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PROTECTED NATURAL AREAS AS LABORATORIES FOR SUSTAINABLE DEVELOPMENT: THE CASE OF GARGANO NATIONAL PARK IN ITALY.

Ada Spiru[1], Raffaele di Mauro[2], Maria Buonarota[3], Michele Guidato[2] and Giovanna Lauriola[2]

[1]Aleksandër Moisiu University of Durrës, Durrës, Albania
[2] Gargano National Park Authority of Foggia, Italy, Foggia, Italy
[3] University of Foggia, Foggia, Italy

Corresponding author: adaspiru@uamd.edu.al
(ORCID: 0000-0001-5524-0501)

Abstract

The Gargano National Park represents one of the most significant and complex environmental systems in Europe, characterized by high biodiversity and a wide variety of ecosystems, ranging from the ancient Umbra Forest to the wetlands of Lakes Varano and Lesina, and coastal areas of outstanding natural value. Managing this rich natural heritage requires an integrated approach that balances environmental protection with sustainable development objectives. Within this framework, the Park Authority promotes policies based on sustainable planning, active involvement of local communities, and multi-level institutional cooperation. Research and innovation play a central role, supported through collaboration with universities and research centers. Key activities include biodiversity monitoring, wildfire prevention, sustainable natural resource management, and the assessment of climate change impacts.

Several initiatives reflect this commitment, such as the LIFE "Diomedee" project addressing invasive alien species, the installation of sustainable mooring buoy fields in the Tremiti Islands, and the adoption of the European Charter for Sustainable Tourism. Sustainable tourism represents a key driver of local economic development, with particular emphasis on reducing seasonality, enhancing inland areas, and promoting cultural and gastronomic heritage. In this context, the Gargano National Park functions as a living laboratory for ecological transition, where scientific knowledge, technological innovation, and territorial governance converge to address global challenges and support development models that preserve and enhance natural capital.

This work aims to provide policy-relevant insights on how protected areas can be leveraged as strategic platforms for sustainable tourism development, fostering local economies while ensuring the long-term conservation of natural resources.

Keywords: Gargano National Park; Biodiversity Conservation; Sustainable Development; Protected Areas Management; Climate Change Adaptation; Sustainable Tourism.

1. Introduction

Protected natural areas have progressively evolved from instruments primarily devoted to biodiversity conservation into multifunctional territorial systems capable of generating environmental, social and economic value. In recent decades, the concept of protected areas has expanded significantly, incorporating objectives related not only to habitat preservation but also to sustainable tourism, climate adaptation, rural development and community participation (Phillips, 2003; Dudley, 2008). This shift reflects broader international policy agendas, including the *United Nations Sustainable Development Goals*, which emphasise the interdependence between ecological protection, economic resilience and social well-being (UN, 2015).

National parks and other protected territories increasingly operate as governance spaces where environmental protection can be integrated with innovation, territorial planning and local development strategies. In this perspective, protected areas may be interpreted as "living laboratories" for sustainable development, where institutions, local communities, researchers and private actors cooperate to test new models of resource management and territorial competitiveness (Borrini-Feyerabend et al., 2013). Their role is particularly relevant in regions characterised by fragile ecosystems, tourism pressure, peripheral economies and exposure to climate-related risks.

Italy provides a highly relevant context for studying these dynamics due to its extensive network of national parks, marine protected areas and landscapes of high ecological and cultural value. Among these, Gargano National Park represents one of the most significant and complex environmental systems in Europe. Established as a protected area in 1991 under Law No. 394/1991, and managed since 1995 by the Gargano National Park Authority, the Park is located in the Apulia region and includes a remarkable concentration of ecosystems: the ancient Umbra Forest, one of the most important forest habitats in Southern Europe; the wetlands of Lakes Varano and Lesina; coastal cliffs and karst formations; agricultural landscapes; and the Tremiti Islands Marine Protected Area. The territory is characterised by exceptional biodiversity and significant landscape heterogeneity, making it a strategic case for analysing integrated sustainability policies.

At the same time, the Gargano area faces several structural challenges. These include seasonal tourism concentration, demographic decline in inland municipalities, wildfire risk, pressures on coastal ecosystems, governance fragmentation and the need to reconcile economic opportunities with environmental limits. Such challenges are common to many Mediterranean protected regions, where tourism and conservation frequently coexist in delicate balance (Eagles et al., 2002). Within this context, the Park Authority has progressively adopted a multidimensional development strategy based on sustainable planning, scientific cooperation and stakeholder participation. Research and innovation play a central role through collaborations with universities, research centres and environmental agencies. Key intervention areas include biodiversity monitoring, invasive species management, wildfire prevention, sustainable mobility, marine ecosystem protection and climate adaptation.

Several initiatives illustrate this transition toward a more integrated governance model. These include the LIFE "Diomedee" project[1] focused on biodiversity restoration and invasive alien species control, the installation of sustainable mooring buoy systems in the Tremiti Islands to reduce ecological pressure from nautical tourism, and the implementation of the European Charter for Sustainable Tourism aimed at strengthening participatory destination management.

Against this background, the objective of this paper is to analyse whether and how Gargano National Park can be considered a laboratory for sustainable development. More specifically, the study investigates how protected natural areas may generate environmental protection outcomes while simultaneously

supporting tourism competitiveness, territorial cohesion and local economic diversification.

The paper is structured as follows. Section 2 reviews the relevant literature on protected areas and sustainable development. Section 3 presents the methodological framework. Section 4 analyses the territorial characteristics of Gargano National Park. Section 5 discusses the main empirical evidence through selected policy initiatives. Section 6 presents conclusions and policy implications.

2. Literature Review and Research Questions

2.1. Literature Review

The role of protected natural areas has undergone a profound transformation over recent decades. Once conceived primarily as instruments for biodiversity conservation, protected areas are now increasingly recognised as multifunctional territories capable of supporting environmental protection, local development, climate resilience and sustainable tourism (Dudley, 2008; Phillips, 2003). This transition reflects a broader policy shift from exclusionary conservation models toward integrated approaches that reconcile ecological objectives with socio-economic needs and stakeholder participation.

A central theme in recent literature concerns the multiple ecosystem services generated by protected areas. Beyond habitat preservation and species protection, parks provide water regulation, carbon sequestration, soil conservation, landscape amenities and recreational benefits with growing economic relevance (MEA, 2005; Kumar, 2011). Recent empirical evidence also suggests that well-managed protected areas can simultaneously reduce biodiversity loss and moderate tourism pressures when governance systems are effective (Zeng et al., 2025). In the context of climate change, forests, wetlands and coastal ecosystems within protected areas are increasingly valued as nature-based solutions for adaptation and mitigation strategies.

The economic dimension of protected areas has received growing attention, particularly through tourism. Nature-based tourism is one of the fastest-growing segments of the global tourism economy and may generate employment, entrepreneurship and territorial diversification, especially in rural and peripheral regions (Eagles, McCool & Haynes, 2002; UNWTO, 2019). More recent studies confirm that tourism in protected areas can contribute directly to Sustainable Development Goals through income generation, biodiversity financing and local livelihood improvement when benefits are inclusively distributed (Phiri et al., 2025). However, unmanaged tourism may also create congestion, environmental degradation and seasonal dependence, particularly in fragile coastal and island destinations.

[1] Life "Diomedee" is a project co-financed by the European Union to support the protection of species and habitats in Gargano National Park and the Regional Park of the Coastal Dunes. For more information visit the official webpage: https://diomedee.eu/en/.

For this reason, governance has become a crucial analytical dimension. Protected areas increasingly depend on participatory and multi-level governance models involving local communities, municipalities, private firms, NGOs and research institutions. Collaborative governance can improve legitimacy, reduce conflicts and enhance implementation capacity in socially complex territories (Borrini-Feyerabend et al., 2013; Lockwood, 2010). Recent comparative evidence from European national parks shows that stronger institutional coordination and community engagement are positively associated with more sustainable tourism outcomes (Matović et al., 2025).

Another emerging strand of literature interprets protected areas as spaces of innovation and experimentation. Parks increasingly host projects related to ecological restoration, digital visitor management, sustainable mobility, renewable energy, biodiversity monitoring and circular economy initiatives. This perspective aligns with the concept of territorial "living laboratories", where public institutions, scientists and communities co-produce solutions under real-world conditions (Evans & Karvonen, 2014). Innovation is particularly relevant in Mediterranean regions exposed to climate vulnerability, overtourism and ecological fragmentation.

Within Europe, the relationship between conservation and tourism has been reinforced through policy tools such as the European Charter for Sustainable Tourism in Protected Areas (CETS), promoted by EUROPARC Federation. The Charter encourages long-term destination strategies based on stakeholder participation, visitor management, local supply chains and environmental quality. Studies suggest that certification and governance frameworks of this type can strengthen destination branding, cooperation and sustainable competitiveness (EUROPARC, 2021).

Mediterranean protected areas are especially relevant laboratories because they combine rich biodiversity with intense seasonal tourism pressures, urbanisation dynamics and coastal vulnerability. In these contexts, the challenge is not only to conserve ecosystems but to integrate inland and coastal development, diversify tourism demand and strengthen territorial resilience. Gargano National Park offers a particularly valuable case study because it combines forests, wetlands, marine ecosystems and tourism economies within a single institutional framework. Analysing this case contributes to understanding how protected areas can translate sustainability principles into measurable territorial outcomes.

2.2. Research Questions

Building on the literature discussed above, this paper investigates whether protected natural areas can effectively function as territorial laboratories for sustainable development. While previous studies have widely recognised the ecological and economic relevance of protected areas, further case-based evidence is needed to understand how governance practices, innovation initiatives and tourism strategies are translated into concrete territorial outcomes.

In particular, the case of Gargano National Park is relevant because it combines high ecological value with socio-economic challenges typical of many Mediterranean regions, including tourism seasonality, environmental pressures, inland marginalisation and the need for stronger territorial coordination. Against this background, the study is guided by the following research questions:

RQ1. To what extent can Gargano National Park be considered a laboratory for sustainable development, integrating environmental protection with local economic growth?

RQ2. How do innovation, research cooperation and governance mechanisms contribute to the sustainable management of protected natural areas?

RQ3. What role does sustainable tourism play in enhancing territorial competitiveness while

preserving natural capital?

RQ4. Which policy lessons from the Gargano experience may be transferable to other Mediterranean and European protected areas?

These research questions provide the analytical framework for evaluating the selected case studies discussed in the empirical sections of the paper.

3. Methodology

This paper adopts a qualitative case study methodology, appropriate for analysing complex territorial systems where environmental, institutional and socio-economic dimensions interact simultaneously (Yin, 2018). Case study approaches are widely used in sustainability research because they allow an in-depth examination of governance processes, policy innovation and place-based development dynamics that are difficult to capture through purely quantitative methods.

Gargano National Park was selected as a strategic case study for three main reasons. First, it represents one of the most ecologically diverse protected areas in Italy and the Mediterranean basin, combining forests, wetlands, coastal ecosystems and marine protected areas within a single governance framework. Second, the Park operates in a territorially heterogeneous context characterised by coastal tourism concentration and inland socio-economic fragility. Third, in recent years the Park Authority has promoted several innovative sustainability initiatives that offer relevant empirical material for policy evaluation.

The empirical analysis is based on a documentary and secondary data approach. Sources include institutional reports of Gargano National Park, official project documentation, EU programme materials, tourism strategy documents, environmental reports, and scientific literature related to protected area governance and sustainable tourism. Particular attention is devoted to three emblematic initiatives:

- The LIFE "Diomedee" project, focused on biodiversity restoration and invasive alien species management;
- The sustainable mooring buoy fields in the Tremiti Islands, aimed at protecting marine ecosystems while regulating nautical tourism;
- The implementation of the *European Charter for Sustainable Tourism (CETS)*, promoting participatory destination governance.

The analytical framework evaluates these initiatives across four interrelated dimensions frequently identified in sustainability literature: (i) environmental effectiveness, (ii) economic contribution, (iii) social participation, and (iv) institutional innovation (Borrini-Feyerabend et al., 2013; Lockwood, 2010). Environmental effectiveness refers to outcomes related to biodiversity conservation and ecosystem protection, while economic contribution concerns tourism development, diversification opportunities and the creation of local value. Social participation focuses on stakeholder engagement and the active involvement of local communities in decision-making processes. Finally, institutional innovation captures governance capacity, strategic partnerships and the ability to promote policy experimentation and adaptive management.

The objective of this work is interpretative and policy-oriented aiming to assess whether and how protected areas can generate integrated development outcomes through coordinated governance mechanisms. This methodology is particularly suitable for emerging research fields where context-

specific evidence and transferable policy lessons are highly valuable. Moreover, the Gargano case is discussed within a broader comparative Mediterranean perspective, allowing the identification of practices potentially replicable in other protected coastal and rural regions facing similar environmental and socio-economic challenges.

4. Gargano National Park: Territorial and Environmental Context. An Italian case study.

Gargano National Park represents one of the most important protected areas in Southern Europe due to its exceptional ecological diversity, strategic geographical position and growing relevance for sustainable territorial development. The Park covers approximately 120,000 hectares in the northern part of the Apulia region and includes terrestrial, coastal and marine ecosystems of

high environmental value. Its territory encompasses the Umbra Forest, one of the oldest and best-preserved forest ecosystems in Italy, the coastal lagoons of Lesina and Varano, extensive karst landscapes, agricultural mosaics, cliffs, beaches and the Marine Protected Area of the Tremiti Islands[2]. This environmental heterogeneity makes Gargano a unique socio-ecological system where biodiversity conservation and human activities coexist.

From an ecological perspective, the Park hosts an extraordinary concentration of habitats and species. It contains a significant share of Italy's vascular flora, endemic orchids, bird migration corridors, marine biodiversity and forest ecosystems recognised at international level. Part of the Umbra Forest was included in the UNESCO World Heritage network of Ancient and Primeval Beech Forests of Europe, confirming the global relevance of the area. These natural assets generate ecosystem services related to carbon sequestration, water regulation, soil protection, coastal resilience and recreation.

At the same time, Gargano is an important tourism destination. Its coastline, islands, forests, religious heritage and traditional villages attract domestic and international visitors, particularly during the summer season. However, tourism demand remains highly concentrated in coastal municipalities and in peak months, while inland areas often experience demographic decline, limited economic diversification and lower accessibility. This spatial imbalance creates a dual territorial structure in which some areas face overtourism pressures while others remain underutilised.

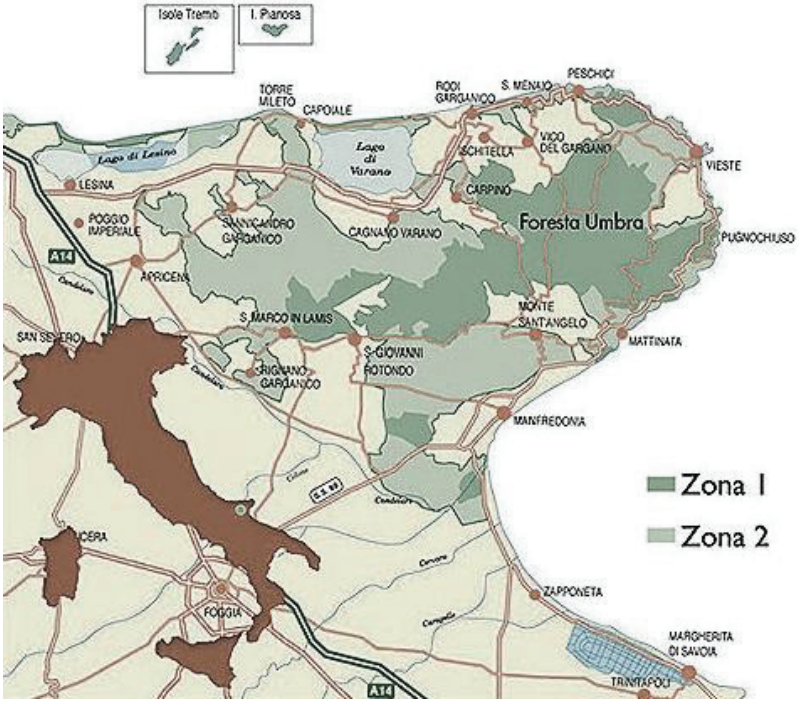


Figure 1. Map of Gargano National Park and Its Zoning System, Province of Foggia, Apulia, Italy.
Source: Gargano National Park Authority.

Within this context, Gargano National Park increasingly performs a strategic governance role. Rather than acting solely as a conservation authority, the Park Authority has progressively adopted an integrated territorial approach based on sustainable tourism, biodiversity protection, environmental education, stakeholder participation and innovation partnerships. The Park therefore functions as an institutional platform where conservation objectives are linked with broader development strategies. This multidimensional role can be summarised through the five pillars reported in Table 1.

Table 1. Gargano National Park as a Laboratory for Sustainable Development.

Dimension	Main Evidence in Gargano National Park
Ecological	Invasive species eradication, Posidonia oceanica protection, forest conservation, wetland biodiversity
Economic	Tourism revenues, sustainable nautical services, support to local enterprises, diversification opportunities
Social	Stakeholder participation, environmental education, community engagement, territorial identity
Governance	CETS certification, inter-institutional cooperation, EU-funded projects, local partnerships
Innovation	Digital booking systems, adaptive management, biodiversity monitoring, sustainable infrastructure

Source: Authors' elaboration.

[2] The Tremiti Islands Marine Protected Area, established by Ministerial Decree of 14 July 1989, is a separate marine protected area located outside the formal boundaries of Gargano National Park. However, due to its geographic proximity, it is legally managed by the same authority, the Gargano National Park Authority. Together, the two protected areas extend the governance framework from terrestrial ecosystems to the surrounding marine environment. The mooring buoy systems analysed in this paper are located within the Tremiti Islands Marine Protected Area.

The strategic relevance of Gargano also derives from its capacity to attract external resources through European programmes and inter-institutional cooperation. Projects financed under LIFE, regional development funds and sustainable tourism networks have strengthened local capacity and introduced innovative management tools. This confirms that protected areas can serve not only as conservation spaces, but also as catalysts for investment and territorial modernisation.

Moreover, Gargano reflects many challenges common to Mediterranean protected regions: climate vulnerability, wildfire risk, tourism seasonality, coastal pressure and demographic decline in rural areas. For this reason, its experience offers lessons of broader international relevance.

Table 2. Main Challenges and Strategic Responses in Gargano National Park.

Structural Challenge	Strategic Response
Seasonal tourism concentration	Sustainable tourism planning and inland destination promotion
Pressure on marine ecosystems	Eco-mooring fields and visitor regulation
Biodiversity threats	LIFE projects and habitat restoration
Inland depopulation	Nature-based tourism and local entrepreneurship
Governance fragmentation	Multi-level cooperation and participatory planning
Climate and wildfire risks	Prevention systems and environmental monitoring

Source: Authors' elaboration.

Overall, Gargano National Park demonstrates how a protected area can evolve into a territorial governance actor capable of combining conservation, economic opportunity and innovation. This makes it a particularly relevant case study for understanding how protected natural areas may function as laboratories for sustainable development.

5. Results and Discussion

Evidence suggests that Gargano National Park has progressively developed into a multifunctional governance system where environmental protection, tourism management and territorial development are jointly pursued. The three selected initiatives analysed in this section—the LIFE "Diomedee" project, the sustainable mooring system in the Tremiti Islands, and the implementation of the European Charter for Sustainable Tourism (CETS)—illustrate how protected areas can generate integrated sustainability outcomes.

5.1. LIFE "Diomedee": Biodiversity Protection and Ecological Restoration

The LIFE "Diomedee" project (LIFE18 NAT/IT/920), approved by the European Commission in 2019 under the LIFE+ Nature Programme (2014–2020), represents one of the most significant biodiversity conservation initiatives implemented in Gargano National Park. With a total budget of approximately €1.5 million, the project aimed to protect habitats and species of European interest by addressing one of the main threats to Mediterranean ecosystems, known as invasive alien species.

The project, completed in early 2025, combined ecological interventions, scientific monitoring and community engagement, contributing to both environmental restoration and institutional capacity

building. The results achieved within the Gargano National Park highlight the effectiveness of integrated conservation strategies

The first major intervention concerned the eradication of the black rat (*Rattus rattus*) in the Tremiti Islands. This action required about two years of field surveys, preliminary monitoring, local community involvement, and the preparation of both an Eradication Plan and an Operational Plan. Rodenticide baits were subsequently distributed across the four islands involved. Although eradication was initially considered successful, in October 2024 the presence of one black rat was detected on San Domino, most likely introduced through freight transport. The Park responded by intensifying monitoring and activating a rapid response around the detection site. No further evidence of rat presence was recorded. This result highlights the importance of continuous biosecurity measures even after successful eradication.

A second intervention focused on the eradication of *Ailanthus altissima* in the islands of San Nicola and San Domino (Action A2 and C2). After the technical planning phase and the acquisition of authorisations from landowners, the works were carried out through several treatment phases between 2023 and 2025. The first intervention was completed between July and October 2023 and addressed all known *Ailanthus* plants in both islands. Further checks were necessary in 2024 to control regrowth and young plants emerging from seeds still present in the soil. The intervention was completed in February 2025 with the planting of replacement vegetation in public gardens on San Nicola and San Domino. This action illustrates the need for repeated and long-term management when dealing with invasive plant species.

A third and separate intervention concerned the eradication of South African ragwort (*Senecio inaequidens*), which proved more complex than initially expected. Several field inspections were carried out in the sites of Lesina and San Giovanni Rotondo to address operational difficulties linked to eradication. In 2023, all newly detected plants were removed, for a total of 1,314 specimens. In 2024, a further 484 plants were eradicated, of which 378, equal to 78%, were removed before flowering. These actions made it possible to control the species through constant removal from all known sites, preventing its spread to surrounding areas. Importantly, eradication

activities were also used for field-based training, involving students, teachers and young people participating in the national civil service.

Finally, the project introduced specific *biosecurity measures* (Action C5) to reduce the risk of reinvasion. In the final stages of black rat eradication, additional monitoring stations were placed near the ports of San Domino and San Nicola and in other critical areas, such as construction material storage sites and small livestock areas where hay deliveries could accidentally introduce rats. Since December 2023, controls have been carried out through biosecurity stations, monitoring points, camera traps, kill traps and non-toxic baits. For *Ailanthus* and *Senecio*, the working group continued to inspect treated and untreated areas during each field visit to detect possible regrowth or new occurrences.

As a result, the LIFE “Diomedee” project shows how protected areas can operate as laboratories for ecological restoration and adaptive conservation. The project combined scientific monitoring, technical intervention, community involvement and environmental education. Its relevance extends beyond the Gargano context, since similar methodologies may be transferred to other Mediterranean islands and coastal protected areas affected by invasive alien species.

Figure 1. Field monitoring and biodiversity intervention activities in Gargano National Park (LIFE "Diomedee" project).
Source: Authors' contribution.

From a policy perspective, the project demonstrates how external funding instruments can strengthen local environmental governance and introduce advanced restoration practices. Beyond direct ecological outcomes, LIFE projects also generate indirect benefits through scientific cooperation, monitoring capacity and knowledge transfer. In the case of Gargano, the initiative reinforced the Park's role as an environmental innovation actor capable of combining conservation priorities with European policy instruments.

Table 3. Main interventions and outcomes of the LIFE "Diomedee" project.

Intervention	Target species / Issue	Main results	Sustainability relevance
Black rat eradication	*Rattus rattus*	Eradication across the Tremiti Islands, with rapid response after one reintroduction event in 2024	Protection of seabirds and island biodiversity
Ailanthus eradication	*Ailanthus altissima*	Multi-phase eradication on San Nicola and San Domino, followed by replacement planting	Restoration of native vegetation

Intervention	Target species / Issue	Main results	Sustainability relevance
South African ragwort control	*Senecio inaequidens*	1,314 plants removed in 2023 and 484 in 2024, mostly before flowering	Prevention of invasive spread in terrestrial habitats
Biosecurity measures	Reinvasion risk	Monitoring stations, traps, camera traps and inspections in critical areas	Long-term prevention and adaptive management

Source: Authors' elaboration.

The experience confirms that biodiversity policies can also function as territorial development tools by improving environmental quality and reinforcing the international visibility of protected destinations.

5.2. Sustainable Mooring Buoy Fields in the Tremiti Islands

The Tremiti Islands represent one of the most sensitive marine ecosystems and a highly attractive nautical tourism destination[3]. However, increasing boat traffic and uncontrolled anchoring created growing pressure on seabeds, particularly on Posidonia oceanica meadows, which are essential habitats for biodiversity conservation and coastal ecological stability.

To address this challenge, the Park Authority promoted the installation of sustainable mooring buoy fields[4]. This system allows vessels to dock without damaging marine habitats while simultaneously improving visitor management and safety standards.

The initiative was designed to regulate boat anchoring according to sustainability principles, while protecting sensitive seabeds and *Posidonia oceanica* meadows, which represent one of the most valuable marine habitats in the Mediterranean. At the same time, the intervention aimed to rationalise the use of marine space within the archipelago and improve the management of nautical tourism flows. The initiative represents a practical example of how environmental regulation can coexist with tourism development rather than restricting it.

The project, financed by the Italian Ministry for the Environment, required significant logistical investments and involved an initial localized impact on the seabed during installation. However, these short-term costs were justified by substantial long-term environmental and managerial benefits. The buoy system provides priority protection for ecologically fragile marine areas, reduces uncontrolled anchoring, and contributes to a more orderly allocation of maritime space for tourism purposes.

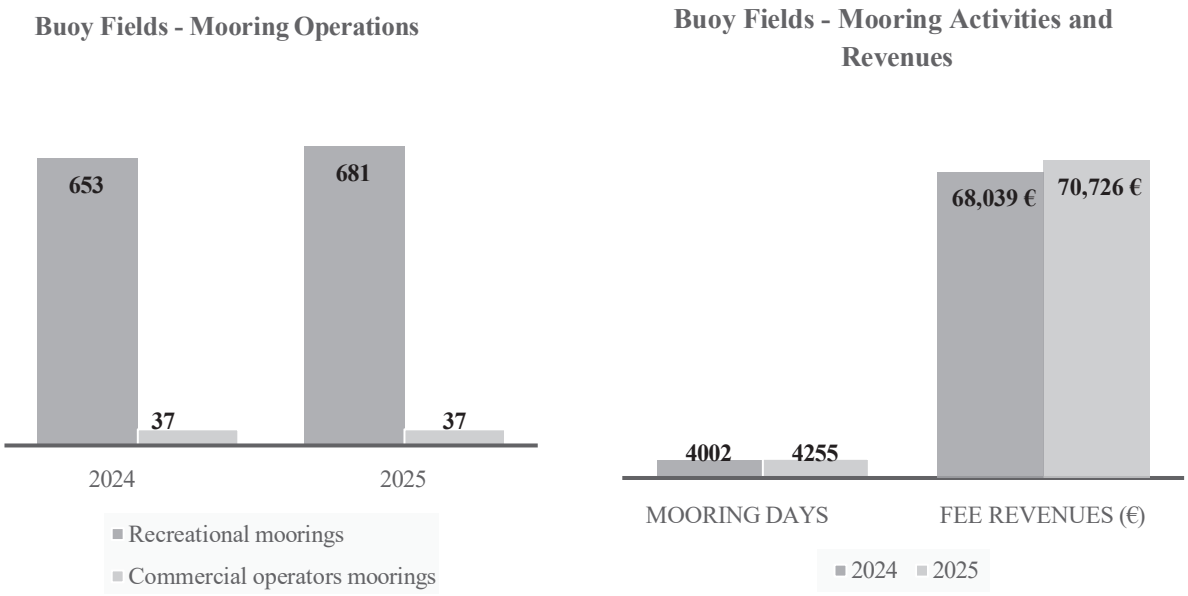
From a governance perspective, the mooring system also generates important operational advantages. In an area lacking a traditional port infrastructure, it improves maritime safety, facilitates monitoring of vessel presence, reduces conflicts among different users of marine resources, and creates a direct source of revenue for the Park Authority. Nevertheless, two structural challenges remain: the highly seasonal demand for mooring services and the recurring maintenance costs associated with marine infrastructure.

Following completion of the works, the management of the buoy fields was initially entrusted to the Municipality of the Tremiti Islands and later transferred to a private economic operator. Full operation was reached in 2022, and management results have been particularly positive, especially in terms of revenues. In 2023, the system was further upgraded through the introduction of the *Blue*

Discovery App, allowing boaters to reserve mooring buoys digitally in a faster and more efficient way. This represents an important step toward smart tourism management and digital innovation within marine protected areas.

In parallel, the Italian Institute for Environmental Protection and Research (ISPRA), acting as implementing authority under the Marine Ecosystem Restoration (MER) programme of the National Recovery and Resilience Plan (PNRR), signed an additional agreement with the Park Authority for the installation of further mooring fields aimed at protecting sensitive marine habitats. Started in 2023, this complementary intervention is currently in its final implementation phase. Figure 2 reports the operational performance of the Tremiti mooring buoy fields.

Figure 2. Operational performance of the Tremiti mooring buoy fields.



Source: Authors' elaboration.

[3] The Marine Protected Area of Tremiti Islands is managed by Gargano National Park Authority. [4] It refers to vessels mooring by tying to a buoy connected by a line to a concrete anchoring block placed on the seabed, rather than free anchoring.

Data confirm the growing economic relevance of the initiative. Between 2024 and 2025, recreational moorings increased by 4%, operator mooring days by 6%, and total fee revenues rose from €68,039 to €70,726. These figures suggest that environmentally regulated marine services can simultaneously generate ecological protection and stable financial returns.

Economically, the mooring system generates revenues through service fees and supports local tourism operators by enhancing the quality and sustainability of the destination. Institutionally, it demonstrates the capacity of the Park to regulate common natural resources through market-compatible instruments. The main effects of the intervention are reported in Table 4.

Table 4. Effects of the Tremiti Sustainable Mooring System.

Dimension	Main Effects
Ecological	Protection of Posidonia meadows, reduced seabed damage
Economic	Mooring revenues, support for nautical tourism
Social	Improved visitor experience and maritime safety
Governance	Regulated access and carrying capacity management
Innovation	Digital reservation and adaptive visitor control

Source: Authors' elaboration.

Overall, the Tremiti buoy field experience demonstrates how protected marine areas can transform environmental regulation into an instrument of sustainable tourism governance. By combining habitat conservation, visitor management, digital innovation and revenue generation, the project offers a replicable model for other Mediterranean island destinations facing similar pressures from seasonal nautical tourism.

5.3. European Charter for Sustainable Tourism (CEST)

The European Charter for Sustainable Tourism in Protected Areas (CETS) represents one of the most relevant governance instruments for aligning tourism development with environmental conservation. Coordinated by the EUROPARC Federation, the Charter promotes a participatory certification pathway through which protected areas define a shared long-term tourism strategy together with municipalities, businesses, civil society organisations and residents. Its core objective is to ensure that tourism growth contributes positively to local economies while preserving natural, cultural and social resources (EUROPARC Federation, 2023; UNWTO, 1996).

The Gargano National Park initiated the CETS candidacy process in 2015 and obtained its first certification in 2017 at the European Parliament in Brussels. A second certification cycle for the period 2022–2026 was awarded in 2022 and extended to both Gargano National Park and the Tremiti Islands Marine Protected Area. This continuity demonstrates the Park's capacity to institutionalise sustainable tourism governance over time.

During the first action plan (2017–2021), a total of 68 actions were proposed, of which 21 by the Park Authority and 47 by external stakeholders. Thirty actions (44%) were fully implemented, while 16 were partially completed and 22 were not completed. Although implementation rates reveal operational constraints, they also indicate an active multi-stakeholder governance process involving both public and private actors. The main barriers included the Covid-19 pandemic, bureaucratic delays, limited coordination capacity, funding uncertainty, and weak networking among participants. More ambitious projects requiring multiple authorisations or joint financing were those most affected.

For the second cycle (2022–2026), the governance model was strengthened through a renewed territorial consultation process structured around three operational phases: participation, planning and programming. Twelve meetings were organised across thematic territories (coastal areas, lagoons, culture/spiritual heritage, and Tremiti Islands), generating 90 participating organisations, 42 formal adhesions and 91 proposed actions, including 27 by the Park Authority. This demonstrates increased stakeholder mobilisation and stronger project generation capacity. Forum composition is represented in Figure 2.

Figure 2. Composition of the CETS Stakeholder Forum in Gargano National Park (2017 vs. 2022).

Source: Authors' elaboration.

The renewed strategy also integrated post-pandemic tourism trends, emphasising slow tourism, active experiences, local authenticity and emotional/place-based experiences. This reflects the transition from mass seasonal tourism toward higher-value and lower-impact destination models.

A further institutional innovation concerns the launch of CETS Part II, aimed at certifying private tourism operators according to sustainability standards. Approved in 2026, this mechanism extends governance from territorial planning to enterprise-level behaviour, creating incentives for sustainable business practices.

Table 5. Main Contributions of the European Charter for Sustainable Tourism (CETS) in Gargano National Park.

Dimension	Main Contributions
Economic	Diversification of tourism products, support for local SMEs, extension of the tourism season
Social	Stakeholder participation, community engagement, stronger local identity and cooperation
Territorial	Promotion of inland areas, reduced coastal concentration, improved territorial integration
Governance	Strategic planning, multi-level coordination, public–private partnerships
Environmental	Tourism development aligned with conservation goals, increased awareness of natural resource protection

Source: Authors' elaboration.

As a result, the Gargano case shows that protected areas can act not only as ecological assets but also as governance laboratories where collaborative planning, stakeholder participation and policy experimentation generate more resilient tourism development models.

5.4. *Comparative Discussion*

Taken together, the three initiatives reveal a coherent territorial development model in which environmental protection, economic valorisation and institutional innovation are mutually reinforcing. LIFE "Diomedee" enhanced biodiversity conservation through invasive species eradication, ecosystem restoration and strengthened cooperation with European institutions.

Table 6. Comparative Synthesis of Gargano Sustainability Initiatives

Initiative	Main Objective	Key Contribution
LIFE Diomedee	Biodiversity restoration	Ecological resilience and EU cooperation
Tremiti Mooring	Marine tourism regulation	Conservation with economic revenues
CETS	Sustainable tourism governance	Territorial coordination and diversification

Source: Authors' elaboration.

The Tremiti mooring buoy system showed how marine protection measures can simultaneously regulate tourism flows, safeguard sensitive habitats such as Posidonia oceanica, and generate stable revenues for local management. The European Charter for Sustainable Tourism (CETS), in turn, improved strategic governance by fostering stakeholder participation, coordinated planning and the diversification of tourism products across coastal and inland areas.

In conclusion, the findings support the view that protected natural areas can operate as laboratories for sustainable development when conservation goals are integrated with innovation, stakeholder engagement and long-term territorial planning. Rather than representing a constraint on local growth, environmental protection can become a catalyst for new economic opportunities, institutional learning and place-based competitiveness. In this respect, Gargano National Park offers a relevant policy model for other Mediterranean protected regions facing similar challenges of tourism pressure, ecological vulnerability and uneven regional development.

6. Conclusions and Policy Implications

This paper examined how protected natural areas can function as practical laboratories for sustainable development through the case of Gargano National Park. The evidence suggests that protected areas should not be interpreted solely as conservation spaces, but also as territories where environmental protection, local economic development and institutional innovation can be effectively integrated. The three initiatives analysed—LIFE “Diomedee”, the Tremiti mooring buoy system, and the European Charter for Sustainable Tourism (CETS)—demonstrate different but complementary pathways through which natural capital can generate ecological, social and economic value.

First, the LIFE “Diomedee” project produced clear environmental benefits through the control of invasive alien species and the restoration of ecosystem functionality. At the same time, it generated indirect economic and social gains. The eradication of black rats, in addition to reducing predation on juvenile seabirds nesting on the islands, also reduced damage to tourism-related facilities and infrastructure, while lowering potential sanitary risks associated with rodents. Moreover, the operational methods developed under the project may represent transferable good practices for other Mediterranean islands facing similar biodiversity threats. This confirms the strategic value of EU-funded environmental programmes as instruments not only of conservation, but also of territorial resilience and knowledge transfer.

Second, the Tremiti mooring buoy fields show how environmental regulation can be transformed into strategic infrastructure for sustainable tourism management. In the absence of large port facilities,

the system performs an essential function by organising nautical access while protecting sensitive marine habitats such as Posidonia oceanica meadows. The experience highlights that such systems are most effective when calibrated to real carrying capacity, spatially distributed across coves, supported by ecological anchoring technologies, integrated with digital reservation tools, and accompanied by environmental awareness measures. In this sense, marine conservation infrastructure can simultaneously improve visitor management, generate revenues and enhance destination quality.

Third, the CETS experience demonstrates the importance of governance and stakeholder coordination in building sustainable destinations. The Charter process strengthened dialogue among municipalities, businesses, NGOs and public institutions, particularly during the pandemic period when tourism models required rethinking. It also increased the visibility of Gargano as a sustainable destination and encouraged territorial integration between coastal areas, inland communities and the Tremiti Marine Protected Area. The activation of CETS Part II in 2026, involving private operators, represents a further step toward embedding sustainability standards within the local tourism economy.

From a policy perspective, several implications emerge. Protected areas should be incorporated into regional development strategies as innovation platforms rather than passive protected zones. Public authorities should support long-term governance mechanisms that involve local stakeholders continuously, not only through one-off consultations. Investments in ecological infrastructure, such as mooring systems, habitat restoration and digital visitor management, can generate multiple returns when linked to tourism planning. Finally, EU and national funding programmes should increasingly reward integrated projects that combine biodiversity protection, climate adaptation, community participation and sustainable entrepreneurship.

From a broader perspective, Gargano National Park offers a replicable model for Mediterranean and coastal regions facing common challenges of overtourism, ecosystem fragility and uneven territorial development. Future research may extend the analysis through comparative case studies, visitor data, socio-economic indicators and impact evaluation methods to better quantify the long-term contribution of protected areas to sustainable regional growth.

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TEACHING PERSPECTIVES IN THE ERA OF ARTIFICIAL INTELLIGENCE: OPPORTUNITIES, CHALLENGES, AND IMPLICATIONS FOR EDUCATIONAL DEVELOPMENT

Arbi Agalliu[1]

[1] Department of Governance, Political Science and Communication "Barleti" University, Albania

Corresponding author: a.agalliu@umb.edu.al

Abstract

Artificial Intelligence (AI) has emerged as one of the most transformative technologies of the twenty-first century, influencing nearly every aspect of society, including education. The integration of AI into educational systems has introduced innovative approaches to teaching, learning, assessment, and educational management. AI-powered technologies have the potential to personalize learning experiences, improve educational accessibility, enhance teaching efficiency, and support evidence-based decision-making. Consequently, educational institutions worldwide are increasingly exploring AI-driven solutions to address contemporary challenges and improve learning outcomes.

Despite these opportunities, the implementation of AI in education also raises significant concerns. Ethical considerations, data privacy, algorithmic bias, academic integrity, and the potential reduction of human interaction have become central topics in educational research and policy discussions. Furthermore, the rapid digitalization of learning environments has contributed to new challenges, including student distraction and attention loss, which may affect academic performance and engagement.

This paper examines the perspectives of teaching in the era of Artificial Intelligence by analyzing its role in education, its benefits and challenges, and its implications for teachers and students. Particular attention is given to the Albanian educational context, which is undergoing a process of digital transformation and educational modernization. The paper argues that while AI offers substantial opportunities for educational improvement, its successful integration requires a balanced approach that combines technological innovation with human-centered pedagogical principles, ethical governance, and continuous professional development for educators.

Keywords: Artificial Intelligence, Education, Teaching, Learning, Educational Technology, Digital Transformation, Albania.

1. Introduction

The history of education has been closely linked to technological advancement. From the invention of the printing press to the emergence of computers and the internet, technological innovations have continuously reshaped educational systems and transformed the ways in which knowledge is created, distributed, and acquired. In recent decades, the digital revolution has accelerated these transformations, leading to the widespread adoption of online learning platforms, virtual classrooms, learning management systems, and digital educational resources. As educational institutions increasingly embrace technology, the emergence of Artificial Intelligence (AI) represents the next major stage in the evolution of teaching and learning.

Artificial Intelligence refers to computer systems capable of performing tasks that typically require human intelligence, including learning, reasoning, problem-solving, decision-making, and language processing. In educational settings, AI technologies are used to personalize learning experiences, automate administrative processes, analyze student performance, and provide intelligent support to both learners and educators. Adaptive learning systems, intelligent tutoring platforms, predictive analytics, and generative AI tools have demonstrated the potential to improve educational outcomes while increasing efficiency and accessibility. Consequently, AI has become a strategic priority for governments, educational institutions, and international organizations seeking to modernize educational systems and prepare learners for a rapidly changing digital economy.

However, the increasing integration of AI into education raises important pedagogical, ethical, and social questions. While AI can support personalized learning and improve educational effectiveness, concerns remain regarding data privacy, academic integrity, algorithmic bias, and the changing role of educators. Moreover, the expansion of digital learning environments has introduced new challenges related to student engagement and attention management. Therefore, understanding the opportunities and risks associated with AI integration is essential for developing effective educational policies and practices. This paper aims to examine the role of AI in contemporary education, explore its implications for teaching and learning, and discuss future directions for educational development in the context of technological transformation.

2. Overview of Education in Albania

The Albanian education system has undergone substantial reforms during the last two decades, reflecting the country's broader efforts to modernize public institutions and align educational policies with European standards. Education in Albania is structured into several levels, including preschool education, primary education, lower secondary education, upper secondary education, vocational education and training, and higher education. The Ministry of Education and Sports is responsible for developing educational policies, implementing reforms, and ensuring quality standards across the educational system.

One of the most significant developments in recent years has been the increasing emphasis on digitalization. Educational reforms have focused on integrating information and communication technologies into teaching and learning processes, improving educational infrastructure, and enhancing digital competencies among students and teachers. The COVID-19 pandemic accelerated these efforts, forcing educational institutions to adopt online learning platforms and digital communication tools. Although the transition to remote learning presented numerous challenges, it also highlighted the importance of technological readiness and digital literacy in contemporary education.

Despite considerable progress, the Albanian education system continues to face several structural challenges. Demographic changes, declining birth rates, migration, regional disparities, and limited technological infrastructure in certain areas affect educational access and quality. Moreover, the need for continuous professional development among teachers remains a priority as educational technologies become increasingly sophisticated. These challenges create both obstacles and opportunities for the integration of Artificial Intelligence within educational settings.

Recent educational statistics indicate important trends regarding student enrollment in Albania. According to data published by the Albanian Institute of Statistics (INSTAT), the number of enrolled pupils and students has shown a gradual decline over recent years, reflecting demographic and migration-related factors.

Table 1. Enrollment in Formal Education in Albania

Academic Year	Enrolled pupils and students
2022 – 2023	554.222
2023 – 2024	533711
2024 – 2025	526.602

Source: INSTAT, Education enrollment statistics, 2022. 2023, 2024, 2025.

The decline in student enrollment presents challenges for educational planning and resource allocation. However, it also creates opportunities for implementing personalized learning approaches and educational innovations supported by Artificial Intelligence. AI technologies may assist educational institutions in identifying learning needs, optimizing resource management, and improving educational outcomes despite demographic changes.

Furthermore, Albania's higher education sector has increasingly recognized the importance of digital transformation. Universities are expanding their use of digital learning platforms, online academic resources, and technology-enhanced teaching methodologies. As a result, the integration of AI into higher education may contribute to improving research capacity, academic performance, and international competitiveness.

The future development of Albanian education will depend on the successful combination of technological innovation, educational quality, and social inclusion. Investments in infrastructure, teacher training, and digital competencies will be essential to ensure that AI technologies

contribute positively to educational development and support lifelong learning opportunities for all citizens.

3. Literature Review

The growing interest in Artificial Intelligence within educational research has generated a substantial body of literature examining its applications, opportunities, and challenges. Scholars generally agree that AI possesses significant potential to transform educational systems by enhancing personalization, efficiency, and accessibility. However, opinions differ regarding the long-term implications of AI for teaching, learning, and educational governance.

Luckin (2018) argues that AI should be viewed as a tool for augmenting human intelligence rather than replacing it. According to this perspective, AI can support learners by providing personalized educational experiences while enabling educators to make more informed pedagogical decisions. Similarly, Holmes, Bialik, and Fadel (2019) emphasize the capacity of AI to facilitate adaptive learning, automate routine tasks, and improve student engagement through intelligent educational systems.

Research on adaptive learning technologies demonstrates that personalized educational environments can improve student motivation, academic performance, and knowledge retention. Learning analytics, another important area of AI research, enables educators to collect and analyze large volumes of educational data in order to identify learning patterns and provide targeted interventions. These capabilities have contributed to the growing popularity of AI-supported educational platforms in both schools and higher education institutions.

International organizations have also highlighted the importance of AI in education. UNESCO (2021) recognizes the transformative potential of AI while emphasizing the need for ethical frameworks, transparency, inclusiveness, and human rights protection. Similarly, the Organization for Economic Co-operation and Development (OECD) has emphasized the role of AI in developing future-ready educational systems capable of responding to rapidly changing labor market demands.

Despite these positive perspectives, researchers have identified several limitations and concerns. Issues related to data privacy, algorithmic bias, digital inequality, and excessive dependence on technology remain significant challenges. Furthermore, some scholars argue that the growing use of AI may alter traditional teacher-student relationships and reduce opportunities for meaningful human interaction. Consequently, contemporary literature increasingly advocates for a balanced and human-centered approach that combines technological innovation with pedagogical, ethical, and social considerations.

The existing body of research suggests that AI can substantially enhance educational effectiveness when implemented responsibly. Nevertheless, its long-term success depends on educational

policies, institutional readiness, teacher competencies, and the establishment of ethical standards that ensure equitable access and responsible technology use.

4. The Role of Artificial Intelligence in Education

Artificial Intelligence has become one of the most influential technological innovations shaping contemporary education. Educational institutions increasingly employ AI-powered systems to improve teaching effectiveness, enhance student engagement, and support data-driven decision-making. Unlike traditional educational technologies, AI systems can analyze large amounts of data, recognize patterns, and adapt their responses according to individual learner needs. Consequently, AI has the potential to transform educational environments from standardized instructional models into personalized and adaptive learning ecosystems.

One of the most significant applications of AI in education is personalized learning. Traditional classroom environments often face challenges in addressing the diverse learning needs of students. Learners differ in their abilities, learning styles, prior knowledge, and pace of learning. AI-powered adaptive learning platforms can analyze student performance and provide customized content, exercises, and recommendations based on individual learning profiles. As a result, students receive targeted support that can improve academic achievement and increase motivation.

Another important application is the development of Intelligent Tutoring Systems (ITS). These systems simulate aspects of human tutoring by providing personalized guidance and immediate feedback. Research suggests that students who receive individualized feedback often demonstrate higher levels of engagement and better learning outcomes compared to those relying solely on traditional instruction. Intelligent tutoring systems can identify misconceptions, monitor progress, and recommend corrective actions, thereby supporting continuous improvement throughout the learning process.

Learning analytics represents another significant contribution of AI to education. Educational institutions generate substantial amounts of data through digital learning platforms, online assessments, and student interactions. AI-driven analytics tools can process this information to identify trends, predict student performance, and detect potential learning difficulties. Teachers and administrators can use these insights to design interventions that improve retention rates, enhance student success, and optimize educational resources.

Artificial Intelligence also supports assessment and evaluation processes. Automated grading systems can evaluate objective assessments quickly and consistently, reducing administrative workload for educators. More advanced AI applications are increasingly capable of analyzing written assignments, providing feedback on grammar, structure, and content quality. While human

judgment remains essential for evaluating creativity and critical thinking, AI can significantly improve efficiency in routine assessment tasks.

Furthermore, AI-powered virtual assistants and educational chatbots have become valuable tools in modern learning environments. These systems provide students with immediate access to information and academic support beyond traditional classroom hours. By offering continuous assistance, chatbots help create flexible and learner-centered educational experiences. Consequently, AI contributes not only to improving educational effectiveness but also to increasing accessibility and inclusiveness within educational systems.

5. Benefits of Artificial Intelligence in Teaching and Learning

The integration of Artificial Intelligence into educational environments offers numerous benefits for students, teachers, educational institutions, and policymakers. These benefits extend beyond technological innovation and have the potential to fundamentally improve educational quality and effectiveness.

One of the most important advantages of AI is the ability to personalize learning experiences. Personalized learning has become a central objective of contemporary educational reforms because students possess different learning styles, abilities, and interests. AI-powered educational systems can adapt instructional content according to individual learner needs, ensuring that students receive appropriate levels of challenge and support. Such personalization contributes to increased motivation, engagement, and academic performance.

Another significant benefit is improved teaching efficiency. Teachers often spend substantial amounts of time on administrative tasks such as grading assignments, monitoring attendance, and preparing reports. AI technologies can automate many of these routine responsibilities, allowing educators to focus on instructional design, student mentoring, and professional development. By reducing administrative burdens, AI enables teachers to dedicate more attention to meaningful educational interactions.

Accessibility and inclusion represent additional advantages of AI integration. Educational technologies powered by AI can support learners with disabilities through speech recognition systems, text-to-speech applications, automatic translation tools, and adaptive learning interfaces. These technologies help create more inclusive educational environments by ensuring that diverse learner needs are addressed effectively. Consequently, AI contributes to educational equity and supports the principle of lifelong learning for all individuals.

AI also enhances educational decision-making processes. Through learning analytics and predictive modeling, educational institutions can identify students at risk of academic failure and implement timely interventions. Such evidence-based approaches improve student retention, reduce dropout rates, and support institutional planning. Policymakers can also utilize educational

data generated through AI systems to develop more effective educational strategies and allocate resources efficiently.

Furthermore, AI contributes to the development of digital competencies and twenty-first-century skills. As societies become increasingly dependent on technology, students require advanced digital literacy, critical thinking, problem-solving, and analytical skills. Exposure to AI-supported learning environments helps learners develop competencies that are highly valued in contemporary labor markets. Consequently, AI not only improves educational outcomes but also prepares students for future professional and social challenges.

The use of AI can additionally support lifelong learning. Modern economies require continuous skill development and professional adaptation. AI-powered learning platforms facilitate flexible and self-directed learning opportunities that extend beyond formal education. Individuals can access personalized learning resources throughout their lives, contributing to professional growth and social inclusion.

Despite these numerous benefits, it is important to recognize that AI should complement rather than replace human educators. Effective teaching requires empathy, emotional intelligence, ethical judgment, and interpersonal communication—qualities that remain uniquely human. Therefore, the greatest benefits of AI emerge when technological capabilities are integrated with human-centered pedagogical practices.

6. Challenges and Risks of AI Integration

Although Artificial Intelligence offers substantial opportunities for educational improvement, its implementation is accompanied by significant challenges and risks that require careful consideration. Educational institutions must address these concerns to ensure that AI contributes positively to teaching and learning processes.

One of the most frequently discussed challenges is data privacy and security. AI systems rely on large amounts of student data to generate personalized recommendations and predictive analyses. Educational platforms often collect information regarding student performance, behavior, attendance, and learning preferences. The collection and processing of such sensitive information raise concerns regarding privacy protection, informed consent, and data ownership. Educational institutions must establish clear policies to ensure compliance with ethical and legal standards governing data management.

Another critical issue is algorithmic bias. AI systems learn from existing datasets, which may contain historical biases and inequalities. If these biases are embedded within educational algorithms, AI technologies may unintentionally reinforce discrimination or unequal treatment. For example, predictive systems could disadvantage certain groups of students if training data fail to represent diverse educational experiences. Consequently, transparency, fairness, and

accountability must become central principles in the development and implementation of educational AI systems.

Academic integrity has emerged as an increasingly important concern with the rapid growth of generative AI technologies. Students can now utilize AI tools to generate essays, solve assignments, and produce academic content with minimal effort. While such technologies may support learning when used responsibly, they also create opportunities for plagiarism and academic misconduct. Educational institutions must therefore develop policies that promote ethical AI use while preserving academic standards and learning objectives.

The digital divide presents another substantial challenge. Access to advanced technologies remains uneven across regions and socioeconomic groups. Students from disadvantaged backgrounds may face barriers related to internet connectivity, technological infrastructure, and digital literacy. As a result, AI integration may unintentionally widen educational inequalities if adequate support mechanisms are not established. Governments and educational institutions must invest in infrastructure and accessibility initiatives to ensure equitable participation in digital learning environments.

Teacher readiness also represents a significant factor influencing successful AI implementation. Many educators have limited experience with advanced AI technologies and may feel uncertain about their application in educational settings. Professional development programs are therefore essential for equipping teachers with the knowledge and skills necessary to integrate AI effectively into their pedagogical practices. Without adequate training, the potential benefits of AI may remain underutilized.

Additionally, concerns have been raised regarding excessive dependence on technology. Overreliance on AI systems may reduce opportunities for critical thinking, creativity, and interpersonal interaction. Education is not solely concerned with knowledge acquisition; it also involves socialization, emotional development, collaboration, and ethical growth. Therefore, maintaining a balance between technological innovation and human interaction remains essential.

Ultimately, the successful integration of AI in education depends on addressing these challenges through comprehensive policies, ethical governance frameworks, institutional preparedness, and continuous stakeholder engagement. A responsible approach to AI implementation can help maximize educational benefits while minimizing potential risks.

7. Student Attention Loss in Digital Learning Environments

One of the most significant challenges associated with the digital transformation of education is the decline in students' attention and concentration. While digital technologies provide unprecedented access to information and learning resources, they also introduce numerous

distractions that can negatively affect academic performance and learning outcomes. The widespread use of smartphones, social media platforms, instant messaging applications, and multimedia content has fundamentally altered students' patterns of attention and information processing.

Research in cognitive psychology suggests that human attention is a limited resource. According to Cognitive Load Theory, learners have a finite capacity for processing information. When students are exposed to excessive stimuli, such as notifications, online advertisements, social media updates, and multiple browser tabs, their cognitive resources become fragmented. Consequently, learning efficiency decreases, and students may experience difficulties in understanding, retaining, and applying knowledge.

Multitasking has become a common behavior among contemporary learners. Many students attempt to participate in online classes while simultaneously using social media, messaging applications, or entertainment platforms. Although multitasking is often perceived as an effective strategy for managing multiple activities, research consistently demonstrates that it reduces concentration and impairs academic performance. Frequent task-switching disrupts deep learning processes and limits the development of critical thinking skills.

Artificial Intelligence can both contribute to and help address attention-related challenges. AI-powered platforms often rely on interactive and engaging learning experiences that encourage student participation. Adaptive learning systems can personalize educational content according to student interests and learning preferences, thereby increasing motivation and reducing disengagement. Furthermore, learning analytics can help educators identify patterns of student behavior associated with reduced participation and declining performance.

To mitigate attention loss, educators should adopt active learning strategies that encourage student engagement. Collaborative learning activities, project-based assignments, problem-solving exercises, and interactive discussions can help maintain student focus. Additionally, educational institutions should promote digital well-being by encouraging responsible technology use and developing policies that minimize unnecessary distractions during learning activities.

Ultimately, maintaining student attention in digital learning environments requires a balanced approach that combines technological innovation with effective pedagogical practices. While AI can support engagement and personalization, human guidance remains essential for fostering meaningful and sustained learning experiences.

8. The Impact of Artificial Intelligence on Teachers

The integration of Artificial Intelligence is significantly transforming the professional responsibilities of teachers. Traditionally, educators have been viewed primarily as providers of information and content. However, the increasing availability of digital resources and AI-powered

learning systems has shifted the focus of teaching toward facilitation, mentoring, and personalized support.

One of the most important impacts of AI on teachers is the reduction of administrative workload. Tasks such as grading assignments, monitoring attendance, generating reports, and analyzing student performance can increasingly be automated through AI technologies. This allows teachers to dedicate more time to instructional planning, student engagement, and professional development activities.

AI also provides valuable support for instructional decision-making. Through learning analytics, educators can gain deeper insights into student progress, identify learning difficulties, and implement targeted interventions. These data-driven approaches enable teachers to make more informed pedagogical decisions and provide individualized support to learners who require additional assistance.

Nevertheless, the growing use of AI also presents challenges for educators. Teachers must develop new competencies related to digital literacy, data interpretation, and AI-supported instructional design. Continuous professional development is therefore essential to ensure that educators can effectively integrate technological innovations into their teaching practices.

Some concerns have emerged regarding the possibility that AI may replace teachers in certain educational functions. However, most educational researchers argue that AI should be viewed as a complementary tool rather than a substitute for human educators. Teaching involves emotional intelligence, empathy, ethical judgment, creativity, and interpersonal communication—qualities that remain beyond the capabilities of current AI systems.

Consequently, the future role of teachers is likely to evolve rather than disappear. Educators will increasingly function as facilitators of learning, mentors, and designers of educational experiences, while AI serves as a powerful tool that enhances teaching effectiveness and supports student success.

9. The Impact of Artificial Intelligence on Students

Students represent the primary beneficiaries of AI-supported educational innovations. Artificial Intelligence offers opportunities to create more personalized, flexible, and inclusive learning environments that address diverse educational needs and learning preferences.

One of the most significant benefits for students is access to personalized learning experiences. AI-powered systems can analyze individual performance and adapt learning materials accordingly. Students receive customized recommendations, targeted feedback, and learning activities that correspond to their current level of understanding. This personalized approach promotes motivation, self-confidence, and academic achievement.

AI also supports self-directed learning. Modern learners increasingly have access to digital platforms that allow them to study independently, monitor their progress, and access educational resources at any time. Such flexibility is particularly important in higher education and lifelong learning contexts, where learners often balance educational responsibilities with professional and personal commitments.

Furthermore, AI can improve accessibility for students with disabilities and special educational needs. Technologies such as speech recognition, text-to-speech applications, automatic translation systems, and adaptive interfaces contribute to more inclusive educational environments. These tools help ensure that all learners have opportunities to participate fully in educational activities.

Despite these benefits, students must also develop competencies necessary for responsible AI use. Critical thinking, digital literacy, information evaluation, and ethical awareness have become essential skills in contemporary society. Students must learn to critically assess AI-generated information, recognize potential biases, and use technological tools responsibly.

The relationship between AI and student development therefore extends beyond academic performance. AI-supported education has the potential to foster lifelong learning, technological competence, and adaptability—qualities that are increasingly important in a rapidly changing global economy.

10. Future Directions of Education in the AI Era

The future of education will be profoundly influenced by continued advances in Artificial Intelligence and related technologies. Educational systems worldwide are expected to become increasingly data-driven, personalized, and technologically integrated. As AI capabilities continue to evolve, new opportunities for innovation and educational improvement will emerge.

One anticipated development is the widespread adoption of smart classrooms. These environments will incorporate AI-powered systems capable of monitoring student engagement, providing real-time feedback, and adapting instructional strategies according to learner needs. Such technologies may enable more responsive and effective educational experiences.

Adaptive learning environments are also expected to become increasingly sophisticated. Future AI systems may possess enhanced capabilities for understanding learner behavior, predicting academic performance, and recommending personalized educational pathways. These innovations have the potential to improve learning outcomes while reducing educational inequalities.

Another important trend involves the integration of Artificial Intelligence with emerging technologies such as Virtual Reality (VR), Augmented Reality (AR), and the Internet of Things (IoT). These technologies can create immersive learning environments that enhance student engagement and support experiential learning. Students may increasingly participate in virtual

laboratories, simulations, and interactive educational experiences that were previously impossible within traditional classroom settings.

For countries such as Albania, the future integration of AI in education will require strategic investments in infrastructure, teacher training, digital literacy, and educational research. Policymakers must establish ethical guidelines and regulatory frameworks that ensure responsible AI use while promoting innovation and accessibility.

Ultimately, the future of education should not focus solely on technological advancement but also on human development. AI should support the cultivation of creativity, critical thinking, collaboration, ethical reasoning, and lifelong learning. Human-centered educational approaches will remain essential for preparing learners to navigate increasingly complex social and professional environments.

11. Conclusion

Artificial Intelligence has emerged as one of the most influential forces shaping the future of education. Its integration into teaching and learning processes offers significant opportunities for improving educational quality, personalizing instruction, enhancing accessibility, and supporting evidence-based decision-making. AI technologies have demonstrated considerable potential to transform traditional educational models and create more flexible, inclusive, and learner-centered environments.

However, the implementation of AI is accompanied by important challenges. Ethical concerns, privacy issues, academic integrity risks, algorithmic bias, and student attention loss require careful consideration by educators, policymakers, and technology developers. Addressing these challenges is essential to ensuring that AI contributes positively to educational development and social well-being.

The findings presented in this paper suggest that AI should be viewed as a complementary educational tool rather than a replacement for human educators. Teachers will continue to play a central role in fostering critical thinking, creativity, emotional development, and ethical understanding. The most effective educational systems will be those that successfully combine technological innovation with human-centered pedagogical values.

As educational institutions continue their digital transformation, strategic investments in infrastructure, teacher preparation, digital literacy, and ethical governance will become increasingly important. Through responsible implementation and continuous evaluation, Artificial Intelligence can contribute significantly to building more effective, equitable, and future-oriented educational systems.

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SUSTAINABLE MARKETING THROUGH ARTIFICIAL INTELLIGENCE: PROMOTING GREEN CONSUMPTION IN EMERGING ECONOMIES

Aelita Mani[1], Arbi Agalliu[2], Anxhelo Mani[3]

[1]Department of Economics, Entrepreneurship and Finance "Barleti" University, Albania
fin.dep@umb.edu.al
(ORCID: 0009-0007-1153-5958)

[2]Department of Governance, Political Science and Communication "Barleti" University, Albania
a.agalliu@umb.edu.al

[3]Deloitte Albania
Anxhelo.mani77@gmail.com

Abstract

Artificial Intelligence (AI) is transforming sustainable marketing especially in emerging economies, profoundly influencing consumer behavior. With increasing environmental awareness and technological development, consumers are increasingly looking for eco-friendly brands. This paper examines how AI-powered sustainability marketing is changing consumer perceptions and driving green consumption, especially in emerging economies. Through systematic literature review and secondary data analysis, the paper highlights the role of advanced AI technologies, whether in machine learning or algorithmic language processing and predictive analytics in building trust and loyalty to green brands. The results show that while challenges such as high cost and lack of infrastructure remain enormous, AI offers numerous opportunities to bridge the gap between intent and action in green consumption. The paper concludes with some practical recommendations for businesses and policymakers in emerging economies.

Keywords: Artificial Intelligence, Sustainability Marketing, Green Consumption, Emerging Economies, Green Marketing.

[1] Both Prof. Assoc. Dr. Aelita Mani and Prof. Assoc. Dr. Arbi Agalliu first authors
[2] Both Prof. Assoc. Dr. Aelita Mani and Prof. Assoc. Dr. Arbi Agalliu first authors
[3] Anxhelo Mani second author

1. Introduction

In the last decade, climate change and environmental degradation have driven a substantial shift in global market dynamics. Consumers, especially younger generations, are showing a growing awareness of the environmental impact of their purchases, looking for products and services that align with their ecological values (Garg et al., 2025). This change has forced companies to adopt green marketing practices to attract and retain this growing segment of the market. However, traditional green marketing often faces challenges such as consumer skepticism towards ecological claims, the phenomenon known as *greenwashing*, and the difficulty in personalizing messages to different cultural and economic audiences (Tan, 2025).

In this context, Artificial Intelligence (AI) emerges as a transformative tool. AI-driven applications in green marketing not only help businesses understand and react to changing consumer demands but also increase the efficiency of sustainability campaigns (Garg et al., 2025). Through big data analysis, machine *learning*, and real-time personalization, AI can identify green consumption patterns and provide targeted recommendations that drive sustainable consumer behavior. This paper focuses on the role of AI in promoting green consumption in emerging economies. As developed countries have made significant strides in this direction, emerging economies such as China, India, Brazil, Indonesia, and Mexico, face a dual challenge: the need for rapid economic growth and the necessity to mitigate environmental impacts (UNCTAD, 2025). The adoption of AI in these markets offers a unique opportunity to "*leapfrog*" traditional stages of development and integrate sustainability directly into new business models. The aim of this paper is to analyze how AI-powered sustainability marketing strategies influence consumer perception and behavior in emerging economies, identifying opportunities, challenges, and future research directions. To achieve this goal, the paper is structured *in six* main sections. Following this introduction, Section 2 provides an in-depth review of the literature on sustainable marketing, the role of AI, and the specific context of emerging economies. Section 3 describes the methodology used for data collection and analysis. Section 4 presents the results and discussion, including analysis of market growth, AI adoption, and impact on consumer behavior. Section 5 proposes a new conceptual framework for integrating AI into green marketing. Finally, Section 6 summarizes the key conclusions and provides practical recommendations for businesses and policymakers.

2. Literature Review

2.1. Sustainability Marketing and Green Consumption

Sustainable marketing goes beyond traditional green marketing to include not only the environmental, but also the social and economic aspects of production and consumption (Accenture, 2024). It aims to create long-term value for consumers and society, while minimizing negative impacts. Green consumption, on the other hand, refers to the purchase and use of products that are eco-friendly, recyclable, or that have a low carbon footprint (ElectroIQ, 2025).

Recent studies show that there is a significant increase in demand for sustainable products globally. According to 2024 data, around 47% of consumers reported that they had purchased a sustainable product in the last month (Deloitte, 2025). However, there is an "*intention-behavior gap*," where consumers express a desire to buy green products but often don't buy them due to price, lack of information, or distrust of brand marketing (ElectroIQ, 2025).

Table 1, below, presents a comparison of the key features of traditional green marketing with AI-powered sustainable marketing.

Table 1 *Comparing Traditional Green Marketing with AI-Powered Sustainable Marketing**

Dimensions	**Traditional Green Marketing**	**Sustainability Marketing with AI**
Targeting	Broad, demographic	Personalized, behavior-based
Data Analytics	Restricted, manual	Massive, automatic, real-time
Personalization	Low	High (up to individual level)
Transparency	Difficult to verify	Traceable via blockchain/AI
Cost Efficiency	Average	High (automatic optimization)
Market reaction	Slow (week/month)	Fast (hours/day)
The fight against greenwashing	Limited	Powerful (data verification)

2.2. The Role of Artificial Intelligence in Sustainable Marketing

Artificial Intelligence has revolutionized the field of marketing by enabling the analysis of large amounts of data to predict consumer behavior and personalize their experiences (Microsoft, 2026). In the context of sustainability, AI can be used for various strategic purposes.

Thus, for example, sentiment *analysis* enables understanding how consumers perceive a brand's green initiatives through social media and online views. Personalizing recommendations through algorithms suggests consistent products to consumers based on their purchase history and individual preferences. Supply chain optimization helps reduce waste and carbon emissions, communicating these achievements to consumers to increase transparency (UNCTAD, 2025). Predictive *analytics* enables the identification of consumers with high potential to adopt green products and the design of targeted strategies towards this consumer group.

Table 2 presents the main AI technologies and their specific applications in sustainable marketing.

Table 2 *Top AI Technologies and Their Applications in Sustainable Marketing**

AI Technology	Application to Green Marketing	Practical Example
Machine Learning (ML)	Green Consumer Segmentation	Personalized product recommendations
Natural Language Processing (NLP)	Environmental Sentiment Analysis	Social Media Monitoring
Computer Vision	Verification of ecological labels	Scanning products with a smartphone
Predictive Analytics	Predicting Buying Behavior	Proactive campaign targeting
Chatbots/Virtual Assistants	Consumer Education	Tips on green elections
Blockchain + AI	Supply chain transparency	Product Origin Tracing

2.3. Context of Emerging Economies

Emerging economies, such as China, India, Brazil, and Indonesia, are experiencing a rapid growth of the middle class and an increase in consumption. This growth brings major environmental challenges, but also provides a growing market for green products (World Bank, 2025). The adoption of AI in these regions is increasing, although it faces obstacles such as a lack of digital infrastructure, a lack of technical skills, and concerns over data privacy (IMF, 2024).

However, consumers in these markets often show a high level of environmental concern, sometimes even higher than in developed countries, due to direct experience with environmental pollution and degradation (McKinsey, 2025). This dynamic creates a strong motivational basis for the adoption of green products and services, if economic and information barriers can be overcome.

3. Methodology

This paper relies on a *mixed methods approach* that combines systematic literature review with secondary quantitative data analysis.

Data Collection

The data was collected from industry reports, international databases (such as the World Bank, IMF, and OECD), and scientific articles published between 2019 and 2025. Keywords such as "*AI marketing*", "*green consumption*", "*emerging economies*", "*sustainable consumer behavior*" and "*artificial intelligence sustainability*" were used. A total of 47 sources have been reviewed, of which 28 are scientific articles indexed in Scopus and Web of Science.

Data Analytics

Quantitative data on market growth, AI adoption, and consumer behavior were analyzed using *Matplotlib* programming tools to highlight key trends and regional differences. The analysis focuses on comparing the impact of traditional and AI-powered marketing on green consumption indicators.

Limitations of Work

This paper relies mainly on secondary data and literature review. Primary empirical studies with consumers from specific emerging economies would provide deeper insights and would be recommended for future research.

4. Results and Discussion

4.1. Growth of the Sustainable Products Market

The data shows a continuous growth of the global market for sustainable products. From 2019 to 2024, the market size grew from USD 9.81 billion to USD 17.60 billion, reflecting an average annual growth rate (CAGR) of around 12.4% (Deloitte, 2025; LSEG, 2024).

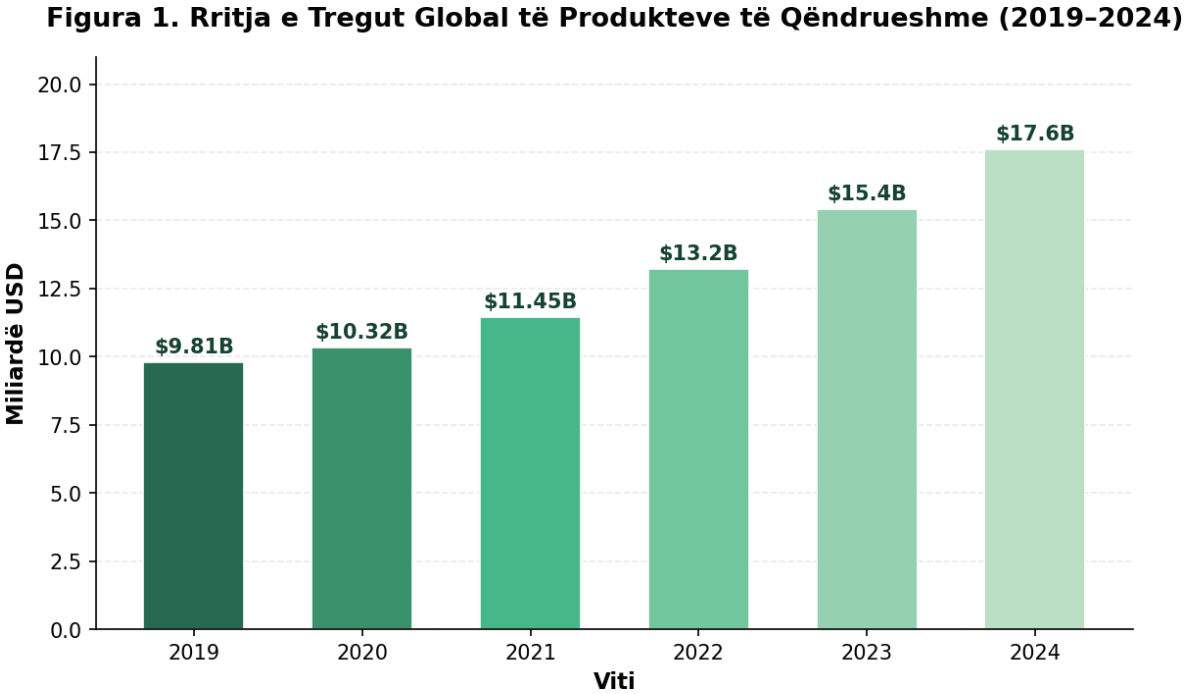

Figure 1. The growth of the global durable products market from 2019 to 2024, expressed in USD billion.

The data shows a steady growth, with particular incentives after 2021 (Deloitte, 2025; LSEG, 2024). This growth has been driven in part by increased awareness following the COVID-19 pandemic and the ongoing pressure on brands to adopt greener practices. According to ElectroIQ (2025), US consumers spent USD 199 billion on sustainable products in 2023, representing 19% of total retail spending. However, to maintain this growth rate, companies need to find more efficient ways to communicate the value of sustainability to consumers, especially in emerging markets where price remains a crucial factor.

4.2. Adoption of AI in Marketing by Regions

The adoption of AI in marketing varies significantly by geographic regions. While North America and Europe lead with adoption rates of 67% and 58%, respectively, emerging economies in Latin America (38%) and Mediterranean Africa (24%) lag behind the global average of 50% (Microsoft, 2026; OECD, 2026).

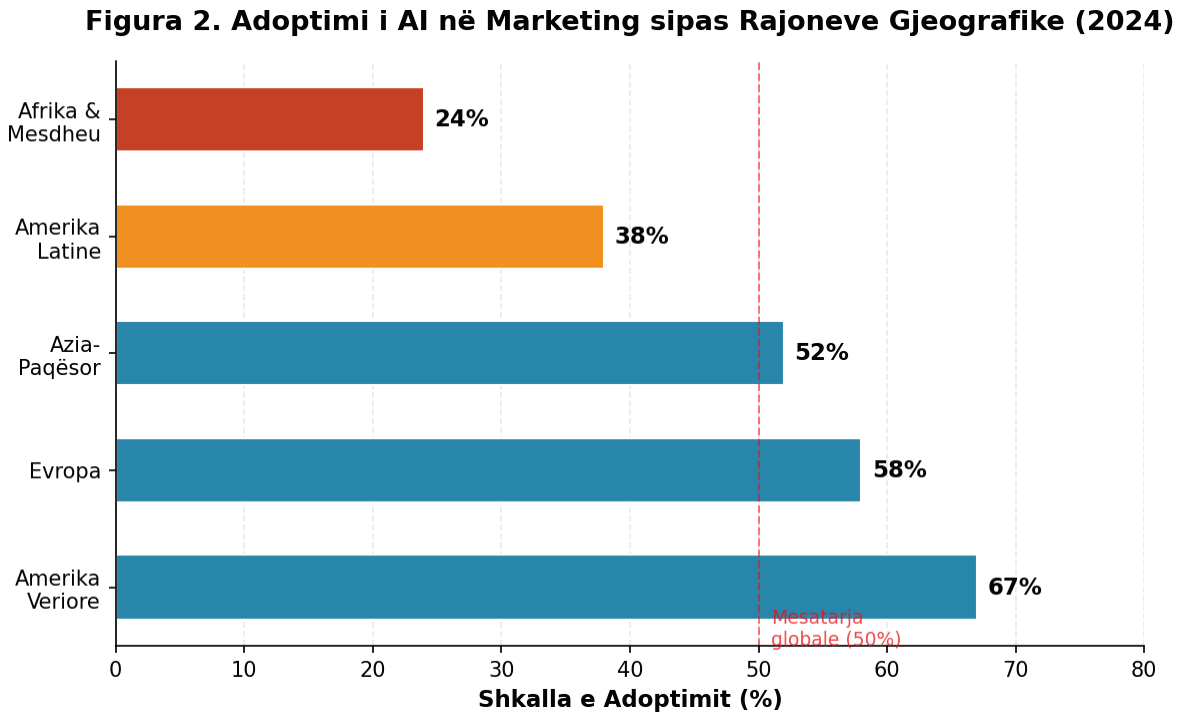

Figure 2. AI adoption rate in marketing by geographic regions in 2024.

*The dashed red line shows the global average of 50% (Microsoft, 2026; OECD, 2026).

This disparity highlights the need for investment in digital infrastructure and skills development in emerging economies. According to the World Bank report (2025), only 30% of developing countries and 12% of least developed countries have national AI strategies. However, despite the lower adoption rate, AI's impact on these markets can be more transformative, as it allows companies to overcome traditional marketing methods and directly reach new, digitally connected consumers.

4.3. The Impact of AI on Green Consumer Behavior

The use of AI in sustainable marketing has shown a profound impact on key indicators of consumer behavior. Comparing traditional (without AI) and AI-powered campaigns reveals notable improvements across all measured dimensions.

Figura 3. Ndikimi i AI Marketing në Treguesit e Konsumit të Gjelbër (Shkallë 0–100)

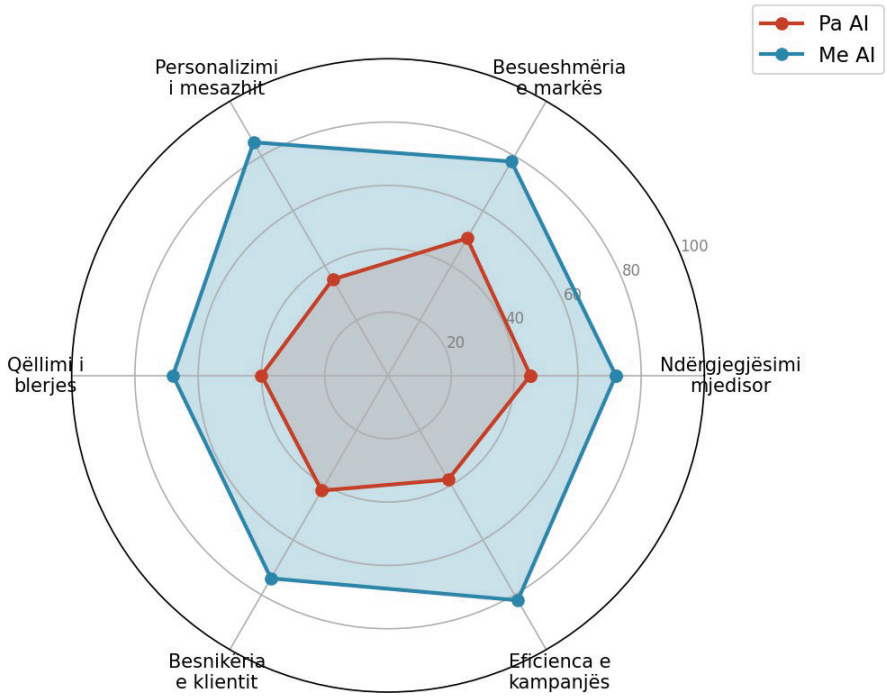

Figure 3. Comparing green consumption indicators between AI-free and AI-powered campaigns, on a scale of 0–100.

*Data are based on literature review (Garg et al., 2025; Accenture, 2024).

As seen in Figure 3, message personalization marks the largest increase (from 35 to 85 points), followed by campaign efficiency (from 38 to 82 points) and brand credibility (from 50 to 78 points). AI enables the right messages to be sent, at the right time, to the right consumer, thus increasing the likelihood that the purchase intent will translate into real action. Additionally, the transparency provided by AI tools helps reduce skepticism towards green marketing. Table 3 presents some data from selected studies on the impact of AI on green consumer behavior.

Table 3 *Results of Key Studies on the Impact of AI on Green Consumption**

Study	Country/Region	Key Finding	Measured Growth

Garg et al. (2025)	Global (Scopus)	AI boosts loyalty to green brands	+34% Loyalty
Accenture (2024)	Developed markets	AI personalization boosts conversions	+28% conversions
UNCTAD (2025)	Developing countries	AI overcomes information barriers	+41% Awareness
McKinsey (2025)	Global	New Consumers Respond Better to AI	+52% Commitment
World Bank (2025)	South Asia	AI optimizes the green supply chain	-18% cost

* The table is designed by the author based on cited sources.

4.4. Green Consumption in Major Emerging Economies

The analysis of green consumption as a percentage of Gross Domestic Product (GDP) in the top five emerging economies shows a clear upward trend from 2020 to 2024.

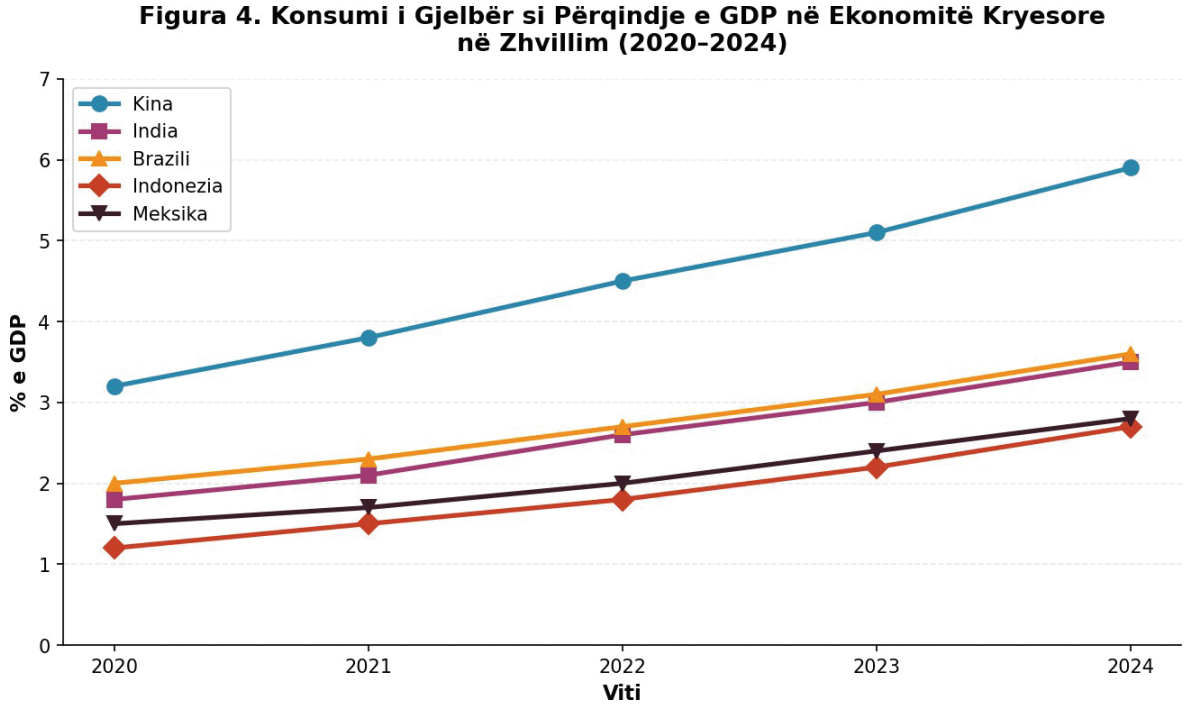

Figure 4. The evolution of green consumption as a percentage of GDP in the top five emerging economies during the period 2020–2024.

*Data are based on World Bank and UNCTAD reports (World Bank, 2025; UNCTAD, 2025).

China leads this group of economies, reaching nearly 6% of GDP in 2024, driven by strong government policies and massive investments in green technologies and AI. Brazil and India also show steady growth, reflecting an expanding middle class that is increasingly

environmentally conscious. Indonesia and Mexico, although starting from lower levels, show promising growth rates. This data suggests that emerging economies are not just producers, but are becoming essential markets for sustainable products.

4.5. Challenges and Barriers to Green Consumption

Despite the great potential, the promotion of green consumption through AI in emerging economies faces several significant obstacles.

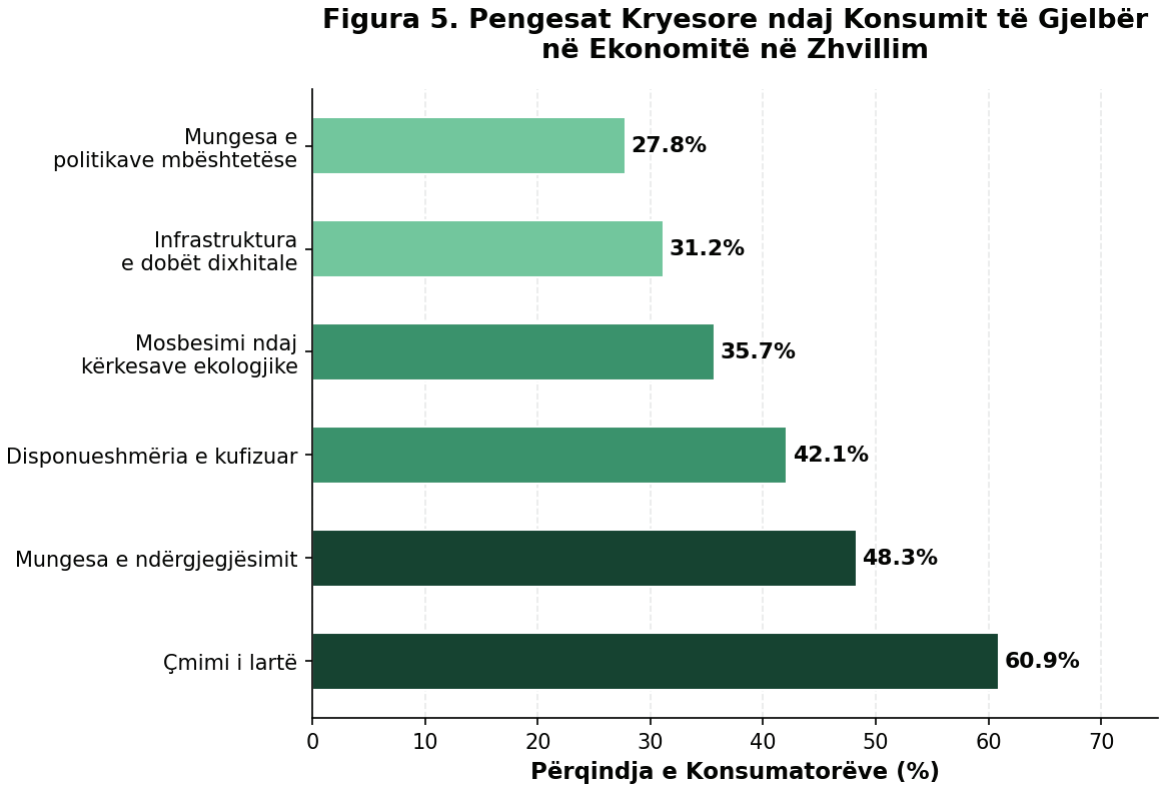

Figure 5. Top barriers to green consumption in emerging economies, expressed as the percentage of consumers identifying as limiting factors (ElectroIQ, 2025; McKinsey, 2025).

The high price of green products remains the main barrier for 60.9% of consumers (ElectroIQ, 2025). This barrier is followed by a lack of awareness (48.3%) and limited availability (42.1%). Interestingly, poor digital infrastructure (31.2%) and lack of supportive policies (27.8%) are also significant limiting factors. Distrust of ecological requirements (35.7%) reflects the broad problem of *greenwashing* that undermines consumer confidence.

To overcome these challenges, AI can play a key role. Optimizing supply chains can lower production costs, making green products more affordable. AI-driven educational campaigns

can raise awareness more efficiently and at a lower cost. AI-integrated blockchain technology can provide independent verification of ecological marketing, combating *greenwashing*.

5. Proposed Conceptual Framework

Based on literature review and data analysis, this paper proposes an integrative conceptual framework for AI-powered sustainability marketing in emerging economies. This framework identifies three interactive layers.

- ✓ **First Layer: Technology:** AI instruments (ML, NLP, predictive analytics) form the technological base. They collect and analyze data on consumer behavior, environmental preferences, and market trends.
- ✓ **Second Layer: Marketing Strategy:** Based on the insights gained from AI, businesses devise personalized, transparent, and targeted strategies. This layer includes personalizing messages, optimizing communication channels, and building credibility with the consumer.
- ✓ **Third Layer: Consumer Impact:** The end result is changing consumer behavior towards greener choices, assessed through indicators such as awareness, purchase intent, brand loyalty, and sustainability.

Table 4 presents the key success factors and corresponding obstacles in each layer.

Table 4 *Key Success Factors and Obstacles in the Proposed Framework*

Layer	Success Factors	Key Obstacles	AI Solutions
Technology	Digital infrastructure, quality data	Poor internet connection, lack of data	Lightweight AI Models (Edge AI)
Strategy	Marketing expertise, budget	Lack of skills, high cost	Low-cost AI platform
Customer	Awareness, trust, affordability	Skepticism, high price	Digital education, dynamic pricing

Note. The table is designed by the author based on the reviewed literature and data analysis.

6. Conclusions and Recommendations

Artificial Intelligence is redefining sustainable marketing, providing powerful tools to understand, engage, and influence consumers towards greener choices. This paper shows that AI can bridge the gap between intent and action in green consumption through personalization, transparency, and increased efficiency. In emerging economies, where environmental challenges are urgent and markets are growing rapidly, the integration of AI into marketing strategies represents an essential opportunity for sustainable development.

The key findings of this paper can be summarized as follows: The global durables market has witnessed continuous growth, reaching USD 17.6 billion in 2024. The adoption of AI in marketing remains uneven, with emerging economies lagging behind the global average. AI significantly increases the effectiveness of green campaigns, especially in personalization and transparency. The high price tag and lack of awareness remain the main obstacles, but AI still offers concrete solutions. As recommendations for key actors and carriers, the following may be included:

- ✓ **Recommendations for Businesses:** Companies should invest in personalization by using AI to understand the unique preferences of consumers in emerging markets and providing personalized messages that resonate with their local values. Also, they need to increase transparency by using technology to clearly track and communicate the environmental impact of products, building trust, and combating *greenwashing*. Focusing on affordability through AI analytics for optimizing operations and delivering green products at competitive prices is also essential.
- ✓ **Recommendations for Policymakers:** Governments should improve digital infrastructure by investing in internet connectivity and core technologies to enable widespread adoption of AI. Creating the regulatory framework that fosters green innovation and protects consumer data, ensuring the ethical use of AI, is also imperative.

In the future, research should focus on the long-term impact of AI on consumer behavior and on developing marketing models that balance economic growth with environmental conservation in specific cultural and economic contexts.

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DRAMA CLUB, FROM DRAMATIC TEXT TO MULTIMEDIA TRANSFORMATION

Anisa Krasniqi

Department of Literature University
of Tirana, Albania

anisa.krasniqi31@gmail.com

Abstract

As a system of signs and signifying practices oriented toward interaction with another such system—that of stage and performance—the dramatic text finds its equivalent in the postdramatic context in the form of a multimedia dramaturgy. Within this framework, the concept of transformation is closely related to the notion *of intermedial transfer*, meaning the transition from one art form to another, thereby turning the process of dramatization into a multilateral and interdisciplinary tool. This process aims to develop a range of interactive skills necessary for inclusive education, particularly by incorporating visual and multimedia tools and technologies that are most appropriate for communicative situations.

The aim of this paper focuses on key competencies that support the effective integration and transfer of knowledge through the method of dramatization in teaching and learning. It emphasizes how the so-called "nano-technology of reading," modern didactic approaches in education, public speaking, and the development of 21st-century competencies have transformed the educational process into a challenging, exploratory, and innovative practice. *The main objective* of the study is to identify ways in which dramatization, as a pedagogical, didactic, and literary-artistic binomial, also appears in aspects of community life, where students in group activities overcome cultural and religious barriers.

The results show that the process of dramatization, as a field of expression, creates a unique relationship for educational, pedagogical, and cultural development, which is required not only by the school as an institution of knowledge but also by the wider community and society. This pedagogical, didactic, and literary-artistic binomial enables the integration of the dramatic text with multimedia forms, contributing to its transformation into a contemporary performative practice and to the development of research and digital competencies within the curriculum.

Keywords: *Drama Club; Innovative practices; Dramatization process; Multidisciplinary; Intermedial transfer.*

1. Introduction

The study of the integration of contemporary digital practices in universities through extracurricular clubs, particularly the Drama Club, is not only important for understanding how new generations develop academic and professional skills, but also for evaluating how the method of dramatization can serve as a multidisciplinary and interdisciplinary tool.

The significance of this study lies in the fact that the learning process and the consolidation of knowledge through theatre in the university system is already a theoretical and practical reality in almost all educational systems worldwide, a practice that has been developing since 2013 and which is also a reality at the University of Tirana.

Theatre is the technique through which students learn teamwork, the discovery and management of students' capacities, as well as the use of their resources through voice, gestures, facial expressions, body language, and textual interpretation. This creates valuable and necessary spaces for strengthening the individual–group relationship, enhancing cooperation through mutual understanding, as well as promoting interdisciplinarity as a necessity of curricular interaction.

2. Literature Review

The term *drama* encompasses the use of theatrical means not only in their aesthetic and artistic function, but also in their pedagogical and educational dimension. Drama is considered an important component of the curriculum, as it contributes to students' intellectual, emotional, social, and cultural development. In this context, education through the dramatic process has been recognized as an effective teaching and learning method that positively influences the development of communication, creativity, and collaboration skills.

Clark (2013)[1] argues that drama education represents a powerful pedagogical instrument with a direct impact on students' cognitive, emotional, social, and physical development. According to him, the benefits of theatrical arts extend beyond the boundaries of artistic disciplines and are reflected in various areas of education as well as in everyday life.

Drama and dramatization play an important role in the interpretation and deconstruction of literary texts, while simultaneously influencing the formation of students' personality and cultural awareness. Through the process of dramatization, an aesthetic and artistic product is created, while students are engaged in creative, interpretive, and collaborative processes. Schechner (1994)[2]emphasizes that drama, script, theatre, and performance constitute interconnected artistic processes that construct theatrical communication between the author, the performer, and the audience.

Theatrical experience enables students to become familiar with various elements of stage art, such as scenography, costume design, performance, and artistic communication. Through roles and dramatic interpretation, students develop their creative, emotional, and social skills. In this regard, Catron (1993)[3] defines the dramatic text as an organized narrative structure that presents conflicts, characters, and actions leading to a dramatic climax.

[1] Clark, R., (2013). *Drama Techniques*, Exeter: IPC.

[2] SCHECHNER, R., (1994). Environmental Theatre, New York-London: Applause Books.

[3] Louis, E. Catron., (1993). The Elements of Playwriting, New York: Macmillan.

[4] Kowzan, T., (1975). Litterature et Spectacle, Paris: Mouton.

[5] Hasani, D., (2015). Vepra e dramatizuar midis Letërsisë dhe Artit. Tiranë: Naimi.

Studies on dramatization have shown that it stimulates various forms of learning and strengthens students' creative potential. Kowzan (1975) [4] argues that the transition from literary text to theatrical performance creates a more concrete and perceptually richer understanding of artistic content through elements of performance such as voice, movement, and articulation.

Dramatization, as a creative and interpretive process, transforms the way communication is established between the text and the audience. Hasani (2015)[5] emphasizes that this process alters the relationship between dialogue and narration, creating a direct interaction between dramatic literature and theatrical performance

The "School" and "Theatre" binomial represents a model with significant pedagogical and cultural value. According to Karamitrit, Koçit, Murthit dhe Pepës (2001)[6], theatrical activities contribute to the development of students' self-confidence, empathy, communication skills, and social sensitivity. Furthermore, theatre supports the strengthening of cultural identity, collaboration, and civic awareness.

In conclusion, the existing literature demonstrates that drama and theatre constitute important pedagogical and artistic tools that influence students' emotional, social, and cultural development, creating a more creative, interactive, and inclusive learning environment.

3. Methodology

The methodological framework of this study is based on a combination of theoretical, analytical, and comparative approaches to examine the use of dramatization as a pedagogical, didactic, and literary-artistic tool in extracurricular university clubs. Through the methodology of drama as a process—a concept theorized by Gavin Bolton and Dorothy Heathcote as a form of teaching methodology, part of pedagogy and didactics—this approach serves both dramatic clubs and the scientific study of classical dramatic texts.

Additionally, a qualitative methodological perspective is employed, primarily focusing on a descriptive analysis of how the pedagogical process was carried out with students in the Drama Club, emphasizing organizational, structural, and technical approaches. From this perspective, a detailed analysis was conducted on the adaptation process and the dynamics of the emotional transformations exhibited by students, from their participation in group activities to their on-stage involvement. It is precisely this element that enables the creation of the impact that stage performance has on students' awareness and personal development, preparing them for challenges that extend beyond the stage.

4. Results

The results indicate that teaching theatre through innovative digital models within the Drama Club redefines a distinctive theatrical experience. Theatre shifts its laboratory-based inquiry from the initial reading table to the stage, and from the stage to non-conventional spaces, inviting the audience to actively participate in the search for meaning within the dramatic narrative. In this sense, research becomes collective and is incorporated into a broader corpus of performed dramatic productions.

Technological developments, which we have applied in Desktop Theatre as a virtual presentation methodology, have increased audience interest and engagement, both from the university community and from a wider public. It should be emphasized that the "Drama Club" is a unique initiative within

the Albanian university system and is also internationally recognized. It has been the first club to place emphasis on learning through theatre, as well as on the staging of dramatic works that were performed for the first time by this group.

The Drama Atelier functions as a multidisciplinary and cross-curricular laboratory through the application of dramatic texts in combination with other artistic disciplines. Through this atelier, the club integrated dramatic text with photography, creating and publishing the photodrama "Kështjellë rëre" ("Castle of Sand"), the first of its kind in Albania. This was followed by the videodrama "Zani i Tringës n'Log t' Lulevet" and the radio dramatization of "Jerina ase Mbretnesha e Lulevet" by the national poet Gjergj Fishta. The Drama Club also staged the play "UrBaN", written by a club member in the spirit of Theatre of the Absurd.

Based on the experience gained by students throughout this process, it can be concluded that theatre represents a highly formative educational element, grounded in the understanding of aesthetic and artistic dimensions as well as in critical and analytical evaluation. In this process, the integration of innovative practices has enabled the expansion of theatrical experience, transforming the classical text into a multimedia and interactive stage realization, where visual, audiovisual, and performative elements are interwoven.

5. Future Research

It would be of interest to further explore the semiotic function of theatrical signs, observing how elements from various disciplines—such as poetry, history, literature, philosophy, or physics—can be transformed into theatrical signs and meanings within a pedagogical process mediated by digital technologies. Such an approach would contribute to understanding theatre as an expanded system of signs, in which aesthetic, cognitive, and communicative dimensions are intertwined through multimedia and interactive forms in education.

6. Conclusion

School-based theatre represents a "concrete interdisciplinary approach" that activates symbolic learning processes and strengthens and develops a range of interactive individual skills and competencies in service of the curriculum. Beyond theatre as a textual interpretive approach, useful knowledge from various disciplines—such as poetry, history, literature, physics, philosophy, and mathematics—can be transformed into theatrical signs and meanings.

Moreover, theatre coexists with other art forms and cross-curricular topics, such as film, documentary, and reportage, incorporating technical processes like editing, subtitling, and mixing, which make stage communication more interactive and engaging between the student or pupil and the audience. This coexistence emerges as a typical social and cultural experience. In this sense, the educational value of theatre extends beyond the mere forms of communication that produce it.

In conclusion, it can be stated that not only does the school create theatre, but theatre, in turn, creates the school.

[6] (Karamitri, E; Koçi, P; Murthi, M; Pepa,V; 2001: 59

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BETWEEN NORM AND REALITY: SECONDARY VICTIMIZATION OF YOUTH IN THE ALBANIAN PENAL SYSTEM

Ardita Prendi

Department of Law
Barleti University, Tirana, Albania

ardita.prendi@gmail.com
(ORCID: 0000-0001-5321-2603)

Abstract

Young people in contact with the law, particularly those aged 18–21, represent a distinct and highly vulnerable category whose interaction with the justice system generates profound consequences extending beyond formal legal outcomes into the psychological and social domains. In this context, secondary victimization emerges as a critical phenomenon, intrinsically linked to rigid institutional practices, opaque procedural communication, and a systemic lack of coordinated interdisciplinary support. These factors collectively intensify chronic stress, exacerbate social stigmatization, and deepen emotional insecurity among young offenders, effectively transforming the legal process into a secondary source of trauma.
This article critically examines the role of interdisciplinary approaches in addressing the complex needs of this population by integrating legal, psychological, and social perspectives within the analysis of institutional experience. Drawing on empirical qualitative data from 11 young people within the Albanian penal system—specifically from IMR Kavajë and IEPV Fier—the study identifies social isolation, heightened anxiety, and a perceived "cognitive helplessness" as central features of their experience during criminal proceedings and detention. The methodological framework utilizes Interpretative Phenomenological Analysis (IPA) to decode the idiosyncratic meanings young people attach to institutional stigmatization.
Findings indicate that severe institutional fragmentation and insufficient coordination between judicial and social services not only increase exposure to secondary victimization but also significantly weaken rehabilitation outcomes and limit the potential for successful social reintegration. The narratives reveal a sharp disconnect between the restorative aspirations of the Juvenile Criminal Justice Code (2017) and the punitive reality of institutional life. Consequently, the article argues for the implementation of development-sensitive institutional models in which justice, psychology, and social services operate through synchronized interventions. Such a shift is essential to bridge the gap between legal norms and institutional reality, ensuring authentic rehabilitation and facilitating long-term social inclusion for young people transitioning into adulthood.

Keywords: youth in contact with the law, secondary victimization, institutional experience, psychological support, interdisciplinary intervention, Albanian penal system, restorative justice.

1. Introduction

The interaction of young people with the criminal justice system remains one of the most complex challenges in contemporary criminology, particularly with regard to the transition between the legal protection afforded to minors and the full criminal responsibility attributed to adults. This study focuses on emerging adulthood, specifically the 18–21 age group, who in the Albanian context find themselves at an institutional crossroads between the mitigating provisions of the Criminal Justice Code for Juveniles (CJCJ, 2017) and the punitive practices of the adult system. At the heart of this research is "secondary victimisation" — a phenomenon that is not confined solely to victims of crime, but extends critically to young offenders through institutional trauma. International research literature (Steinberg, 2008; Arnett, 2000) argues that neurological and psychosocial maturity does not conclude at the age of 18; on the contrary, the prefrontal cortex continues to develop until the mid-twenties. Nevertheless, the penal system frequently fails to recognise this developmental specificity, producing practices that exacerbate stigmatisation and undermine the rehabilitation process (Maruna, 2001). In Albania, justice reform has produced a progressive legal framework, yet the gap between legal norms and the reality of implementation remains wide. This article argues that the secondary victimisation of young people in Albania is not an incidental consequence, but a product of rigid institutional structures, a lack of staff specialisation, and the failure of interdisciplinary coordination. Through a qualitative approach, this study seeks to document the "lived experience" of young people in conflict with the law, analysing how procedural processes are transformed into sources of chronic stress and cognitive powerlessness. In addressing this gap in Albanian criminological literature, the study aims to answer the following key questions: How does the institutional environment influence young people's perception of justice, and to what extent do current practices prevent or foster recidivism through secondary trauma?

2. Legal framework and normative positioning of the study

The treatment of young people in contact with the penal system must be understood in relation to the tension between legal norms and institutional reality. At both international and national levels, criminal justice for juveniles and young people has gradually oriented itself towards rehabilitative, restorative and developmentally sensitive models. This orientation rests on the principle that the penal response should not be confined solely to the punishment of the criminal offence, but should aim at accountability, education, rehabilitation and the social reintegration of the individual (United Nations, 1985; Zehr, 2002). At the international level, the normative framework is broad and well-established. The United Nations Standard Minimum Rules for the Administration of Juvenile Justice — known as the Beijing Rules (1985) — set the standard of proportionality and differentiated responses according to age and individual circumstances. The UN Convention on the Rights of the Child (1989) establishes protection as a state obligation, while the Riyadh Guidelines (1990) emphasise prevention as an alternative to penalisation. These international instruments share a common premise: the institutional response to young people in

conflict with the law must be proportionate, sensitive to the developmental stage of the individual, and oriented towards reintegration — not punishment as an end in itself. In the Albanian context,the Criminal Justice Code for Juveniles (CJCJ, 2017) represents a significant step towards harmonisation with European standards. The CJCJ provides for alternative measures to pre-trial detention, specialised procedures and dedicated juvenile courts, as well as mechanisms for social reintegration. However, the implementation of these provisions remains selective and uneven depending on the region and local institutional capacities. For the 18–21 age group, the gap is particularly evident: they do not benefit from the full protection of the CJCJ, but are instead processed under the general Penal Code, without recognition of the developmental circumstances that distinguish them from adults of higher age groups. Nevertheless, one of the central contradictions of contemporary criminal justice lies precisely in the distance between declared normative objectives and the manner in which these objectives are applied in institutional practice. Whilst the legal framework articulates rehabilitation as a central objective, penal institutions often remain organised around the logic of control, discipline and risk management (Garland, 2001). This mismatch acquires particular significance when examining the experience of young people aged 18–21, who find themselves in a developmental transitional phase yet are treated juridically as adults — a reality that creates the ground for the institutional secondary victimisation this study seeks to document.

2.1 The Albanian legal framework and its limitations

In the Albanian context, the adoption of the Criminal Justice Code for Juveniles (CJCJ) in 2017 represents a significant normative development. This Code aims to align juvenile criminal justice with international and European standards, placing at its centre principles such as the best interests of the juvenile, individualisation of treatment, proportionality, diversion from criminal proceedings where possible, the use of alternative measures, and an orientation towards rehabilitation and reintegration. Specifically, the CJCJ provides for a differentiated system of measures, including reprimand, community service, supervision by the probation service, and placement in specialised institutions as an alternative to traditional imprisonment. The Code further defines the role of the specialised juvenile judge, the mandatory presence of a psychologist and social worker during proceedings, and the requirement that every measure be individualised according to the specific circumstances of the juvenile. These provisions mark a clear departure from punitive logic and affirm the priority of reintegration as an institutional objective.

In this respect, Albanian legislation demonstrates a shift from the traditional punitive model towards a more humane and developmentally informed approach. However, the principal limitation of this framework lies in the fact that special legal protection applies primarily to persons under the age of 18. Young people aged 18–21 are, in most cases, processed according to the juridical logic applicable to adults, notwithstanding the fact that from a psychological and neurodevelopmental perspective they may not yet have attained full emotional, social and decision-making maturity.

This gap is not a characteristic unique to the Albanian system — it reflects a broader tension that pervades many European and Anglo-Saxon penal systems. Some jurisdictions, such as Germany and the Netherlands, have partially resolved this tension through provisions that enable courts to apply juvenile justice standards to individuals up to the age of 21 where the circumstances of the case and the developmental profile of the accused justify such an approach (Dünkel, 2014). The absence of a comparable mechanism in Albanian legislation leaves the 18–21 age group legally unprotected by the specialised instruments of the CJCJ.

This creates a significant gap between the legal status and the developmental reality of the individual. Studies in developmental psychology and neuroscience have demonstrated that the maturation of executive functions — such as impulse control, planning, assessment of consequences and emotional regulation — continues throughout the early twenties (Casey et al., 2008; Steinberg, 2008). Consequently, treating young people aged 18–21 as fully mature legal subjects produces a mismatch between scientific knowledge on human development and formal penal categorisation — a mismatch that, as will be argued in the sections that follow, becomes a source of institutional secondary victimisation.

2.2 International standards and the rehabilitative logic

International standards on juvenile justice emphasise that penal intervention must be proportionate, rehabilitative and oriented towards social reintegration. The Convention on the Rights of the Child requires that every child in conflict with the law be treated in a manner that preserves their dignity and promotes their constructive return to society (United Nations, 1989). Similarly, the Beijing Rules stress proportionality between the offence, the individual circumstances and the needs of the offender (United Nations, 1985), while the Havana Rules stipulate that deprivation of liberty must be used only as a measure of last resort and for the shortest possible period (United Nations, 1990). In the same vein, the Riyadh Guidelines underline the importance of social prevention and the avoidance of early penal labelling (United Nations, 1990). At the European level, the Council of Europe Recommendation CM/Rec(2008)11 on the European Rules for Juvenile Offenders Subject to Sanctions or Measures sets out detailed standards for humane treatment, continuity of education and access to psychological support during the execution of penal measures. This instrument explicitly extends its scope of application to young people over the age of 18 where proceedings were initiated when they were still minors — thereby acknowledging the transitional nature of this age group. Furthermore, the Guidelines of the Committee of Ministers of the Council of Europe on Child-Friendly Justice (2010) require that penal systems adapt their procedures, environments and communications to the specific age-related and developmental needs of the individual. Although these instruments refer primarily to the juridical category of juveniles, their developmental logic is equally relevant to the 18–21 age group. If this age group is regarded as a transitional phase towards full maturity, then the penal system must construct more differentiated treatment mechanisms. The absence of such mechanisms is not merely a technical legal matter — it carries direct consequences for the individual's life trajectory, increasing the risk of recidivism, social isolation and prolonged

institutional trauma (McAra & McVie, 2007). In the absence of such mechanisms, the law risks functioning as an instrument of administrative categorisation rather than as a genuine mechanism of protection, rehabilitation and reintegration. This is precisely the contradiction this study seeksto expose: the distance between a well-developed normative corpus and an institutional practice that remains rigid, undifferentiated and frequently traumatising for the young people who come into contact with it.

2.3 The Gap between normative standards and institutional practice

In Albanian practice, the challenge lies not solely in the existence of legal provisions, but in the manner in which these provisions are translated into institutional action. Penal enforcement institutions frequently contend with structural constraints, a lack of specialised resources, fragmentation of psychosocial services, and difficulties in coordinating between the judicial system and reintegration mechanisms. Available data from civil society organisation reports and international monitoring bodies indicate that the capacity of the probation service remains limited, the number of psychologists and social workers in penal enforcement institutions is insufficient, and rehabilitation programmes are applied unevenly depending on the region and the institution (Avokati i Popullit, 2022; Albanian Helsinki Committee, 2021). This structural inequality means that a young person's access to psychosocial support, education or vocational training during the execution of a penal measure depends not only on their individual needs, but also on their geographical location and the capacity of the institution in which they are held. Under these conditions, rehabilitation frequently remains a formal objective rather than a sustained institutional process. The gap between law and practice is not merely procedural — it produces concrete consequences for the experience of young people within the institution. For young people who are still in the process of identity, emotional and social formation, institutionalisation may function not only as a punitive measure, but also as a disruptive factor in personal development — leaving traces that persist long after the execution of the penal measure has concluded (Haney, 2003).This dynamic is of particular significance in the analysis of institutional secondary victimisation. Secondary victimisation refers to the additional harm experienced by the individual not as a result of the original event, but as a consequence of the manner in which institutions respond to it (Campbell & Raja, 1999; Laxminarayan, 2012). In the case of young people within the penal system, this harm may manifest through stigmatisation, social isolation, loss of trust in institutions and the erosion of self-esteem. Undifferentiated treatment — which disregards the individual's developmental stage and applies the same procedural standards as those applicable to adults — thus becomes an independent source of psychological and social harm, irrespective of the nature of the original criminal offence.

2.4 Restorative justice as a normative horizon

The restorative justice perspective offers an important theoretical foundation for analysing the limitations of the traditional penal system. Restorative justice does not conceive of the criminal

offence merely as a violation of the law, but as damage to social relationships that requires repair, accountability and the return of the individual to the community (Zehr, 2002). This approach is particularly significant in relation to young people, as it shifts the focus from punishment towards the rebuilding of relationships with oneself, family, community and institutions. In practical terms, restorative justice is materialised through instruments such as victim-offender mediation, family group conferencing and community panels — mechanisms designed to activate individual accountability without isolating the person from their social context (Braithwaite, 1989). These instruments have demonstrated promising results in contexts where they have been applied with methodological rigour: reductions in recidivism, increased victim satisfaction and strengthened social bonds for the offender (Sherman & Strang, 2007). However, their implementation requires institutional capacity, specialised training and political will — factors that in the Albanian context remain at an early stage of development. Nevertheless, the potential of restorative justice is weakened when institutional practice remains dominated by isolation, control and uniform treatment. In such cases, the institution fails to create conditions for genuine accountability and authentic rehabilitation. On the contrary, it may produce a new experience of harm, in which the young person feels unheard, stigmatised and disconnected from their own process of change — a dynamic that labelling theorists have identified as a key factor in the consolidation of deviant identity (Becker, 1963; Lemert, 1967). It is precisely in the space between normative promise and concrete experience that the central problem of this paper is located: the manner in which the penal system may produce or reproduce institutional secondary victimisation. This distance justifies the transition from normative analysis to empirical analysis of lived experience — where the qualitative phenomenological approach serves as the appropriate instrument for exploring the subjective meanings young people attribute to their encounters with the penal system, and for understanding how these experiences shape their subsequent social and identity trajectories.

3. Methodology

3.1 Study design

This research is based on an exploratory empirical design with a qualitative approach. The choice of this methodology is determined by the need to understand the “lived experience” of young people aged 18–21 within the penitentiary system, going beyond simple statistical measurements. The study aims to analyze how institutional secondary victimization is produced and internalized through the subject–institution interaction. Descriptive statistical elements are used exclusively to construct the socio-demographic profile of the sample and to triangulate the qualitative findings. The epistemological paradigm of the study is constructivist-interpretivist, recognizing that social reality is not objectively given, but is constructed through the meanings and interpretations that individuals assign to their experiences (Creswell, 2013; Lincoln & Guba, 1985). This paradigm is appropriate for the study of phenomena such as secondary victimization, where the subjective dimension — the way in which the individual perceives and internalizes institutional harm — is as important as its externally measurable manifestations. Within this

paradigm, the study follows a phenomenological approach, which aims to describe and interpret the essential structures of lived experience as they appear in the subject's consciousness (van Manen, 1990; Moustakas, 1994). Phenomenology was chosen as a methodological orientation for direct reasons: it allows the researcher to remain close to the language and meanings of the participants, without reducing them to predetermined analytical categories.This is particularly important when the object of study consists of individuals who have experienced institutional marginalization and who often do not find space to articulate their experiences within public discourse

3.2 Sample and institutional context

The research was conducted in two key institutions of the Albanian penal system: the Juvenile Institute of Kavajë and the Institution for the Execution of Criminal Decisions in Fier. Participants were selected through purposive sampling.

The sample size consisted of N = 11 young people, all male.

The inclusion criteria were as follows: age group 18–21 years; convicted by a final court decision; and presence in the institution for at least six months.

The distribution of participants was: 6 participants from the Juvenile Institute of Kavajë and 5 participants from the Institution for the Execution of Criminal Decisions in Fier.

For ethical reasons and in order to ensure the stability of the data, individuals in pre-trial detention or still undergoing judicial proceedings were excluded from the study.

3.3 Instruments and data collection

Data collection was carried out through the triangulation of sources, with the aim of increasing the validity of the study.

Semi-structured interviews: These focused on participants' perceptions of justice, institutional treatment, and the challenges of reintegration.

Structured questionnaires: These were used to collect data on socio-economic status, family relationships, and access to services.

Consultations with professionals: Interviews were conducted with psychosocial staff in order to contextualize the empirical observations.

Documentary analysis: This included the review of legislation, particularly the Criminal Justice for Children Code — KDPM, 2017 — and the internal regulations of the institutions.

3.4 Data Analysis Procedure

The qualitative data were analyzed through Thematic Analysis, following the model proposed by Braun and Clarke (2006), an approach widely recognized for its methodological flexibility and its suitability for exploratory phenomenological studies. Thematic analysis was selected as the preferred analytical tool because it allows for the identification, organization, and interpretation of patterns of meaning expressed in interview data, without being restricted by predetermined theoretical categories. The analytical process was developed through five

interrelated phases. The first phase involved the full transcription of the interviews and deep familiarization with the text through repeated readings and initial reflective notes. The second phase consisted of the generation of initial codes, during which each analytically significant segment of the text was systematically labelled. This phase was carried out without a predefined hierarchy, prioritizing fidelity to the participants' own language. The third phase aimed to identify potential themes by grouping the codes into broader units of meaning. Among the most consistent themes that emerged were "isolation as an institutional paradigm" and "the developmental gap between legal protection and penal reality." The fourth phase consisted of the critical review of the themes in relation to the theoretical framework of secondary victimization, verifying whether the generated themes were supported by sufficient textual evidence and whether they demonstrated internal analytical coherence. The fifth and final phase led to the definition of the definitive analytical themes, accompanied by clear naming and an explanation of their role within the narrative of the study. In order to ensure the rigor of the analytical process, several measures of trustworthiness were applied. The coding of the material was carried out in two independent cycles by the researcher, followed by a systematic comparison between them through inter-rater reflection. In addition, the technique of "member checking" was used by returning to some participants to verify whether the interpretations produced corresponded with the intended meaning of their statements (Lincoln & Guba, 1985). These measures increased the credibility of the findings and reduced the risk of unconscious projection of the researcher's biases onto the empirical material. The quantitative data were processed through descriptive analysis, including frequencies and percentages, exclusively for the purpose of supporting and triangulating the qualitative narrative, without claiming statistical generalizability.

3.5 Ethical Considerations

The study was conducted in full accordance with ethical standards for research in closed settings, recognizing that populations deprived of liberty require additional protective measures (ESRC, 2015; APA, 2017). Informed consent was obtained through a detailed verbal and written explanation of the purpose, procedure, and rights of the participants, after which each subject signed the relevant form. To minimize the risk of implicit coercion arising from the institutional position of dependency, recruitment was carried out exclusively by the researcher — not by the institutional staff. Anonymization was guaranteed through the coding of data (P01–P11). The raw materials are stored in a secure digital environment with restricted access, and direct quotations have been reformulated where necessary to prevent indirect identification. Voluntariness was emphasized at the beginning of each interview: each participant had the right to withdraw or refuse to answer specific questions at any moment, without any consequence for their treatment or criminal proceedings. Finally, the study was conducted after obtaining approval from the General Directorate of Prisons and institutional permissions from the Juvenile Institute of Kavajë and the Institution for the Execution of Criminal Decisions in Fier. The role of the researcher was exclusively observational and listening-oriented, without any intervention or manipulation.

3.6 Limitations of the Study

Although this study provides in-depth phenomenological findings, it carries methodological and contextual limitations that should be taken into consideration when interpreting the findings. The first limitation relates to generalization. The small sample size (N=11) does not allow for statistical generalization, but rather aims at transferability — the possibility that the findings may offer insights applicable to similar institutional contexts (Lincoln & Guba, 1985). The second limitation concerns gender representation. The absence of female subjects limits the analysis to the masculine perspective of imprisonment, leaving aside specific forms of secondary victimization that the literature documents as more severe for young women in conflict with the law (Belknap, 2007). The third limitation relates to self-censorship. The supervisory institutional environment may have restricted the authenticity of some expressions, despite the measures taken to ensure confidentiality and voluntariness — a natural limitation of research conducted in closed settings (Liebling, 2001). The fourth limitation concerns the researcher's positionality. The researcher's assumptions and perspectives may influence the coding and interpretation of the data; this risk was minimized through continuous reflexivity and auditing of the analytical process (Creswell, 2013).

4. Results and discussion

The results of this study reveal a clear tension between rehabilitation as a normative objective and the concrete institutional experience. The findings suggest that institutional secondary victimization is not necessarily produced by overt violence or intentional violations of rights, but rather by the structural mismatch between the developmental needs of young people and the limited response capacity of the institution. This dynamic, also documented in comparative European literature (Muncie & Goldson, 2006), takes on specific nuances in the Albanian context, where delayed institutional transition creates particular conditions for the accumulation of secondary harm.

4.1 Vulnerability profile: pre-conditions of imprisonment

The analysis of the socio-demographic profile (N=11) shows that the crisis of rehabilitation begins chronologically and structurally before entry into the penal system. Participants carry accumulated and interconnected forms of vulnerability, which configure what the literature identifies as "pathways of vulnerability" toward conflict with the law (Haines & Case, 2015). In the field of educational capital, only one participant had attended higher education, while the overwhelming majority had completed only compulsory education or had not completed secondary education. This low educational profile is not merely an individual characteristic — it reflects early disengagement from the educational system as a documented risk factor for social and penal marginalization (Farrington & Welsh, 2007). From the perspective of human capital theory, the lack of educational qualifications significantly limits post-penal reintegration options and

increases the probability of recidivism (Becker, 1964). In the field of economic insecurity, more than half of the sample had been exposed to chronic unemployment or insecure informalemployment prior to conviction. This finding resonates with the model of "cumulative social exclusion," according to which economic, educational, and social deprivation act as synergistic — not independent — factors in increasing vulnerability to conflict with the law (Room, 1995; Paugam, 1996). The third dimension of vulnerability is related to the lack of family and institutional social support: 7 out of 11 participants reported that their families had not benefited from any form of social support prior to the penal crisis. This finding is analytically important because the literature on social capital shows that supportive family networks are among the key protective factors against recidivism and institutional vulnerability (Laub & Sampson, 2003).Taken together, these findings confirm that the penal system often intervenes as a reactive rather than preventive mechanism. When educational, economic, and social capital are low, the penitentiary institution is burdened with an accumulated corrective function for which it is neither adequately structured nor sufficiently financed. In the absence of such capacity, imprisonment reproduces and deepens — rather than interrupts — the conditions of social exclusion that precede crime (Farrington, 2003; Wacquant, 2009).

4.2 *Isolation as "developmental harm"*

Isolation emerged as the central and most traumatic experience reported by the young people — 8 out of 11 participants identified it as the primary source of institutional suffering. The analysis identifies two interconnected levels of isolation, which operate synergistically in the production of developmental harm. The first level — physical isolation — manifests as separation from the family and the social network. Paradoxically, although 10 out of 11 participants reported regular family contact, this does not mitigate what Sykes (1958) conceptualized as the "pains of imprisonment" — the inherent sufferings of deprivation of liberty, which go beyond the physical dimension and deeply affect the sense of identity and personal worth. Formal contact does not replace the natural emotional and social recognition that characterizes free interpersonal relationships. The second level — developmental isolation — is analytically more important for the age group under study. The lack of structured opportunities for education, vocational training, and active engagement turns the institution into a passive "waiting space," where time passes without the accumulation of human or social capital. This phenomenon corresponds to the concept of "institutional developmental deprivation," according to which imprisonment interferes not only with physical liberty, but also with the individual's ability to pass through the normative stages of psychosocial development (Erikson, 1968; Arnett, 2000). For the 18–21 age group — which is precisely in the critical phase of identity consolidation — this developmental isolation acquires particular clinical and criminological significance. The emotional adaptation reported by some participants should not be interpreted as an indicator of the absence of suffering, but rather as a learned protective mechanism that may mask deeper institutional trauma (Herman, 1992). This interpretive distinction is essential: a system that measures the well-being of young people only through the absence of open conflict risks systematically ignoring the silent forms of psychological harm.

4.3 Psychological support: the gap between need and access

The study identifies a clear institutional paradox: while 10 out of 11 young people consider psychological support necessary for coping with the institutional experience, 4 out of 11 have not had effective access to it. This quantitative gap reflects a broader structural dysfunction. The qualitative analysis reveals that young people conceptualize the role of the psychologist in a way that goes beyond the traditional clinical function. The psychologist is perceived as a "recognition mechanism" — an institutional presence that listens to them as persons with a history, needs, and potential, and not merely as "penal subjects" of an administrative category. This finding resonates with Honneth's (1995) theory of recognition, according to which institutional misrecognition — the failure to see the individual in their complexity — constitutes in itself a form of moral and psychological harm.The lack of access to psychological support reinforces the feeling of "invisibility" and institutional abandonment, turning into a silent and undocumented form of secondary victimization. When the institution fails to provide the tools for processing traumatic experience, it does not remain neutral — it becomes an active actor in the reproduction of harm (Laxminarayan, 2012).

4.4 Education and personal development as a missing link

The absence of educational and vocational programs was identified as the second greatest challenge after isolation, confirming a consistent pattern of deprivation of developmental opportunities within the institution.For the 18–21 age group, this absence produces what may be conceptualized as "trajectory freeze" — imprisonment causes a suspension of the accumulation of human, educational, and professional capital precisely at the stage when peers outside the institution are building the foundations of their careers and social independence. This temporal gap does not automatically close after release — it becomes a long-term structural barrier to reintegration (Heckman, 2006). According to Maruna (2001), sustainable rehabilitation requires the construction of a new pro-social identity narrative — a process he terms "desistance through redemption scripts." This process does not occur in a vacuum: it requires tools, opportunities, and meaningful relationships within the institution. Without education, structuring activities, and personal projects, the institution fails to provide the minimum conditions for this transformation, leaving the young person in an "identity vacuum" that significantly increases the risk of recidivism after release (McNeill, 2006).

4.5 Stigmatization and post-penal social separation

The findings regarding the period after release are among the most alarming in the study: 5 out of 11 participants report a strong sense of separation and exclusion from society, turning release not into a positive turning point, but into the beginning of a new phase of vulnerability. This result is consistent with the predictions of Labeling Theory (Becker, 1963; Lemert, 1967): the label "convicted person" is internalized and becomes a stigmatizing social identity that

precedes and limits opportunities for reintegration. Goffman (1963) conceptualized this process as a “spoiled identity” — a permanent change in the way the individual is perceived by others and in the way they perceive themselves. For young people aged 18–21, this stigmatizing process intervenes in an identity phase that is still not fully consolidated and, consequently, produces deeper long-term harm than in older adults. The feeling of exclusion shows that the system manages to administer punishment as a procedural act, but systematically fails to build institutional bridges toward the community. According to Tyler (2006), the legitimacy of the penal system in the eyes of young people depends directly on their perception of procedural justice — not only on the outcome of the sentence. When young people feel that they have not been treated with dignity and respect, trust in institutions erodes, weakening their motivation for post-penal normative conformity. The synthesis of these findings suggests that institutional secondary victimization in Albania has a cumulative nature: developmental isolation, lack of psychological support, educational gaps, and post-penal stigmatization do not operate as isolated phenomena, but as an interconnected chain of harm that begins within the institution and continues — often with increased intensity — after release.

5. Conclusions

This study analyzed the experience of young people aged 18–21 within the Albanian penitentiary system, focusing on the tension between rehabilitation as a normative objective and rehabilitation as a concrete institutional experience. The findings confirm that this age group constitutes a particularly vulnerable category: positioned at the boundary between legal adulthood and incomplete psychological, social, and identity maturity, it is treated penally as adult, while its developmental needs remain structurally unaddressed. This mismatch between legal status and developmental reality constitutes, as this paper argues, the fundamental ground on which institutional secondary victimization is produced. The results show that the crisis of rehabilitation does not begin inside prison — it is rooted in an earlier history of accumulated vulnerability. The young people included in the study entered the penal system with limited educational capital, economic insecurity and lack of institutional support and, in some cases, previous contact with the justice system. These conditions do not deterministically explain involvement in criminal offences, but they indicate that the penal system often intervenes as a final reactive mechanism, after social, educational, and preventive mechanisms have failed or have been structurally insufficient (Farrington & Welsh, 2007; Wacquant, 2009).One of the most important findings of the study is isolation as a central and cumulative experience of imprisonment. It is not limited to physical separation from family and community, but manifests as developmental isolation — the lack of opportunities for education, personal development, positive engagement, and real preparation for life after release. For the 18–21 age group, which is precisely in the critical phase of identity consolidation (Arnett, 2000; Erikson, 1968), this isolation interferes with psychosocial maturation and produces what the literature conceptualizes as a “trajectory freeze” — a developmental gap that survives long beyond the execution of the penal measure.Psychological support emerges as an important but still insufficient component of the institutional response. Young people perceive

the psychologist not as an administrative functionary, but as a mechanism of recognition (Honneth, 1995) — an institutional presence that treats them as persons with history and potential, not as categorical penal subjects. The gap between expressed need and documented real access — 10 versus 4 out of 11 participants — shows that current services fail to cover the emotional and developmental needs of this age group, turning the lack of access into a silent form of secondary victimization (Laxminarayan, 2012).Education and personal development appear as essential missing links of rehabilitation. For young people aged 18–21, the absence of educational and vocational programs within the institution is not merely a programmatic gap — it is an interruption of the normal trajectory of maturation at a historically critical moment (Heckman, 2006). Without the construction of a pro-social identity narrative (Maruna, 2001), the institution fails in its essential rehabilitative function and leaves the young person in an identity vacuum that significantly increases the probability of recidivism.The study also highlights the risk of stigmatization and post-penal social separation. Physical release does not mark the end of social punishment — the label "convicted person" is internalized as a stigmatizing identity (Goffman, 1963; Becker, 1963) and limits opportunities for reintegration into work, education, and social relationships. When the young person leaves the institution without support, without new skills, and without a concrete perspective for reintegration, the system risks reproducing the same conditions of exclusion that preceded the crime — thus closing a harmful institutional cycle.Overall, the findings support the central argument of the article: a system that articulates rehabilitation as a normative goal may, in practice, produce cumulative forms of institutional secondary victimization if it fails to address the real psychological, social, and developmental needs of young people. Secondary victimization does not necessarily appear through open violence — it is produced through developmental isolation, passivization, lack of recognition, restriction of educational opportunities, and insufficient preparation for reintegration.The main value of this study lies in its epistemic shift from the formal question "does rehabilitation exist as a legal objective?" toward the phenomenological question "how is rehabilitation experienced by young people within the system?" The empirical answer is critical: rehabilitation is not measured by the existence of institutions or services, but by their ability to rebuild connections, create opportunities, and treat young people not as penal subjects, but as individuals in a process of development — with real potential for change and social reintegration.Consequently, the treatment of young people aged 18–21 requires a differentiated approach, sensitive to development and oriented toward real rehabilitation. This implies: strengthening psychological and psychosocial services; expanding educational and vocational programs; creating positive structuring activities within institutions; actively involving the family and community; and building sustainable support mechanisms after release. Without these coordinated and adequately funded interventions, rehabilitation remains a normative promise — not a concrete transformative experience.

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SUSTAINABLE URBAN MOBILITY AND TEN-T GOVERNANCE: THE STRATEGIC ROLE OF FOGGIA MUNICIPALITY IN SUPPORTING WESTERN BALKANS EU INTEGRATION.

Ada Spiru[1], Pasquale Cataneo[2] and Maria Buonarota[3]

[1]Aleksandër Moisiu University of Durrës, Durrës, Albania
[2] Council Committee "Territory", Municipality of Foggia, Foggia, Italy
[3] University of Foggia, Foggia, Italy

Corresponding author: adaspiru@uamd.edu.al
(ORCID: 0000-0001-5524-0501)

Abstract

This contribution explores the role of urban policies and sustainable mobility in strengthening the European integration process of the Western Balkan countries. Drawing on the institutional experience of the Municipality of Foggia, the paper examines how an integrated vision of territorial planning, in line with Regulation (EU) 2024/1679 on the Trans-European Transport Network (TEN-T), can foster socioeconomic development, territorial accessibility, and macro-regional cooperation in the Adriatic area. The case study of Foggia, a strategic urban node located at the intersection of two multimodal corridors of the TEN-T network, highlights the potential of a systemic approach that integrates sustainable urban mobility planning (SUMP/PUMS), transport infrastructure, intermodal logistics, and digital innovation. In particular, the development of a multimodal hub based on the new high-speed rail station and the existing ones, the Gino Lisa Airport, the Port of Manfredonia, and the integrated railway logistics platform at Incoronata represents a relevant example of integration between European transport networks, local productive systems, and territorial development strategies.

This work also discusses the role of smart city policies and the digitalization of services, with particular attention to intelligent mobility platforms and Mobility as a Service (MaaS) solutions aimed at improving public transport efficiency and urban quality of life. Overall, these strategic directions outline a model of territorial governance capable of combining environmental sustainability, economic competitiveness, and urban attractiveness, while offering replicable insights for Western Balkan cities engaged in the European Union accession process. The paper aims to contribute to the scientific and institutional debate on mobility policies and European integration.

Keywords: Sustainable Urban Mobility; Trans-European Transport Network (TEN-T); Territorial Governance; Multimodal Transport Hubs.

1. Introduction

Sustainable mobility and transport connectivity have become central pillars of European economic integration, territorial cohesion and climate transition policies. Efficient transport systems

reduce transaction costs, improve market accessibility, facilitate labour mobility and strengthen regional competitiveness (Banister & Berechman, 2001; Rodrigue, 2020). At the same time, transport infrastructure is increasingly recognised not merely as a technical asset, but as a strategic governance instrument capable of shaping spatial development trajectories, cross-border cooperation and political integration (Vickerman, 2018; Crescenzi & Rodríguez-Pose, 2012). Within the European Union (EU), this perspective has been institutionalised through the Trans-European Transport Network (TEN-T), which aims to connect national systems into a coherent multimodal network supporting mobility, cohesion and sustainability (European Commission, 2024a).

The renewed geopolitical context following recent global disruptions, supply-chain vulnerabilities and security tensions has further reinforced the strategic importance of resilient transport corridors and integrated logistics systems (Notteboom, Pallis & Rodrigue, 2021; OECD, 2023). In this framework, connectivity policies are no longer confined to internal market efficiency but increasingly serve broader objectives such as neighbourhood stabilisation, enlargement policy and strategic autonomy (Bickerton et al., 2015). Nowhere is this more evident than in the Western Balkans, where transport integration is considered a key enabler of economic convergence and eventual EU accession (Bartlett, 2013; Tzifakis & Petrovic, 2021).

The six Western Balkan economies—Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia—remain characterised by fragmented infrastructure systems, border bottlenecks, uneven institutional capacities and relatively high logistics costs compared with EU member states (World Bank, 2020; Transport Community, 2024). For this reason, the EU has increasingly linked enlargement strategy with infrastructure modernisation, regulatory harmonisation and corridor development. Recent initiatives such as the Growth Plan for the Western Balkans and the extension of TEN-T corridors beyond the EU's formal borders confirm that transport governance is now a functional component of accession policy (European Commission, 2023a; EIB, 2023).

While much of the literature focuses on national governments, supranational institutions and major metropolitan gateways, less attention has been devoted to the role of medium-sized urban nodes and municipalities in supporting macro-regional integration processes. Yet secondary cities often host critical intermodal junctions, logistics platforms, labour markets and governance capacities that make them essential operational interfaces between corridors and territories (ESPON, 2020; Meijers and Burger, 2017). Their strategic significance is particularly relevant in peripheral or semi-peripheral regions, where urban nodes can reduce spatial isolation and catalyse broader development processes (Camagni & Capello, 2015; Dijkstra et al., 2020).

This paper argues that the Municipality of Foggia offers an illustrative case of how a medium-sized urban node can contribute to sustainable mobility and European integration objectives. Located in Southern Italy, within the Apulia region, Foggia occupies a pivotal geographical position at the intersection of the Baltic Sea–Adriatic Sea Corridor and the Scandinavian–Mediterranean Corridor under the revised TEN-T framework (Regulation EU 2024/1679). It also represents a natural Adriatic gateway towards Albania, Montenegro and the wider Western Balkans. Through its railway junction, airport system, logistics platforms, road accessibility and evolving urban mobility planning, Foggia has the potential to function as a territorial bridge linking Southern Italy with the Western Balkans and Eastern Mediterranean space.

The paper adopts a broader conceptual view of urban mobility governance. Sustainable urban mobility is understood not only as local transport planning, but as the capacity of cities to integrate passenger mobility, freight logistics, digital systems, environmental objectives and institutional coordination across multiple scales (Banister, 2008; Bertolini, 2020). In this perspective, instruments

such as Sustainable Urban Mobility Plans (SUMPs/PUMS), smart mobility systems, rail-air-port intermodality and low-emission public transport can generate benefits that extend beyond municipal boundaries, especially when embedded within European corridors and macro-regional strategies (European Commission, 2023b; Eltis, 2024).

The case of Foggia is particularly relevant because it combines two dimensions often treated separately in the literature: *local sustainable mobility governance* and *transnational connectivity policy*. On one side, the municipality is updating planning tools and infrastructure systems in line with EU urban node requirements. On the other, its territorial position allows it to support Adriatic integration, trade flows and accessibility improvements relevant to Western Balkan convergence. This dual function reflects the growing importance of municipalities as policy actors within multi-level governance systems (Hooghe & Marks, 2001; Pierre & Peters, 2020).

Against this background, the main objective of this paper is to assess the strategic role that Foggia Municipality can play in supporting Western Balkans EU integration through sustainable urban mobility and TEN-T governance. More specifically, the paper addresses three research questions: (i) how can medium-sized urban nodes contribute to transnational corridor integration? (ii) which governance instruments enable municipalities to support EU cohesion and enlargement objectives? and (iii) what lessons does the Foggia case offer for other Adriatic and Balkan territories seeking stronger connectivity and sustainable development?

Methodologically, the paper develops a qualitative case study based on policy analysis, regulatory review, infrastructure assessment and territorial interpretation. It combines academic literature on transport geography, urban governance and regional development with institutional evidence relating to TEN-T policy, Italian planning frameworks and Adriatic cooperation initiatives. This approach allows the paper to bridge theoretical debates with an applied territorial case.

The study contributes to the literature in three ways. First, it expands TEN-T scholarship by highlighting the often-overlooked role of secondary urban nodes. Second, it links sustainable urban mobility with enlargement and neighbourhood policy. Third, it provides a policy-relevant framework for understanding how Southern European municipalities can become active actors in EU integration processes through infrastructure governance and territorial strategy.

The remainder of the paper is organised as follows. Section 2 reviews the literature on transport infrastructure, urban nodes, cohesion policy and enlargement through connectivity. Section 3 presents the methodological framework and case-study rationale. Section 4 examines the evolving TEN-T and Western Balkans integration context. Section 5 analyses the strategic role of Foggia Municipality through infrastructure, governance and mobility dimensions. Section 6 discusses policy implications for Italy, the EU and the Western Balkans. Section 7 concludes.

2. Literature review

The relationship between transport systems, territorial development and European integration has been widely examined in academic literature. This section reviews the main theoretical and empirical contributions relevant to the paper, focusing on five interconnected dimensions: transport infrastructure and regional growth, TEN-T governance and cohesion policy, the strategic role of urban nodes, Western Balkans integration through connectivity, and sustainable mobility planning through PUMS instruments.

1.1 Transport infrastructure and regional growth

Transport infrastructure has long been considered a fundamental determinant of economic growth, territorial integration and productivity. By reducing travel time, logistics costs and market frictions, transport networks improve accessibility for firms and households, stimulate investment and facilitate agglomeration economies (Banister & Berechman, 2001; Rodrigue, 2020). In the European context, infrastructure investment has also been associated with regional convergence, especially in peripheral areas historically affected by weak connectivity (Crescenzi &Rodríguez-Pose, 2012). However, the relationship is not automatic: the economic impact of infrastructure depends on complementary institutional quality, governance capacity and local absorptive conditions (Vickerman, 2018).

Recent literature further highlights the strategic role of transport systems in resilience and supply-chain security. Following the pandemic and geopolitical disruptions, infrastructure is increasingly interpreted as a component of strategic autonomy and regional competitiveness rather than only a mobility asset (OECD, 2023; Notteboom et al., 2021). This broader perspective is especially relevant for border regions and gateway territories connecting the EU with neighbouring economies.

1.2 TEN-T governance and European cohesion

The Trans-European Transport Network (TEN-T) represents the EU's main policy instrument for integrating national transport systems into a coherent multimodal framework. Initially conceived to support the single market, TEN-T has progressively evolved into a governance tool for territorial cohesion, decarbonisation and geopolitical connectivity (European Commission, 2024a). Through core and comprehensive corridors, the network aims to remove bottlenecks, improve interoperability and strengthen cross-border accessibility.

Empirical studies show that TEN-T investments can reduce spatial fragmentation and promote integration between central and peripheral regions, although outcomes vary depending on implementation capacity and local planning coordination (Medeiros, 2019; Vickerman, 2018). TEN-T also reflects the logic of multi-level governance, where EU institutions, member states, regions and municipalities jointly shape infrastructure priorities (Hooghe & Marks, 2001). The revised Regulation (EU) 2024/1679 further reinforces the role of urban nodes, logistics terminals and external corridor extensions, signalling a shift from infrastructure provision toward network governance.

1.3 Urban nodes and multimodal logistics

Urban nodes occupy a growing place in transport and regional studies because they function as interfaces where long-distance corridors meet local mobility systems. Ports, rail terminals, airports and logistics platforms located in cities generate flows of goods, labour and information that extend well beyond municipal boundaries (Hall & Hesse, 2013). While major metropolitan gateways have received most attention, medium-sized cities can also perform strategic connector functions, particularly in polycentric regions and peripheral territories (Camagni & Capello, 2015; Meijers & Burger, 2017).

The concept of borrowed size suggests that smaller cities may benefit from proximity to wider networks when they specialise in strategic functions such as logistics, intermodality or corridor access (Meijers & Burger, 2017). In Southern Europe, secondary cities often host rail junctions, dry

ports or airport systems capable of supporting regional competitiveness if integrated into wider planning frameworks. This literature is relevant to Foggia, whose importance derives less from metropolitan scale and more from nodal position within Adriatic and national networks.

1.4 Western Balkans integration through connectivity

Transport connectivity has become a central pillar of the EU's strategy toward the Western Balkans. Candidate and potential candidate countries continue to face infrastructure gaps, border inefficiencies and fragmented regulatory systems that constrain trade, labour mobility and foreign investment (World Bank, 2020; Transport Community, 2024). For this reason, the EU has increasingly linked accession prospects with corridor modernisation, market integration and alignment with European transport standards.

Studies on enlargement policy argue that functional integration through infrastructure may precede and facilitate formal political accession (Bartlett, 2013; Tzifakis & Petrovic, 2021). Initiatives such as the Growth Plan for the Western Balkans, Corridor VIII and the extension of TEN-T corridors beyond EU borders aim to reduce economic distance between the region and the Union (European Commission, 2023a; EIB, 2023). In this context, Adriatic cities and Italian gateway regions can play a strategic intermediary role by providing maritime, rail and institutional connections between both shores.

1.5 Sustainable mobility and PUMS governance

At the urban scale, sustainable mobility policies seek to reconcile accessibility, environmental quality and social inclusion. The traditional paradigm centred on road expansion has gradually been replaced by integrated approaches based on public transport, active mobility, digital systems and demand management (Banister, 2008; Bertolini, 2020). Sustainable Urban Mobility Plans (SUMPs), known in Italy as PUMS, are the main planning instruments promoted by the European Commission to coordinate these objectives.

The literature emphasises that effective mobility planning requires participatory governance, data-driven decision making and integration between land use, freight logistics and climate goals (Marsden & Reardon, 2017; Eltis, 2024). Increasingly, PUMS are also expected to align cities with TEN-T urban node requirements, multimodal accessibility and zero-emission transition targets. This suggests that municipal mobility plans can generate impacts beyond local transport efficiency, contributing to regional cohesion and transnational corridor performance.

Taken together, the literature indicates that transport infrastructure, urban governance and regional integration are deeply interconnected. Yet limited attention has been paid to how medium-sized municipalities can support macro-regional integration through sustainable mobility strategies. This gap provides the rationale for analysing the case of Foggia as a secondary urban node with potential relevance for Western Balkans EU integration.

3. Research Questions

Building on the literature reviewed above, this paper examines whether medium-sized urban nodes can contribute to broader European integration processes through transport governance and sustainable mobility planning. Although TEN-T policy has traditionally concentrated on major

metropolitan gateways, recent policy reforms and academic debates increasingly recognise that secondary cities may also perform strategic functions when they occupy advantageous positions within multimodal corridors and cross-border networks (European Commission, 2024a; Camagni & Capello, 2015). In this respect, the Municipality of Foggia offers an appropriate case through which to explore the wider territorial role of non-metropolitan urban centres.

The first objective of the study is to assess whether a secondary TEN-T urban node such as Foggia can play a strategic macro-regional role. This implies examining whether a medium-sized city may generate relevance beyond its demographic scale by acting as an intermediary platform between Southern Italy, Adriatic gateways and the Western Balkans. The question is consistent with the literature on polycentric development and borrowed size, according to which urban importance may derive from network connectivity and specialised functions rather than population mass alone (Meijers & Burger, 2017).

RQ1: *Can secondary TEN-T urban nodes like Foggia play strategic macro-regional roles?*

The second objective is to analyse how municipal mobility planning can support the European integration of neighbouring regions. Sustainable Urban Mobility Plans (PUMS) are generally conceived as local planning instruments aimed at improving accessibility, environmental sustainability and quality of life. However, when cities are located on strategic corridors, these plans may also strengthen access to ports, airports, rail terminals and international markets. In this sense, municipal transport governance may complement broader EU cohesion and enlargement strategies by enhancing functional integration between territories (Banister, 2008; Hooghe & Marks, 2001).

RQ2: *How can municipal mobility planning support EU integration of neighbouring regions?*

The third objective is to investigate whether sustainable mobility investments can generate cross-border cohesion effects. Improvements in rail accessibility, logistics efficiency, airport services, digital mobility systems and low-emission urban transport may produce benefits extending beyond municipal boundaries by reducing travel costs, improving connectivity and facilitating trade, tourism and labour mobility (Crescenzi & Rodríguez-Pose, 2012; Vickerman, 2018). This dimension is particularly relevant for Adriatic regions, where economic interactions between Italy and the Western Balkans remain significant.

RQ3: *Can sustainable mobility investments generate cross-border cohesion effects?*

Taken together, the research seeks to determine whether Foggia should be interpreted not simply as a local municipality, but as a strategic territorial node capable of linking urban sustainability objectives with wider European cohesion and enlargement goals.

4. Methodology

This paper adopts a qualitative case study methodology to investigate the strategic role of Foggia Municipality in linking sustainable urban mobility with TEN-T governance and Western Balkans EU integration. The case study approach is appropriate when analysing complex territorial phenomena in which infrastructure, institutions and policy processes interact across multiple governance levels (Yin,

2018). Rather than testing causal relationships through econometric techniques, the study aims to provide an analytically grounded interpretation of how a medium-sized urban node may generate macro-regional relevance through its spatial position, infrastructure assets, planning capacity and anadequate cost-benefit analysis by integrating existing and new individual point infrastructures into the TEN-T network system.

The research design combines three complementary methods. First, a policy and regulatory analysis is conducted to examine the evolving European framework for transport connectivity, with particular attention to the revised TEN-T Regulation (EU 2024/1679), Sustainable Urban Mobility Plan (PUMS/SUMP) guidelines, cohesion policy priorities and EU enlargement initiatives toward the Western Balkans. This allows the case of Foggia to be interpreted within a broader institutional context of the Puglia Region and Southern Italy.

Second, the paper employs territorial and infrastructure analysis. This includes the assessment of Foggia's geographic location within Southern Italy, its role as a railway junction, airport node, road connector and gateway to Adriatic maritime corridors. Particular attention is given to the municipality and province accessibility to ports such as Manfredonia, Bari and Brindisi, as well as its potential connections with Albania, Montenegro and other Western Balkan economies. In transport geography terms, the objective is to evaluate nodal centrality rather than city size alone (Rodrigue, 2020).

Third, documentary evidence is used to analyse local governance capacity. This includes municipal planning documents, strategic mobility plans, regional transport strategies, public investment initiatives and institutional reports concerning Foggia's sustainable mobility agenda. The analysis therefore links local planning instruments with wider European corridor objectives.

The empirical material used in the paper derives from multiple sources: European Commission documents, TEN-T regulations, Italian national and regional planning frameworks, municipal documents of Foggia, infrastructure reports, and secondary statistical evidence from Eurostat, OECD, the World Bank and transport agencies. Figures and maps included in the study are used as interpretative tools to illustrate corridor positioning, multimodal assets and territorial linkages.

Analytically, the paper evaluates the case of Foggia through four dimensions: strategic location within European corridors, multimodal infrastructure endowment, municipal governance capacity, and potential contribution to Western Balkans connectivity. These dimensions provide the basis for answering the research questions and discussing whether secondary urban nodes can support broader EU cohesion and enlargement objectives.

Although the study is exploratory and case-specific, it offers broader insights for other medium-sized cities located along external EU corridors. Future research may complement this qualitative approach with traffic flows, accessibility indicators, investment data and comparative benchmarking across similar Adriatic urban nodes.

5. Background: Western Balkans and TEN-T Enlargement

The integration of the Western Balkans into the European Union has progressively evolved from a predominantly political accession process into a broader strategy based on socio-economic convergence, financial integration and infrastructure modernisation. In this context, transport connectivity has become one of the most visible and operational dimensions of enlargement policy. Efficient transport systems reduce economic distance, improve market accessibility, facilitate labour mobility and support regional competitiveness, thereby helping candidate countries converge with

EU standards and markets (World Bank, 2020; Bartlett, 2013).

Table 1. Network density in Western Balkans, year 2024.

	Network density in WB		
	Motorway density	Other roads density (excluding motorways)	Rail density
	kilometer per km²	*kilometer/km²*	*kilometer/km²*
Bosnia and Herzegovina	0,005	0,464	0,020
Montenegro	0,015*	0,730	0,018
North Macedonia	0,013	0,584	0,027
Albania	0,002	0,126	0,009
Serbia	0,013	0,586	0,043
Kosovo	0,013	0,211	0,031**
EU (27 states)	0,018	(:)	0,049

Source: Authors' elaboration based on Eurostat.
Notes: (:) Not available. *Source: Statbase. **Source: Trainkos.

The six Western Balkan economies—Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia—continue to face structural transport constraints, including fragmented rail systems, uneven motorway development, limited intermodality and border bottlenecks compared with EU member states (OECD, 2022; Transport Community, 2024). These weaknesses translate into higher logistics costs and lower territorial accessibility compared with the EU average. As shown in Table 1, motorway density in most Western Balkan countries remains below the EU-27 average (0.018 km/km²), while rail density is also generally lower, particularly in Albania and Bosnia and Herzegovina. Serbia performs relatively better in rail infrastructure, but overall regional disparities remain significant. As a result, physical and regulatory barriers continue to limit regional economic convergence.

These gaps help explain why transport infrastructure remains central to the EU's enlargement agenda. The literature increasingly recognises that infrastructure-led integration may generate tangible benefits even before formal accession, including higher trade volumes, stronger tourism flows, investment attraction and institutional learning (EIB, 2023; Vickerman, 2018). For this reason, connectivity policy has become one of the most visible instruments of the EU's enlargement strategy.

To support this transition, the European Union has recently introduced targeted financial and technical instruments. The most relevant is the Growth Plan for the Western Balkans (2024–2027)[1], designed to foster socio-economic integration, institutional reforms and access to parts of the EU Single Market before full membership. The Plan combines financial support with reform conditionality and aims to reduce the development gap between the region and EU member states (European Commission, 2023a).

The second major technical pillar is the extension of the Trans-European Transport Network (TEN-T) toward neighbouring candidate countries. Originally conceived as an internal EU infrastructure system, TEN-T now explicitly includes stronger external corridor linkages under the revised Regulation (EU 2024/1679). This reform recognises that European territorial cohesion and strategic resilience require better physical integration with neighbouring regions, particularly the Western Balkans (European Commission, 2024a).

As illustrated in Figure 1, Europe's railway network remains denser and more continuous in the EU core, while South-Eastern Europe still shows missing links and modernisation needs. Several lines under construction are concentrated in peripheral and accession regions, highlighting

the ongoing effort to reduce historical infrastructure asymmetries. This confirms that rail development remains essential for sustainable enlargement and corridor integration.

For the Western Balkans, this means that accession is no longer viewed only through legal harmonisation, but also through physical integration into European mobility networks. Corridor development facilitates trade flows, supports tourism, enhances energy and logistics security, and improves labour mobility. In practical terms, railway modernisation, digital customs procedures, multimodal terminals and upgraded ports all contribute to reducing the effective distance between Balkan economies and the EU core.

Among the most relevant projects is Corridor VIII, linking the Adriatic and Black Seas through Albania, North Macedonia and Bulgaria. This axis has gained renewed geopolitical relevance because it offers diversification of east-west connectivity and strengthens Albania's gateway role. At the same time, Adriatic maritime routes connecting Italy with Albania, Montenegro and Croatia remain essential channels of passenger and freight movement. Southern Italian regions therefore occupy a strategic intermediary position in the enlargement process

Figure 1. Railway network in Europe, 2026.
Source: Railmaps.com (accessible March 2026).

[1] EC (2023). New growth plan for the Western Balkans. Brussels, 8.11.2023, COM(2023) 691 final.

As shown in Figure 2, the Adriatic basin can be interpreted as a bridge space where TEN-T corridors, maritime links and connection dynamics intersect. Italian ports and inland nodes facing the Balkans may thus contribute directly to EU integration by improving accessibility and reducing bottlenecks on both shores. This creates opportunities not only for major metropolitan gateways such as Bari or Trieste, but also for medium-sized inland connector cities linked to those ports.

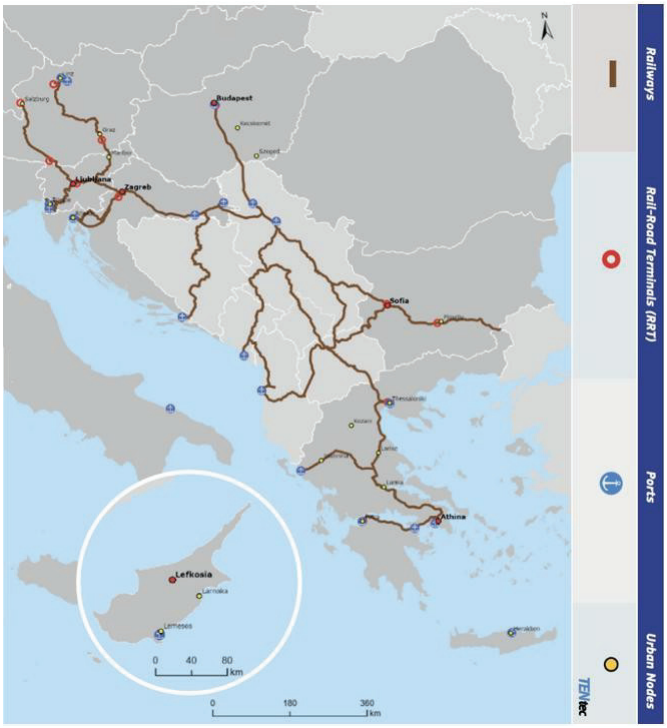


Figure 2. Western Balkans Connectivity and the Extension of TEN-T Corridors in the Adriatic Region.
Source: Transport Community (2024).

The main structural challenges and policy responses are summarised in Table 2. Fragmented rail systems require corridor modernisation and interoperability; border delays are being addressed through green lanes and customs digitalisation; weak port-hinterland connections call for multimodal investments; while governance gaps are partially mitigated through the institutional role of the Transport Community[2].

In this broader setting, the integration of the Western Balkans with the European Union is increasingly founded on a strategy of accelerated socio-economic, financial and infrastructural convergence. In this framework, the Growth Plan and the TEN-T extension represent the two principal operational pillars. However, the success of this strategy also depends on the role of gateway regions and intermediary urban nodes capable of connecting EU territory with Balkan corridors. This is particularly relevant in Southern Italy, where several cities may function as interfaces between the Italian peninsula and the Western Balkans.

Table 2. Main Connectivity Challenges and EU Responses in the Western Balkans

[2] The Transport Community is an international organisation that brings together the European Union and the six Western Balkan partners, together with participating observers — Georgia, the Republic of Moldova and Ukraine — for the implementation of common transport policies. It works in cooperation with the European Commission, EU Member States and regional authorities, with a collaborative and innovative approach aimed at strengthening European integration in the transport sector.

Structural Challenge	EU Response through TEN-T framework
Fragmented rail systems	Corridor modernisation and interoperability
Border delays	Green lanes and customs digitalisation
Weak port-hinterland links	Multimodal terminal investment
Peripheral market access	TEN-T corridor extension
Institutional coordination gaps	Transport Community governance framework

Source: Authors' elaboration.

The next section focuses on the Municipality of Foggia as one such case. Its position within revised TEN-T corridors, proximity to Adriatic gateways and evolving sustainable mobility agenda make it a relevant example of how local urban governance may support broader European integration processes.

6. Foggia Municipality as a TEN-T Urban Node: Smart Mobility, Multimodal Logistics and Territorial Competitiveness

The case of Foggia is particularly relevant because it shows how a medium-sized city in Southern Italy can assume a strategic role within European transport governance. Its importance does not derive only from demographic size, but from its position within a wider system of corridors, ports, airports, logistics platforms and urban mobility policies. In this sense, Foggia can be interpreted as a "secondary strategic node" capable of connecting local sustainable mobility planning with broader TEN-T, Adriatic and Western Balkans integration objectives.

6.1 Geographic Position: Foggia between Southern Italy, the Adriatic and the Western Balkans

Foggia is located in northern Apulia and occupies a strategic position between the inland areas of Southern Italy, the Adriatic coast and the maritime routes connecting Italy with the Western Balkans. This location places the city within a broader Adriatic connectivity space, where passenger mobility, freight flows and institutional cooperation increasingly depend on the integration of road, rail, port and airport systems.

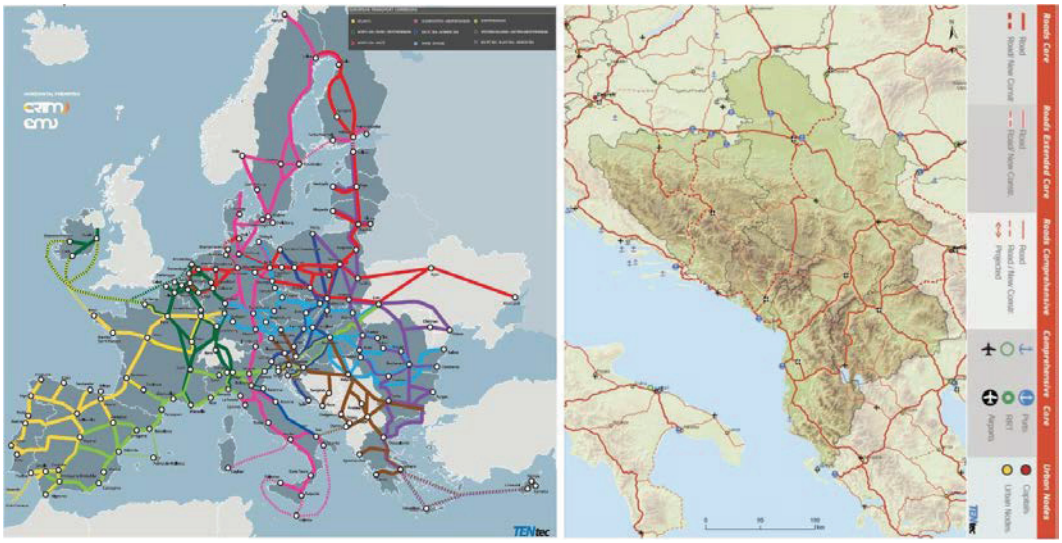


Figure 3. (a) The TEN-T network and (b) the geographic position of Foggia within the Adriatic connectivity space.
Source: Transport Community (2024).

The wider Apulian transport system includes a dense set of strategic assets: around 1,500 km of railway lines, a port system distributed along the Adriatic axis including Manfredonia, Bari and Brindisi, the Ionian port of Taranto, and several smaller ports such as Barletta, Molfetta, Monopoli, Otranto and Gallipoli. The regional system also includes Bari Interport, the integrated logistics platform of Foggia-Incoronata, and four airports located in Foggia, Bari, Brindisi and Taranto. This combination makes Apulia a potential gateway between Italy, the EU and the Western Balkans.

Within this system, Foggia represents the northern inland entry point of Apulian connectivity. Its position strengthens the regional function of Apulia as a "natural bridge" between the two shores of the Adriatic, especially in relation to Albania, Montenegro and the broader Western Balkans–Eastern Mediterranean corridor. The city therefore has a potential role in supporting both local development in Capitanata[3] and wider EU integration dynamics.

6.2 TEN-T Corridor Position and Macro-Regional Relevance

The strategic value of Foggia has increased under the revised TEN-T framework. The city is a crossroad of two major multimodal corridors: the Baltic Sea–Adriatic Sea Corridor and the Scandinavian–Mediterranean Corridor. This gives Foggia a dual function: it is both a national connector between Northern and Southern Italy and a potential interface with the Adriatic and Balkan transport space (Cataneo, 2020).

This position is especially relevant in light of the EU's renewed attention to the Western Balkans–Eastern Mediterranean corridor and to Corridor VIII, which connects the Adriatic Sea with the Black Sea through Albania, North Macedonia and Bulgaria. The relaunch of Corridor VIII reinforces the strategic role of Adriatic gateways, such as Bari and Brindisi, but also increases the relevance of inland nodes capable of connecting maritime flows through equipped ports connected to the TEN-T rail and road network – such as those of Manfredonia – with national and European land corridors. The strategic role of Foggia within the TEN-T and Adriatic Connectivity space is summarized in Table 3.

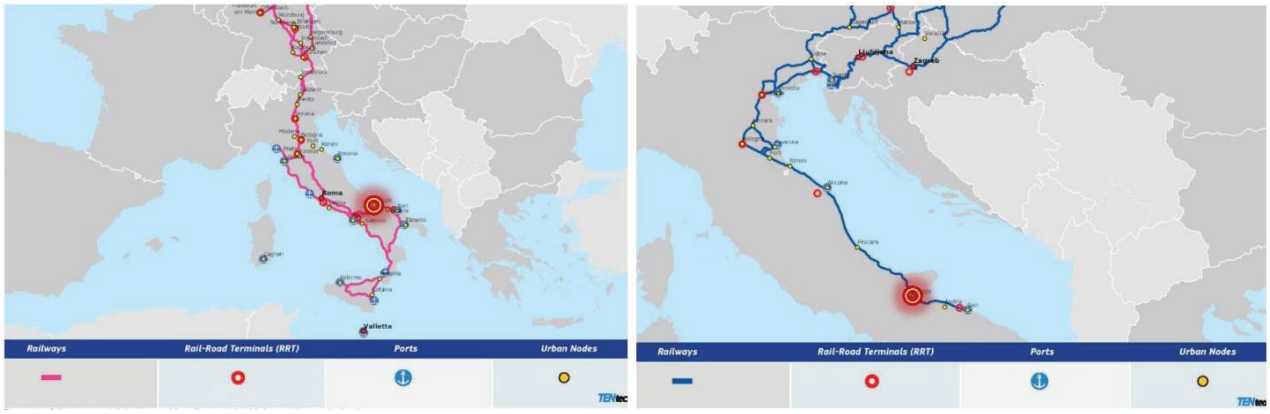
Table 3. Foggia's Strategic Position within the TEN-T and Adriatic System

Dimension	Strategic Function
TEN-T corridor position	Crossroads of Baltic–Adriatic and Scandinavian–Mediterranean corridors
Adriatic orientation	Gateway potential toward Albania, Montenegro and Western Balkans
Inland location	Connection between ports, production areas and national rail/road networks
Southern Italy role	Support to cohesion and accessibility in a less developed area
Macro-regional relevance	Potential interface between EU internal market and enlargement area

Source: Authors' elaboration.

[3] Capitanata is a historical–geographical district of Southern Italy, broadly corresponding to the northern part of the modern Apulia region, largely coinciding with the Province of Foggia in the Kingdom of Italy.

Figure 4. Geographic Position of Foggia within the TEN-T network.



Source: Transport Community (2024).

The Foggia case therefore confirms that TEN-T governance should not be interpreted only through the perspective of large metropolitan areas. Secondary cities may perform crucial functions when they are located at corridor intersections and when they possess transport assets capable of supporting multimodal flows.

The new EU Agenda for Cities[4], launched between late 2025 and early 2026, which aims to strengthen the role of urban, centres in economic, social and territorial cohesion, confirms the vision represented above.

6.3 Multimodal Assets: Rail, Airport, Ports and Logistics

Foggia's potential as a smart mobility hub depends on the integration of several infrastructure components. The first is the railway system. Foggia has historically been one of the most important rail junctions in Southern Italy, located along the Adriatic axis and connected with the Naples–Rome direction. The strengthening of high-speed/high-capacity rail services is central to avoiding the marginalisation of Foggia as a secondary stop and to maintaining its function as a strategic node within long-distance passenger and freight mobility.

The second asset is the Gino Lisa Airport, whose relaunch is considered essential for the accessibility of Capitanata, Gargano and the internal areas of the Dauni Mountains, also of the broader tourist and business system. In the territory of Foggia Province, geomorphologically similar to many contexts in the Western Balkans and their peripheral-inner areas, the airport accessibility can reduce isolation and support economic diversification, especially if integrated with rail and road services.

Table 4. Main Multimodal Assets of Foggia Hub

Asset	Current / Potential Role	Relevance for EU–Western Balkans Connectivity
Rail hub	Junction on national and Adriatic rail axes	Supports passenger and freight corridor integration
Current and new high-speed/high-capacity stations	Improves national accessibility	Reduces peripheral isolation
Gino Lisa Airport	Regional airport for Capitanata and Gargano	Supports tourism, business and institutional mobility

[4] EC (2025). An EU Agenda for Cities: Driving Growth and Prosperity. Brussels, 3.12.2025. COM(2025) 739 final.

Asset	Current / Potential Role	Relevance for EU–Western Balkans Connectivity
Port access	Functional connection to Manfredonia, Bari and Brindisi	Links inland territory with Adriatic maritime routes
Motorway access	Functional connection to the Italian and European motorway network	Connects the territory for long-distance and last-mile road transport
Foggia-Incoronata logistics platform	Freight and logistics consolidation	Supports intermodal trade and supply-chain integration

Source: Authors' elaboration.

The third dimension concerns maritime access. Although Foggia is not itself a port city, it is functionally connected to the ports of Manfredonia, Bari and Brindisi. These ports provide access to Adriatic passenger and freight routes, including those directed toward Albania and other Balkan countries. This makes Foggia relevant as an inland redistribution and support node for maritime flows. The fourth asset is the integrated logistics platform of Foggia-Incoronata, which can support freight consolidation, agro-food logistics, intermodal transport and connections with industrial areas. The development of this multimodal hub – exhibiting a highly favourable cost-efficiency ratio – represents a case of integration between EU transport networks, national infrastructure and local productive systems. Multimodal assets of Foggia are summarised in Table 5.

6.4 Institutional Governance: From Local Planning to European Coordination

The Foggia case also shows that infrastructure must be accompanied by governance capacity. The strategic vision for the area has developed over a long period. Already in 1999, local institutions and social partners identified four priorities: the centrality of the Foggia railway node, the relaunch of Gino Lisa Airport, the development of logistics and intermodality around Incoronata, and the method of concertation among government, local authorities and social actors. Figure 4 represents the early efforts of conceptualising the system of infrastructures, transportation and services in Capitanata. This early vision anticipated many themes now central to European transport governance: intermodality, territorial cohesion and multi-level coordination.

More recently, the Province and Municipality of Foggia adopted several planning acts aimed at promoting polycentric and network-based territorial development. The first phase included the provincial resolution no. 11/2018 and municipal resolutions no. 13/2017 and no. 156/2018, supporting the integration of infrastructure, energy, digital networks, productive systems and urban development. A second phase is currently linked to more recent municipal resolutions, including no. 02/2024, 151/2024, 67/2025 and 81/2025, which reinforce the role of the Municipality in aligning local planning with the new TEN-T framework as shows in Figure 4.

Figure 4. (a) Multimodal Transport System of Foggia: Rail, Airport, Ports and Logistics Platform (passengers and freght); (b) TEN-T Network Scenario: Intermodal Hub in Foggia – New Interoperability Station.
Source: Foggia Municipality.

The Sustainable Urban Mobility Plan of Foggia, approved by Municipal Council resolution no. 156 of 4 September 2018, represents a key governance instrument. It connects urban mobility planning with wider logistics and territorial accessibility objectives. Under Regulation (EU) 2024/1679, Foggia is included among Italian urban nodes and will need to update its PUMS by 31 December 2027 in line with EU recommendations and urban node requirements. This makes the PUMS not only a local planning document, but also a tool for implementing European mobility governance at municipal level. The relevant governance Instruments are summarised in Table 5.

Table 5. Governance Instruments Supporting Foggia's TEN-T Role

Governance Instrument	Function
PUMS 2018	Strategic planning for sustainable urban mobility
Apulia Regional Transport Plan 2021-2030	Promotes sustainable, intermodal and safe mobility through targeted rail, port and airport investments.
TEN-T Regulation 2024/1679	Framework for urban node requirements
National PUMS support structure	Technical support for implementation and monitoring
Multi-level coordination	Connection among municipality, region, state and EU policies

Source: Authors' elaboration.

6.5 Smart City, Digitalisation and Intelligent Mobility

A distinctive element of the Foggia case is the integration between transport governance and digital innovation. The *"Foggia Smart City"* project, developed through the 3S initiative, aims to create a technological platform capable of improving public administration processes and providing citizens with useful urban information. The project includes three main components: *SmartCity3D*, *QCumber* and an air quality monitoring system (Figure 5).

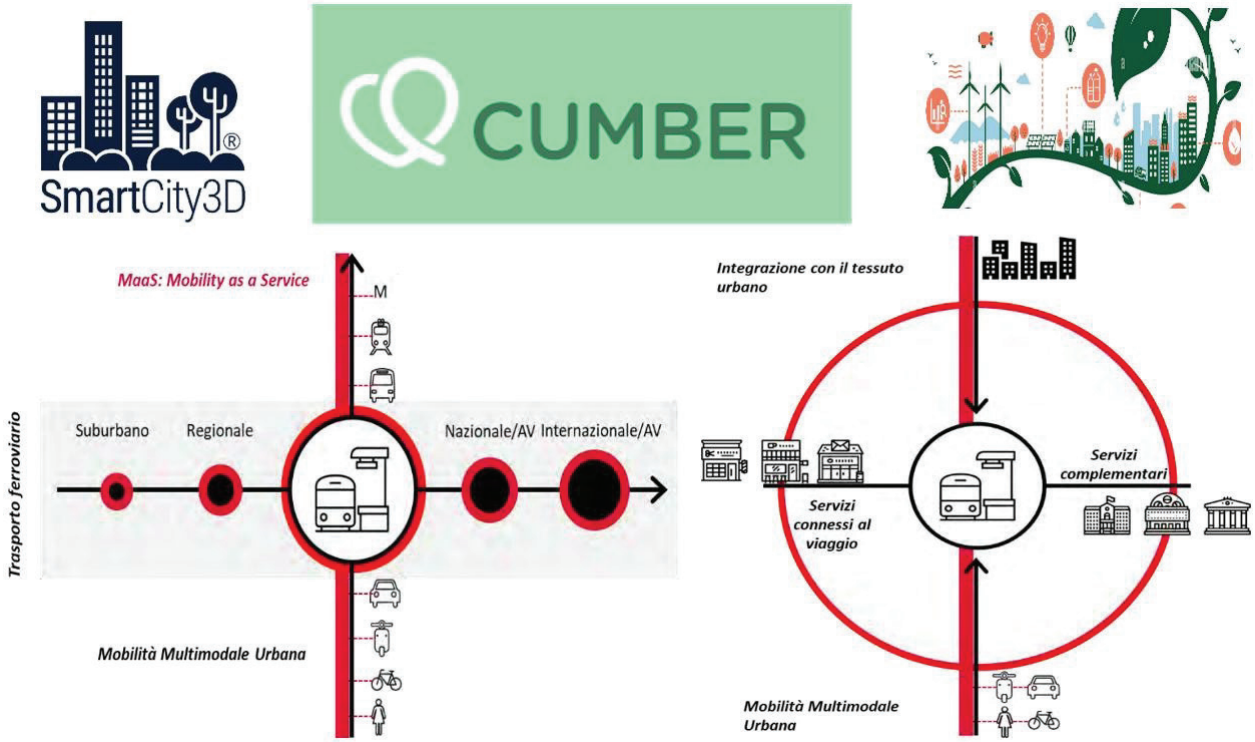


Figure 5. Smart Mobility Governance in Foggia: (a) Digital Platforms, (b) PUMS and TEN-T Urban Node Requirements.
Source: Foggia Municipality.

SmartCity3D is a Web-GIS 3D platform designed to analyse and manage the digital twin of the city through point clouds, 360-degree images, geodatabases and big data, while *QCumber* applies an "IoT for sustainability" approach, integrating real-time data into the assessment of environmental impacts. The air quality system uses LoRa technology, a low-energy and long-range wireless solution, to monitor pollution conditions across the municipality.

These digital tools can be progressively connected with sustainable mobility services, including cycling infrastructure, public transport information, traffic management and smart logistics. This is

particularly relevant in light of Article 41 of Regulation (EU) 2024/1679, which encourages urban nodes to integrate different transport modes and promote intelligent transport systems.

Foggia has also planned investments in zero- and low-emission public transport, including four electric vehicles and four charging or refuelling infrastructures. These interventions support the transition toward cleaner urban mobility and can help reduce air and noise pollution while improving accessibility.

Table 6. Smart Mobility and Digital Innovation Components in Foggia.

Component	Description	Mobility / Sustainability Relevance
SmartCity3D	3D Web-GIS and digital twin platform	Urban planning, infrastructure monitoring
QCumber	IoT-based sustainability tool	Real-time environmental impact assessment
LoRa air quality network	Low-energy air monitoring system	Pollution control and health-oriented planning
Electric public transport	Four electric vehicles and charging infrastructure	Low-emission mobility
Future MaaS integration	Integration of public, shared and digital mobility services	Interoperability and user-centred mobility

Source: Authors' elaboration.

6.6 Accessibility, Quality of Life and Territorial Competitiveness

In Italy, initiatives such as the one called Integrated Development of Multi-Action Territorial Systems S.I.S.Te.M.A. of the Italian Ministry of Infrastructure and Transport, which, through pilot projects called: "Territorial Complexities" and "Underutilized Areas", have represented an opportunity to give new impetus to polycentric and networked development through the strengthening of connections between major infrastructure networks and city systems (Figure 6).

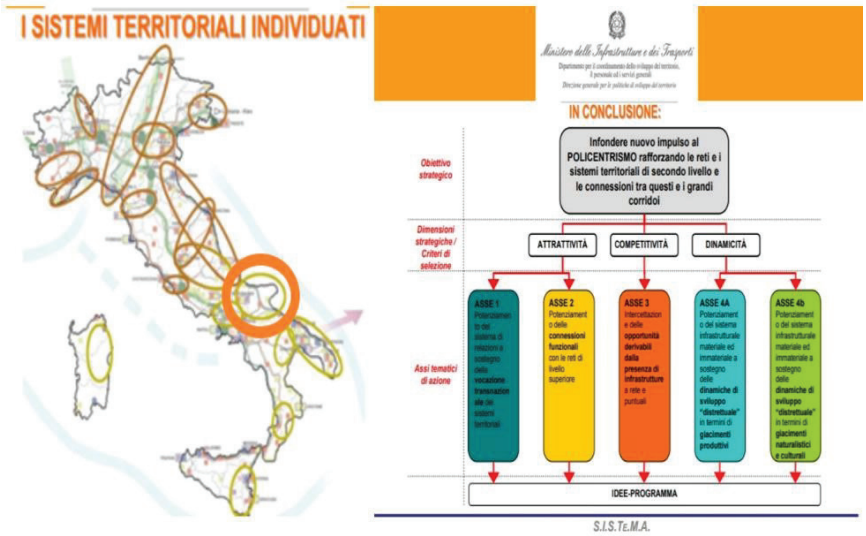


Figure 6. Integrated Development of Multi-Action Territorial Systems S.I.S.Te.M.A. of the Italian Ministry of Infrastructure and Transport.

Source: Italian Ministry of Infrastructure and Transport (MIT).

The strategic relevance of smart mobility in Foggia is reinforced by the socio-economic challenges of the territory. The province is characterised by low income levels, demographic dispersion and accessibility constraints. According to the material analysed, Foggia ranked 98th out of 107 Italian provinces in the 2025 Quality of Life ranking and remains affected by weak

indicators in wealth, services and safety. At the same time, the province displays a low population density, around 86–89 inhabitants per km², below the Apulian, Italian and EU averages.

These conditions make the accessibility objective of Regulation (EU) 2024/1679 particularly relevant. Article 50 emphasises seamless mobility for vulnerable users, people living in remote or rural areas, and those affected by transport poverty. Foggia fits both dimensions: it is located in a low-density and partly rural province, and it faces significant income and service-access challenges. The paper therefore interprets sustainable mobility not only as an environmental policy, but also as a tool for social inclusion and territorial justice.

Table 7. Opportunities and Constraints for Foggia as a Smart Mobility Node

Opportunities	Constraints
Strategic position in southern Italy between the Adriatic Sea, the Tyrrhenian Sea and inland areas	Low income and transport poverty risks
Rail, airport, road and logistics assets	Need for stronger intermodal integration
Proximity to Adriatic ports	Dependence on external port gateways
Smart City and digital platforms	Need for full integration with PUMS
Infrastructure investments and university presence	Weak quality-of-life indicators and low population density

Source: Authors' elaboration.

At the same time, Foggia presents signs of territorial competitiveness. The area has recorded strong value-added growth, with a reported increase of 4.22% in 2024, and it is supported by planned infrastructure investments, university capital, integrated tourism assets and innovation-oriented initiatives. The CIS[5] Area of Foggia finances projects of more than €250 million, with transport absorbing around 53% of resources, followed by competitiveness, tourism and research.

6.7 Urban Security and Digital Control as Enabling Conditions

Urban security is another dimension of Foggia's smart city strategy. The municipality has introduced technological systems to improve territorial control and public safety.

The *"Occhio del Ciclope"* video-surveillance project involves public financing and municipal co-financing for a total of €550,000, with the aim of installing and integrating cameras in strategic urban areas to prevent crime, vandalism and degradation. This intervention is linked to the activation of a modern operational centre within the Local Police Command. A network of 270 cameras located in key city areas allows continuous monitoring of the urban territory, integrating video surveillance, real-time intervention management and coordination between the control room and local patrols.

Although urban security is not traditionally part of transport planning, it is increasingly relevant for sustainable mobility. Safe streets and stations monitor public spaces and reliable timely and digital infrastructures improve walkability, public transport attractiveness and the perceived quality of urban mobility. In this respect, security technologies can be interpreted as enabling conditions for smart and inclusive mobility.

[5] Institutional Development Contracts (CIS) are negotiated planning instruments aimed at accelerating the implementation of strategic projects of national, interregional, and regional significance that are functionally interconnected and require an integrated approach.

6.8 The Transferable Policy Logic for Albania and the Western Balkans

The Foggia case offers a useful reference for Albania and other Western Balkan countries. The key lesson is not the simple replication of infrastructure, but the construction of an integrated governance model linking corridors, local mobility, logistics, digital systems and territorial development.

For Albania, where the TEN-T extension and Corridor VIII are central to EU integration, the experience suggests the importance of strengthening multi-level coordination among national institutions, municipalities, port authorities, business associations and regional development actors. A Foggia-inspired approach would imply treating urban nodes such as Durrës, Tirana and Vlorë not only as local transport centres, but as strategic platforms for EU integration. This requires integrated planning of ports, rail connections, road access, logistics areas, airport accessibility, smart mobility and urban sustainability. Such an approach could support Albania's gradual integration into the EU single market and improve its position within the Western Balkans–Eastern Mediterranean corridor.

In this sense, Foggia contributes to the paper's central argument: secondary urban nodes can play macro-regional roles when they combine spatial centrality, multimodal assets, institutional planning and smart mobility governance. The city demonstrates that sustainable mobility can become a bridge between local development and European integration.

7. Results and discussion

The analysis suggests that the Municipality of Foggia represents a relevant example of how a secondary urban node within the TEN-T framework can perform functions that go beyond its local administrative boundaries. Although not a metropolitan core such as Milan, Rome or Naples, Foggia occupies a strategic position at the intersection of Southern Italy, the Adriatic gateway and the Western Balkans corridor system.

This confirms the growing literature showing that medium-sized cities may generate substantial cohesion effects when embedded in wider transport networks and supported by coordinated governance mechanisms (ESPON, 2020; Vickerman, 2018). The case study also confirms that infrastructure alone is insufficient. The effectiveness of transport nodes increasingly depends on the capacity of local institutions to integrate rail, road, air, logistics and digital systems into a coherent mobility strategy (Papa & Bertolini, 2015; European Commission, 2023a).

In this respect, Foggia's experience demonstrates the importance of municipal planning instruments such as the Sustainable Urban Mobility Plan (PUMS), which translates European strategic priorities into local implementation measures.

7.1 Foggia as a Strategic Secondary TEN-T Node

The evidence presented in Section 6 indicates that Foggia benefits from a rare combination of territorial assets: rail junction functions, proximity to Adriatic ports, airport accessibility, logistics platforms and links to major north–south and east–west corridors. This supports the argument that secondary nodes may reduce territorial imbalances by redistributing accessibility away from already congested metropolitan areas (Banister, 2011; Capello, 2018).

The forthcoming high-speed rail station and upgraded multimodal facilities are particularly relevant. Improved rail accessibility can enlarge labour markets, attract investment and strengthen business connectivity (Chen & Hall, 2011). At the same time, connections with Bari, Brindisi, Naples, Rome and the Adriatic coast increase Foggia's potential role as an inland gateway serving both domestic and international flows.

From a macro-regional perspective, this is significant because Southern Italy often suffers from lower accessibility indicators than Northern Europe. Therefore, strengthening nodes such as Foggia contributes not only to local development but also to the territorial rebalancing objectives of EU cohesion policy (Crescenzi & Rodríguez-Pose, 2012).

7.2 Governance Capacity and Sustainable Mobility Planning

A second major result concerns governance. The case demonstrates that municipal institutions can act as policy entrepreneurs when they align local strategies with national and European frameworks. Foggia's PUMS, municipal resolutions and smart-city initiatives show how local governments may operationalise broad EU goals such as decarbonisation, multimodality and digitalisation.

This is coherent with the EU Recommendation on Sustainable Urban Mobility Planning, which stresses participation, evidence-based planning and long-term monitoring (European Commission, 2023b). The local adoption of electric buses, charging systems, intelligent traffic management and digital platforms suggests an incremental transition toward a low-carbon mobility model.

Importantly, governance innovation is not limited to infrastructure delivery. It also concerns coordination among municipalities, transport operators, port authorities, business associations and universities. In lagging regions, this institutional coordination is often more decisive than funding alone (Rodríguez-Pose & Garcilazo, 2015). Foggia's evolving planning framework therefore illustrates how governance quality can become a development asset.

This vision is confirmed by the EU Agenda for Cities, which represents a strategic framework aimed at strengthening the role of urban centers in the implementation of European policies. Presented on December 3, 2025, the agenda is based on a broad participatory process and involves urban actors from all over Europe.

7.3 Relevance for Western Balkans Integration

A third result is the broader geopolitical relevance of the case. The Western Balkans remain characterised by fragmented rail systems, border bottlenecks and uneven logistics performance (Transport Community, 2024; World Bank, 2023). In this context, neighbouring EU territories such as Apulia can function as integration platforms. Foggia's location on the Adriatic side of Italy gives it potential importance in future east–west connectivity scenarios involving Albania, Montenegro and Corridor VIII links toward the Black Sea region. Its intermodal system may facilitate passenger exchanges, trade logistics, tourism flows and business cooperation. Thus, local mobility investments can generate spillovers beyond national borders. This finding reinforces the concept that EU enlargement is not only a diplomatic or legal process, but also an infrastructural and territorial one. Integration advances when neighbouring regions become physically connected through reliable and sustainable mobility systems (Dimitrov et al., 2022; European Commission, 2024).

7.4 Limits and Critical Issues

Despite these positive elements, several constraints remain. Foggia continues to face socio-economic fragilities, including lower income levels, unemployment, security concerns and service gaps. These structural weaknesses may reduce the developmental impact of transport investments if not accompanied by broader economic and social policies.

Moreover, infrastructure projects often suffer delays, fragmented competencies and discontinuity in political commitment. Without stable financing and institutional continuity, the transformative potential of TEN-T urban nodes may remain only partially realised (OECD, 2021).

Finally, sustainable mobility objectives require behavioural change, reliable public transport, integrated planning, scheduling and ticketing systems. Physical infrastructure alone does not guarantee modal shift unless accompanied by affordability, service quality and accessibility measures (Banister, 2008).

Overall, the case study supports three main propositions. First, secondary urban nodes can play strategic roles in macro-regional cohesion. Second, municipal governance is central to translating TEN-T objectives into practical urban mobility outcomes. Third, investments in Southern Italian nodes may indirectly support Western Balkans EU integration by improve Adriatic connectivity and through Corridor VIII with the Black Sea. Table 8 summarises these findings.

Table 8. Main Results of the Foggia Case Study.

Dimension	Main Finding	Wider Implication
Territorial role	Foggia functions as multimodal secondary node	Reduces peripheral isolation
Governance	PUMS and smart planning improve coordination	Stronger local implementation capacity
Sustainability	Electric mobility and digital tools emerging	Supports decarbonisation targets
Macro-regional role	Gateway toward Adriatic and Balkans	Supports enlargement connectivity
Main risks	Socio-economic fragility and delays	Need for integrated policy support

Source: Authors' elaboration.

8. Conclusion and policy implication

This paper examined the strategic role of Foggia Municipality within the evolving TEN-T framework and its potential contribution to Western Balkans integration through sustainable urban mobility governance.

The analysis shows that medium-sized cities located in corridor intersections may perform functions traditionally associated with larger metropolitan centres, particularly when they combine geographic centrality, multimodal assets and proactive governance.

Foggia emerges as a significant case because it links Southern Italy to Adriatic and Balkan routes while simultaneously pursuing internal urban modernisation through planning tools such as the PUMS, digitalisation measures and cleaner mobility investments. The municipality therefore illustrates how local governments can become active agents of European territorial integration rather than passive recipients of infrastructure policy. Especially, the EU Agenda for Cities confirms their importance in the strategic vision of the European Union.

The paper also contributes to the literature by highlighting the relationship between TEN-T governance and enlargement policy. Connectivity with the Western Balkans should be interpreted

not only as a matter of cross-border infrastructure, but also as a network of functional urban nodes capable of supporting trade, logistics, tourism and institutional convergence.

In this perspective, Foggia and the wider Apulia region may serve as a bridge between the EU core and accession countries across the Adriatic basin.

From the study, several policy implications emerge. First, EU and national authorities should pay greater attention to secondary TEN-T urban nodes. These cities can generate high territorial returns at lower cost than already saturated metropolitan hubs. Targeted investment in rail accessibility, logistics platforms and intermodality can strengthen cohesion and resilience.

Second, municipal planning capacity should be reinforced. Technical assistance, digital tools and stable funding are essential for updating PUMS strategies in line with Regulation (EU) 2024/1679 and the Sustainable Urban Mobility framework.

Third, Adriatic cooperation should be expanded through programmes linking Italian and Western Balkan cities, ports and logistics zones. Joint projects in customs digitalisation, green corridors, multimodal freight and tourism mobility would accelerate regional convergence.

Fourth, transport policy must remain socially inclusive. In areas with lower income levels, economic accessibility and the quantity/quality of public services, integrated and sustainable, are crucial for the quality of life for citizens. Sustainable mobility must, therefore, produce real social benefits for people and improve the attractiveness, trade, and territorial competitiveness for businesses.

In conclusion, the Foggia case demonstrates that European integration increasingly depends on the effectiveness of local places embedded in transnational networks. Sustainable mobility, when combined with institutional capacity and territorial vision, can transform peripheral cities into strategic gateways. Moreover, for the Western Balkans enlargement agenda, this means that progress may come not only from Brussels or national capitals, but also from dynamic municipalities capable of connecting regions, markets and communities across borders.

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EARLY CHILDHOOD DEVELOPMENT IN THE MODERN ERA: CHALLENGES AND MULTISYSTEM PERSPECTIVES

Adriana Qafa[1], **Silvana Delia**[2]

[1] Department of Education Sciences and Vocational Training
"Barleti" University, Tiranë
[2] Department of Physical Education and Sports
"Barleti" University, Tiranë

Corresponding author: edu.co@umb.edu.al
(ORCID: 0009-0006-1783-4249)

Abstract

Early childhood development (ECD) is a critical stage of human life in which cognitive, socio-emotional, and linguistic foundations are established, shaping long-term educational achievement, psychological well-being, and overall life outcomes. In the modern era, ECD is increasingly influenced by globalization, digital transformation, and changing family structures, which create both opportunities and challenges for optimal development.

This study conceptualizes early childhood development as a multidimensional process shaped by the interaction of family environments, educational settings, and digital technologies. These interconnected systems influence children's developmental trajectories in both direct and indirect ways. While contemporary changes have expanded access to learning resources and cognitive stimulation, they also introduce risks related to socio-emotional development, attention regulation, and behavioral stability.

A mixed-methods research design was applied, combining a systematic review of international literature with empirical data collection. Primary data were collected from 120 participants, including parents and early childhood educators, through structured questionnaires and semi-structured interviews. Quantitative data were analyzed using descriptive statistical methods, while qualitative data were examined through thematic analysis to identify key patterns and influencing factors.

Findings show that supportive and emotionally stable caregiving environments enhance children's socio-emotional development, cognitive engagement, and learning outcomes. Play-based, interactive approaches foster creativity, communication, and problem-solving skills, while excessive and unregulated digital exposure is linked to reduced attention, weaker emotional regulation, and limited social interaction. Parental stress remains a key risk factor influencing children's development and behavior.

The study emphasizes early intervention, educator development, and parental engagement. Overall, effective ECD in contemporary contexts requires integrated, multisystem approaches that balance family support, educational quality, and responsible digital use to ensure sustainable child development outcomes.

Keywords: early childhood development, multisystem perspective, socio-emotional development, digital exposure, early intervention.

1. Introduction

Early childhood development (ECD) is widely recognized as a foundational stage in human development, influencing long-term academic achievement, psychological well-being, and social functioning (Shonkoff and Phillips 2000; Heckman 2006). During this critical period, children rapidly develop essential cognitive, emotional, and linguistic competencies that form the basis for lifelong learning, behavior, and health (Center on the Developing Child 2016; Thompson 2014). Brain development is particularly dynamic in early childhood, with neural plasticity making children highly responsive to environmental influences, both positive and negative (Nelson and Sheridan 2011). Consequently, early experiences play a decisive role in shaping developmental trajectories and future opportunities (Black et al. 2017).

In recent decades, childhood environments have undergone significant transformation due to globalization, technological advancement, and changing family dynamics (UNICEF 2019; Livingstone et al. 2017). Increased access to digital technologies, shifting parenting roles, and evolving socio-economic conditions have redefined the contexts in which children grow and learn (OECD 2020). On one hand, these changes have expanded access to educational resources and cognitive stimulation (Plowman et al. 2012). On the other hand, they have introduced new developmental risks, including excessive screen exposure, reduced face-to-face interaction, and challenges related to attention regulation and emotional stability (Radesky et al. 2015; Twenge and Campbell 2018). These dual influences highlight the complexity of modern childhood and the need for balanced developmental approaches (Gottschalk 2019).

Furthermore, family environments continue to play a central role in early development. Supportive, responsive, and emotionally stable caregiving fosters secure attachment, emotional regulation, and positive social behaviors (Ainsworth et al. 1978; Bowlby 1988). In contrast, adverse conditions such as parental stress, economic hardship, or inconsistent caregiving are associated with negative developmental outcomes, including behavioral difficulties and reduced emotional competence (Abidin 1992; Conger et al. 2010). At the same time, early childhood education settings significantly contribute to cognitive and socio-emotional growth, particularly when they employ play-based, interactive, and child-centered pedagogies (Hirsh-Pasek et al. 2009; Sylva et al. 2004).

Given these interrelated influences, this study adopts a multisystem perspective to explore early childhood development. Drawing on ecological systems theory, it emphasizes the dynamic interaction between family environments, educational practices, and digital exposure (Bronfenbrenner 1979; Bronfenbrenner and Morris 2006). These systems do not operate in isolation but continuously interact to shape children's developmental outcomes in both direct and indirect ways (Sameroff 2009). By examining these relationships, the study aims to provide a comprehensive understanding of the factors that support or hinder optimal child development in contemporary contexts.

2. Literature Review

Child development is a highly complex process that results from the continuous interaction of biological predispositions and multiple layers of environmental influence. Contemporary developmental theories emphasize that growth cannot be understood in isolation, but rather through the dynamic relationship between the child and the contexts in which they develop. Ecological systems theory offers a comprehensive framework for explaining this interaction by highlighting the interdependence of family, educational, and societal systems that shape developmental pathways (Bronfenbrenner 1979; Bronfenbrenner and Morris 2006; Tudge et al. 2009). From this perspective, children actively engage with their environments, and development is constructed through ongoing reciprocal exchanges over time (Sameroff 2009; Lerner 2006).

Within these interconnected systems, the family remains the most influential early context for development. A large body of research indicates that warm, responsive, and consistent caregiving practices are closely linked to secure attachment formation, which serves as a foundation for later emotional regulation and social functioning (Ainsworth et al. 1978; Bowlby 1988; Sroufe 2005). When caregivers respond appropriately to children's emotional and physical needs, children are more likely to develop trust, self-regulation, and adaptive social behavior. Conversely, environments marked by chronic stress, instability, or limited emotional responsiveness may compromise socio-emotional growth and increase vulnerability to behavioral and emotional difficulties (Center on the Developing Child 2016; Conger et al. 2010; Evans and English 2002). This body of literature supports the assumption that variations in caregiving quality play a significant role in shaping early developmental outcomes.

Early childhood education also represents a critical developmental context, particularly through pedagogical approaches that prioritize active engagement. Play-based learning is widely recognized as an effective method for supporting holistic development, as it allows children to explore, experiment, and construct knowledge through direct interaction with their environment (Hirsh-Pasek et al. 2009; Weisberg et al. 2013). Such approaches contribute to the development of cognitive flexibility, creativity, communication abilities, and early problem-solving skills (Zosh et al. 2017; Sylva et al. 2004). In addition, child-centered and interactive learning environments have been associated with increased motivation and sustained engagement in learning activities (Bodrova and Leong 2007; OECD 2020). These findings suggest that pedagogical strategies during early childhood significantly influence both cognitive and socio-emotional development.

In parallel, the rapid expansion of digital technologies has reshaped the environments in which children grow and learn. Digital media can offer educational opportunities and cognitive stimulation when appropriately designed and guided, particularly through interactive and educational content (Plowman et al. 2012; Neumann 2014). However, concerns have emerged regarding the developmental consequences of excessive or unregulated screen exposure. Research has linked high levels of screen time to reduced attention capacity, delays in language acquisition, and weaker emotional and behavioral self-regulation (Radesky et al. 2015; Madigan et al. 2019; Twenge and Campbell 2018). Additionally, prolonged passive media use may reduce opportunities for social interaction and experiential learning, which are essential during early childhood

(Livingstone et al. 2017; Valkenburg et al. 2021). These findings indicate that the impact of digital exposure is highly dependent on intensity, content, and parental mediation.

Parental well-being is another critical factor influencing early developmental trajectories. Elevated levels of stress in parents have been associated with reduced emotional availability, less consistent parenting practices, and increased negative interactions within the parent–child relationship (Abidin 1992; Deater-Deckard 2004; Crnic and Low 2002). Such conditions can weaken the emotional security of the child and negatively influence behavioral regulation and adjustment (Cummings et al. 2000; Neece et al. 2012). In addition, parental stress may indirectly limit opportunities for developmental enrichment, such as shared play, reading, and communication activities within the home environment.

Taken together, the literature highlights that early childhood development emerges from the combined influence of multiple interrelated systems rather than from any single factor. Developmental outcomes are most favorable when family support, educational quality, and digital exposure are well balanced and mutually reinforcing. In contrast, disruptions within any of these systems may create developmental risks or limit optimal growth (Bronfenbrenner and Morris 2006; Sameroff 2009; Shonkoff and Fisher 2013). Based on this synthesis, the study conceptualizes development as a multisystem process in which environmental quality, caregiving conditions, educational practices, and digital experiences jointly shape early developmental outcomes.

3. Methodologjy

3.1 *Research Design*

Data were gathered through the use of two complementary methods: structured questionnaires and semi-structured interviews, with the purpose of capturing both measurable trends and more detailed experiential perspectives related to early childhood development.

The structured questionnaires were developed to obtain standardized information on key variables relevant to the study, such as the quality of caregiving practices, the extent of children's exposure to digital devices, and caregivers' perceptions of developmental progress. Responses were recorded using Likert-type scales, which allowed participants to indicate levels of agreement or frequency in a consistent format. This approach made it possible to transform subjective perceptions into quantifiable data suitable for statistical examination, enabling the identification of general tendencies and comparisons across the sample (Bryman 2016). The standardized nature of the instrument also ensured consistency in data collection across all participants, supporting the reliability of the quantitative findings.

Alongside this, semi-structured interviews were carried out with a smaller group of participants in order to gain a deeper understanding of personal experiences and contextual factors influencing child development. This qualitative method enabled parents and educators to describe in their own words their views on caregiving practices, the role of digital technologies in children's daily lives, and the challenges they face in supporting healthy development. The flexible format of the interviews allowed the discussion to expand beyond predefined questions, making it possible to

capture richer and more nuanced information that is often not accessible through standardized surveys (Kvale and Brinkmann 2015).

By combining these two methods, the study achieved methodological triangulation, meaning that findings from different data sources were compared and interpreted together. This approach increases the strength of the analysis by reducing the limitations of relying on a single method and by providing a more complete understanding of the research problem. Integrating quantitative structure with qualitative depth contributed to greater data richness, interpretive depth, and overall credibility of the study findings (Flick 2018).

3.2 Participants

This study involved a total of 120 participants, including parents and early childhood educators. The inclusion of these two groups was intentional, as it enabled the research to capture perspectives from both the family environment and the educational setting, which are widely recognized as the most influential contexts in early childhood development (Bronfenbrenner 1979; Sameroff 2009). Participants were selected based on their direct experience with young children, ensuring that all responses were grounded in practical involvement. Parents represented the primary caregiving environment, where children develop early emotional bonds, daily routines, and initial learning experiences. Their contributions provided insight into caregiving practices, household conditions, digital media use, and parental stress, all of which are known to significantly influence early developmental outcomes (Bowlby 1988; Abidin 1992; Center on the Developing Child 2016).

Early childhood educators represented the structured educational environment and contributed professional observations regarding children's learning behaviors, communication skills, engagement, and socio-emotional interactions within group settings. Educators play a key role in identifying developmental patterns in social and learning contexts beyond the home environment (OECD 2020; Sylva et al. 2004).

By combining these two groups, the study adopted a multisystem perspective that recognizes child development as the result of interactions between multiple environments rather than a single context (Bronfenbrenner 1979; Sameroff 2009; Bronfenbrenner and Morris 2006). This approach strengthens the depth and validity of the findings by integrating complementary viewpoints from both home and school settings.

3.3 Data Collection

Data collection was designed to obtain both *quantitative evidence* and *qualitative insights* in order to better understand early childhood development from multiple perspectives. For this purpose, the study used two complementary methods: structured questionnaires and semi-structured interviews.

The structured questionnaires were used to gather uniform and comparable information from all participants. They focused on three main areas: caregiving practices, children's exposure to digital media, and perceived developmental outcomes. Caregiving practices were examined through aspects such as emotional support, consistency in daily routines, and parental involvement in learning activities. Digital exposure was assessed by considering how often children use digital devices, how much time they spend on them, and the type of content they are exposed to. Perceived

developmental outcomes included indicators such as attention span, emotional control, communication abilities, and social interaction. This structured format allowed responses to be organized in a way that made them suitable for statistical interpretation and pattern identification (Bryman 2016).

Alongside this, semi-structured interviews were carried out to gain a deeper understanding of participants' experiences and viewpoints. This method allowed parents and educators to speak freely about their daily interactions with children and to explain situations that could not be fully captured through fixed-response questions. Topics discussed included challenges in caregiving, the influence of digital technology on children's behavior, and observations of learning and emotional development in different environments. The flexible nature of this approach made it possible to explore unexpected but relevant issues that emerged during the conversations (Kvale and Brinkmann 2015).

Using both methods together allowed the study to combine structured measurement with detailed personal accounts. This helped create a more complete picture of early childhood development by linking observable patterns with real-life experiences. As a result, the data collection process strengthened the overall depth and clarity of the study findings while maintaining methodological balance (Flick 2018).

3.4 Data Analysis

The analysis of data in this study followed a *mixed analytical strategy*, combining quantitative summarization with qualitative interpretation in order to better understand early childhood development as a multidimensional process. This approach is consistent with mixed-methods research principles, which emphasize the integration of numerical trends with contextual meaning to improve depth of interpretation (Creswell and Plano Clark 2018; Tashakkori and Teddlie 2010). For the *quantitative component*, descriptive statistical techniques were applied to the data obtained from structured questionnaires. The purpose of this stage was to organize and simplify the dataset in order to identify general tendencies related to caregiving practices, digital exposure, and child developmental indicators. Measures such as frequencies, percentages, and mean values were used to summarize participant responses and highlight distribution patterns across the sample. This type of analysis is particularly useful in exploratory research, as it provides a clear overview of variables without imposing causal assumptions (Bryman 2016; Field 2018). In addition, descriptive statistics allowed for the comparison of responses between parents and educators, contributing to a clearer understanding of contextual differences across environments.

For the *qualitative component*, thematic analysis was conducted on the data obtained from semi-structured interviews. This method involved a systematic process of examining interview transcripts to identify repeated ideas, concepts, and patterns within participants' narratives. The analysis began with repeated reading of the data to ensure familiarity, followed by initial coding of meaningful statements. These codes were then organized into broader themes that reflected key aspects of caregiving experiences, digital media use, and perceptions of child development outcomes. Thematic analysis is widely recognized as an effective method for interpreting

qualitative data, particularly in studies focusing on human experiences and social behavior (Braun and Clarke 2006; Clarke and Braun 2013).

Through this process, several interconnected themes emerged, including variations in caregiving quality, differences in digital media regulation, and contrasting perceptions of child behavior across home and educational settings. These themes provided a deeper understanding of how environmental factors influence early childhood development in practice.

Finally, the integration of quantitative and qualitative findings was carried out during the interpretation phase. This step allowed the study to compare statistical trends with participants lived experiences, ensuring that numerical patterns were supported and explained by contextual insights. Such triangulation strengthens the validity of research findings by reducing the limitations associated with using a single method of analysis (Flick 2018; Denzin 2012). The combined analytical approach therefore contributed to a more holistic and reliable understanding of early childhood development as a process shaped by multiple interacting systems (Bronfenbrenner and Morris 2006; Sameroff 2009).

4. Results

The analysis of the collected data highlights several consistent patterns regarding the main factors influencing early childhood development, particularly across caregiving environments, educational practices, digital exposure, and parental well-being.

The findings first indicate that *the quality of caregiving in the home environment plays a central role in children's socio-emotional and cognitive development*. Children who are exposed to stable, responsive, and emotionally supportive caregiving tend to show better emotional regulation, more positive social interactions, and higher engagement in learning activities. In contrast, when caregiving is inconsistent or emotionally less responsive, children are more likely to display difficulties in behavior regulation and reduced participation in learning processes. This pattern reflects the importance of early relational experiences in shaping developmental outcomes (Bowlby 1988; Center on the Developing Child 2016).

Secondly, the results show *that play-oriented and interactive learning approaches contribute positively to multiple areas of development*. Both parents and educators reported that children demonstrate higher levels of curiosity, communication, and active participation when learning activities involve exploration, interaction, and play-based methods. Such environments appear to support not only cognitive development but also social skills and creativity, confirming the value of experiential learning in early education settings (Hirsh-Pasek et al. 2009; Sylva et al. 2004).

A further important finding relates to *digital media exposure during early childhood*. The data suggest that when screen use is frequent and not well-regulated, children are more likely to experience difficulties in sustaining attention, regulating emotions, and engaging in social interaction with peers. Parents and educators also observed that excessive reliance on digital devices may reduce children's interest in non-digital play and face-to-face communication. These outcomes are consistent with concerns in the literature regarding the developmental risks of high and unstructured screen exposure (Radesky et al. 2015; Twenge and Campbell 2018).

Finally, the analysis identifies *parental stress as an important influencing factor in child development*. Higher levels of stress among parents were associated with reduced emotional availability, less consistent caregiving routines, and increased behavioral challenges in children. Participants indicated that when parents experience pressure or emotional exhaustion, their ability to engage in supportive interactions and structured developmental activities decreases significantly. This pattern supports existing evidence that parental stress can negatively affect parenting quality and, consequently, child developmental stability (Abidin 1992; Deater-Deckard 2004).

Overall, the results suggest that early childhood development is strongly shaped by the interaction of multiple environmental factors. Positive caregiving practices and interactive educational approaches support healthy development, while excessive digital exposure and elevated parental stress may hinder emotional, social, and cognitive outcomes.

5. Discussion

The results of this study provide evidence that early childhood development should be understood as a *multidimensional and interdependent process*, rather than the outcome of isolated influences. The findings clearly indicate that children's developmental trajectories are shaped through the continuous interaction between family conditions, educational experiences, digital environments, and parental well-being. This supports systemic views of development, which argue that change occurs through reciprocal relationships between the child and surrounding environments over time (Bronfenbrenner 1979; Bronfenbrenner and Morris 2006; Sameroff 2009).

One of the most prominent insights concerns the role of the *family environment*, particularly the quality of caregiving. The results show that emotionally responsive and stable caregiving is closely linked with stronger socio-emotional functioning, improved behavioral regulation, and higher engagement in learning activities. This can be interpreted as evidence that early relational stability provides a foundational structure for later developmental competencies. Such findings are consistent with attachment-based perspectives, which emphasize the importance of secure early relationships for emotional and social development (Bowlby 1988; Ainsworth et al. 1978). From a broader developmental systems view, caregiving quality appears to function as a stabilizing factor that supports children's adaptation to other environments, including school settings.

The study also highlights the importance of *educational experiences*, particularly those based on play and interaction. Children exposed to more participatory and exploratory learning environments demonstrated higher levels of creativity, communication, and problem-solving. This suggests that learning in early childhood is most effective when it is active and socially embedded, rather than passive or purely instruction-based. These findings align with research on experiential learning, which emphasizes the role of engagement and exploration in cognitive development (Hirsh-Pasek et al. 2009; Weisberg et al. 2013). However, the results also imply that the effectiveness of educational practices may depend on conditions outside the classroom, especially family support and emotional stability.

A further important dimension emerging from the study is the influence of *digital exposure*. The data suggest that unregulated and excessive use of digital devices is associated with difficulties in

maintaining attention, weaker emotional control, and reduced social interaction among children. This indicates that digital environments are not neutral; rather, they actively shape developmental processes depending on how, when, and how much they are used. These findings are consistent with concerns raised in previous research regarding early screen exposure and developmental risks (Radesky et al. 2015; Twenge and Campbell 2018). A critical interpretation of this result suggests that the developmental impact of technology is highly context-dependent and should be understood in relation to caregiving practices and adult mediation.

The role of *parental stress* also emerges as a significant factor influencing developmental outcomes. Higher levels of stress were associated with reduced emotional availability, less consistent caregiving behavior, and more behavioral difficulties in children. This indicates that parental well-being is not only an individual factor but also a structural influence that shapes the quality of the family environment. When stress levels are elevated, the capacity of parents to provide stable emotional support and engage in enriching interactions appears to decline, which in turn affects child development outcomes (Abidin 1992; Deater-Deckard 2004). From a systemic perspective, parental stress can therefore be seen as a factor that weakens the overall functioning of the family system.

Overall, the findings suggest that early childhood development is best understood through an integrated *systems perspective*, where multiple environments operate simultaneously and influence each other. Rather than acting independently, family, education, digital exposure, and parental well-being form an interconnected network of influences. The implications of this are important: interventions aimed at improving child development should not focus on a single domain, but instead address the relationships between systems.

In conclusion, this study contributes to a more nuanced understanding of early development by emphasizing interactional processes rather than isolated determinants. It highlights the need for coordinated approaches that support families, strengthen educational practices, and guide digital exposure in early childhood contexts.

6. Conclusion and Recommendations

This study conceptualizes early childhood development as a complex and multidimensional process, shaped through continuous interactions among the main contexts of a child's life, including the family, educational institutions, and the digital environment. The findings indicate that development is not the result of a single influencing factor, but rather of an interconnected system of relationships that evolve over time, in line with ecological and transactional approaches to development (Bronfenbrenner 1979; Bronfenbrenner & Morris 2006; Sameroff 2009). This implies that children's daily experiences and the quality of interactions they encounter across different environments jointly contribute to shaping developmental outcomes.

Within this framework, secure and emotionally responsive relationships with caregivers emerge as a key factor for children's well-being. Children raised in environments where parents are attentive and responsive to their needs are more likely to develop self-confidence, emotional regulation skills, and active engagement in learning, supporting attachment theory perspectives (Bowlby

1988; Ainsworth et al. 1978). Furthermore, previous research has shown that warm and consistent interactions directly contribute to the development of executive functions and later academic success (Shonkoff & Phillips 2000).

From an educational perspective, child-centered practices, particularly those based on play and exploration, create optimal conditions for the development of cognitive and social skills. Through play, children learn to communicate, solve problems, and interact with others in active ways, reinforcing existing evidence on experiential learning (Hirsh-Pasek et al. 2009; Sylva et al. 2004; Piaget 1962). These approaches also foster creativity and critical thinking from an early age.

However, the study also highlights factors that may hinder optimal development. Excessive and unregulated exposure to digital media is associated with difficulties in attention, emotional self-regulation, and reduced social interaction with peers (Radesky et al. 2015; Twenge & Campbell 2018; Madigan et al. 2019). These effects are particularly evident when technology use replaces direct interaction with adults or physical and social activities (American Academy of Pediatrics 2016).

Another important factor is parental stress, which has an indirect yet significant impact on child development. High levels of stress can limit parents' ability to provide consistent and responsive care, negatively affecting the parent–child relationship and the child's emotional stability (Abidin 1992; Deater-Deckard 2004). Research further suggests that chronic family stress is associated with increased behavioral problems and socio-emotional difficulties in children (Evans et al. 2013).

Overall, these findings emphasize that early childhood development should be understood as the outcome of continuous interactions between protective and risk factors. An environment that combines responsive caregiving, high-quality educational experiences, and balanced use of technology creates more favorable conditions for healthy and sustainable child development.

Taking into account that the quality of parental caregiving is essential for children's socio-emotional development and self-regulation, it is recommended to develop practical parenting programs that specifically focus on building secure relationships, responding to children's emotional needs, and managing stressful situations in daily life (Center on the Developing Child 2016; Shonkoff & Fisher 2013). These interventions should be accessible from the early stages of parenthood in order to prevent later difficulties.

Given that play-based and interactive teaching supports cognitive and social development, it is recommended that early childhood education institutions more systematically integrate exploratory activities, symbolic play, and collaborative learning into their curricula, while also investing in continuous professional training for educators to effectively implement these methods (Hirsh-Pasek et al. 2009; OECD 2020).

In relation to the negative impact of excessive digital media exposure, it is suggested to develop clear and practical guidelines for families that define time limits, promote age-appropriate educational content, and encourage joint media use between parents and children to maintain social interaction (Livingstone et al. 2017; Radesky et al. 2015; WHO 2019).

Since parental stress was identified as a factor that negatively affects the quality of caregiving, it is recommended that social policies and community services include support for parents' mental health through counseling, support groups, and measures that facilitate work–family balance (Abidin 1992; Deater-Deckard 2004).

To address the need for consistency in children's developmental experiences, strengthening communication and collaboration between families and educational institutions is recommended, through regular meetings, information exchange, and the establishment of shared developmental goals for the child (Bronfenbrenner & Morris 2006; Sameroff 2009).

Finally, given that early development is a long-term process influenced by context, future research should employ longitudinal designs and cross-cultural comparative approaches to better understand how different factors shape child development across diverse social and economic conditions (Lerner 2006; UNICEF 2019).

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THE EFFECTIVENESS OF PROGRESSIVE MUSCLE RELAXATION IN REDUCING ANXIETY SYMPTOMS AMONG UNIVERSITY STUDENTS

Ardiola Bodinaku

Department of Behavioral Sciences, Barleti University, Tirana, Albania

a.bodinaku@umb.edu.al
(ORCID: 0009-0002-8081-9499)

ABSTRACT

Anxiety is considered one of the most common psychological difficulties among university students and has a significant impact on emotional well-being, academic functioning, and overall quality of life. Anxiety symptoms are associated with increased emotional distress, difficulties in concentration, impaired daily functioning, and reduced adaptive coping abilities. Within this context, Progressive Muscle Relaxation (PMR) has been identified as an effective non-pharmacological psychological intervention for reducing anxiety symptoms and promoting emotional regulation.

The aim of this study was to investigate the impact of Progressive Muscle Relaxation on anxiety symptoms among university students. A quasi-experimental research design was implemented in which Progressive Muscle Relaxation techniques were applied to university students aged 19 to 25 years presenting mild to moderate anxiety symptoms.

The study sample consisted of 100 university students selected through random sampling procedures. Anxiety levels were assessed before and after the intervention using the Generalized Anxiety Disorder Questionnaire (GAD-7). Participants attended weekly Progressive Muscle Relaxation sessions over a six-week period.

The findings demonstrated a reduction in anxiety symptoms following the implementation of Progressive Muscle Relaxation techniques, indicating the positive effects of the intervention on psychological well-being and emotional calmness. The results further suggest that Progressive Muscle Relaxation may contribute to improved stress management and better daily functioning among university students.

Overall, the findings support the use of Progressive Muscle Relaxation as an accessible and effective psychological intervention for anxiety management within university settings and student mental health services.

Keywords: anxiety, anxiety symptoms, progressive muscle relaxation, university students, psychological well-being.

1. Introduction

Anxiety disorders are considered among the most prevalent psychological concerns worldwide and are associated with significant consequences for emotional well-being, everyday functioning,

and overall quality of life. Anxiety is encountered across nearly all cultures and is linked to emotional distress, psychosomatic symptoms, decreased efficiency, and difficulties in social and academic functioning (Demyttenaere, 2004; Kessler, 2005). In particular, Generalized Anxiety Disorder (GAD) negatively affects interpersonal relationships, academic achievement, and individuals' adaptive abilities. Among university students, anxiety is highly prevalent, and studies report elevated prevalence rates during the university years (Bolden, 2008; Margarita, 2008).

Within behavioral approaches, Progressive Muscle Relaxation (PMR) has been regarded as an effective non-pharmacological intervention for anxiety management. Initially developed by Jacobson (1938), PMR is based on the systematic contraction and release of different muscle groups with the aim of achieving physical and emotional relaxation. This technique has been extensively utilized in psychotherapy, stress management, and mental health interventions due to its effectiveness in lowering physiological activation and emotional tension associated with anxiety. Various studies have demonstrated that progressive relaxation contributes to the reduction of anxiety symptoms, improvement of emotional control, as well as enhancement of psychological well-being and quality of life.

Although interest in behavioral interventions for anxiety treatment has increased considerably, there is still a continuing need for further research regarding the effectiveness of progressive relaxation techniques, especially among young adults and university populations. In this context, the present study aims to analyze the effectiveness of Progressive Muscle Relaxation in reducing anxiety symptoms and improving quality of life among individuals aged 20–25 years.

The study was developed using a quasi-experimental design, in which participants underwent Progressive Muscle Relaxation intervention and were evaluated before and after treatment through the Generalized Anxiety Disorder Questionnaire (GAD-7). The contribution of this study lies in providing empirical evidence regarding the effectiveness of progressive relaxation as a behavioral intervention in the treatment and management of anxiety.

The paper is organized into four main sections. The first section presents the theoretical background on anxiety and Progressive Muscle Relaxation. The second section addresses the methodology and study procedures. The third section presents the findings and interpretation of the results, while the final section discusses the conclusions and implications of the study for psychological practice and future research.

2. Literature Review

Anxiety is considered one of the most commonly experienced emotions and is defined as an unpleasant feeling of distress, tension, nervousness, fear, insecurity, or concern (Barlow, 2002;

Karatas, Alci & Aydin, 2013; Lenka & Kant, 2012). Usually, this emotional response is associated with the individual's perception of danger and threat and includes emotional, physiological, cognitive, and behavioral components (Hockenbury, 2010). The criterion for determining thenormality or pathology of anxiety levels may depend on its cause and intensity (Barker, 2009). In fact, moderate anxiety may motivate individuals to cope with difficulties and achieve success in their lives (Abolghasemi, Mehrabizadeh – Honarmand, Najarian & Shokrkon, 2004). However, anxiety may escalate and manifest itself in the form of psychological disorders. Anxiety disorders are considered among the most common forms of mental disorders and are present in almost all cultures (Demyttenaere, 2004). Epidemiological data indicate that they are experienced by approximately 18% of adults every year and by nearly 32% of individuals throughout their lifetime (Kessler, 2005). Anxiety negatively affects quality of life (Cramer, 2005; Rappaport et al., 2005; Saarni, 2007) and contributes to functional impairment (Bloom, 2011), causing occupational difficulties and decreased productivity (Greenberg et al., 1999; Ormel, 1994). Despite its prevalence and significance, only a limited number of individuals with anxiety disorders receive professional treatment (Wittchen, 2002).

Anxiety disorders may be classified depending on whether the anxious condition is persistent, as in the case of Generalized Anxiety Disorder (GAD) and Obsessive – Compulsive Disorder (OCD), or episodic and intermittent. Episodic anxiety disorders may be further categorized according to whether the source of anxiety is external, as in specific phobias, or internal, as in panic disorder. Intrusive thoughts also represent a characteristic feature of chronic anxiety, where excessive worry about real-life situations is typical of GAD, whereas the inability to evaluate the significance of unwanted thoughts and irrational obsessions is characteristic of OCD.

The term Generalized Anxiety Disorder (GAD) was first introduced with the publication of DSM-III (American Psychiatric Association, 1980). The basic characteristic of the disorder was persistent anxiety lasting for at least one month, and patients were required to meet three symptoms from four categories, including motor tension, autonomic hyperactivity, fearful expectation, and vigilance/control. In order to improve the broad and unclear diagnostic criteria of DSM-III for GAD, several important modifications were made with DSM-III-R (American Psychiatric Association, 1987). Initially, the principal feature of the disorder shifted from persistent anxiety to excessive or unrealistic worry. The minimum duration required for establishing the diagnosis changed from one month to six months, better reflecting the chronic nature of GAD. Nevertheless, the somatic criteria remained unclear, requiring the presence of six out of eighteen different symptoms to establish the diagnosis. With the publication of DSM-IV in 1994, the diagnostic criteria for GAD became more specific and effective. Although excessive worry and anxiety remained the central features of GAD, the term "unrealistic" was removed and replaced with the concept that worry is difficult to control. Additionally, the minimum duration requirement of six months was maintained. Taken together, these criteria clearly reflect the chronic nature of GAD. In both DSM-IV and DSM-V, the core characteristic of GAD remains excessive and uncontrollable worry and anxiety related to various life

situations. Individuals with GAD tend to worry about many aspects of their lives. Frequently, when asked about the reasons for their worries, they respond: “What do I not worry about?” In this sense, the term “generalized anxiety” is consideredappropriate, since the content of their worries extends to nearly every aspect of life. Furthermore, worries may continuously shift from one topic to another. For example, a patient may initially worry about their health (“What if I develop cancer?”) and then shift toward concerns regarding family and finances (“Who will take care of my children if I die? Will they be safe? What if my family cannot afford the expenses?”). In general, individuals with GAD report worries related to family, relationships, work or school, health, and finances. Research findings indicate that individuals with GAD tend to worry more about minor issues compared to nonclinical individuals and those suffering from other forms of anxiety disorders (Brown, Moras, Zinbarg, & Barlow, 1993; Hoyer, Becker, & Roth, 2001). In fact, everyday minor concerns represent one of the most typical characteristics of GAD.

The concept of quality of life is associated with the way individuals perceive their position in life in relation to their value system, personal goals, expectations, and standards within the social and cultural context in which they live (Szabo, 1996). This definition clearly indicates that quality of life includes a subjective evaluation of individual experience. Although its definition has continuously evolved over the years, it generally encompasses a broad range of human experiences related to well-being and individuals’ subjective functioning in relation to their personal expectations (Szabo, 1996).

Within mental health research, quality of life is considered a particularly important element, and the number of scientific studies addressing this topic has significantly increased in recent years (Schneider, Maclennan, & Freeny, 2008). This concept has been examined in numerous studies, especially among individuals facing chronic illnesses or various forms of long-term disability (Schneider et al., 2008).

Mental health specialists have used different definitions of quality of life while studying patients with anxiety and depressive disorders. Mendlowicz and Stein proposed that the assessment of quality of life should include: 1) the patient’s subjective perception of their life, 2) the multidimensional nature of the concept, and 3) a focus on aspects of personal experience related to health and healthcare (Mendlowicz & Stein, 2000).

Research findings demonstrate that anxiety disorders are associated with significant reductions in quality of life. Spitzer and colleagues identified negative effects on social functioning, role functioning, and mental health (Spitzer, Kroenke & Linzer, 1995). In 2000, Mendlowicz and Stein, through a systematic review of existing studies, concluded that anxiety disorders substantially reduce quality of life and psychosocial functioning (Mendlowicz & Stein, 2000).

The impact of GAD episodes also extends to academic and occupational functioning, causing difficulties in academic achievement, prolonged absences from work, and problems in social interactions (Mendlowicz & Stein, 2000). Massion and colleagues (1993), in the National Comorbidity Survey (NCS), identified impairments in role functioning and social life among

individuals with GAD. Similar findings were confirmed by the study conducted by Kessler and colleagues (1999), which demonstrated that individuals with GAD report lower quality of life in social relationships and work environments. In the same line, Wittchen (2000), in a community study conducted in Germany, found that individuals with GAD had poorer levels of quality of life. Based on data from the Ontario Health Survey, Stein and Heimberg (2004) concluded that a diagnosis of GAD increases the likelihood of reporting poor quality of life and that the long-term benefits of treatment are particularly important. Likewise, Bourland and colleagues reported that individuals with GAD present lower quality of life. Overall, epidemiological and clinical studies have shown that individuals with GAD experience considerable impairments in quality of life, even after controlling for the effects of medical and psychiatric comorbidity (Ritsner & Awad, 2007).

On average, the duration of GAD is estimated to be approximately ten years and usually follows a chronic course with periodic fluctuations (Mancuso, Townsend, & Mercante, 1993). Levels of functional disability associated with anxiety disorders are considerable and affect individuals' social life, occupational functioning, and well-being. Approximately 59% of patients with GAD report moderate or severe physical disabilities, compared to 12% of individuals without mental health problems (Ormel, Vonkorff, Ustun, Pini, Korten, & Oldehinkel, 1994). Additionally, 38% of patients perceive their occupational disability as moderate or severe, compared to only 7% of individuals without mental disorders (Ormel, Vonkorff, Ustun, Pini, Korten, & Oldehinkel, 1994). The average number of disability days is substantially higher among patients with GAD compared to healthy individuals.

Patients diagnosed with GAD in Primary Healthcare settings in Spain utilize more healthcare resources compared to patients without this diagnosis, with an average of ten visits per year (SD: 9.6), compared to 7.6 annual visits among other patients (SD: 8.1) (Bermejo-Caja, Martin-Garcia, Garcia-Laborda, Perez-Quintana, Diaz-Rodriguez, & Marques-Andres, 2013). These findings are similar to those reported in other studies, which indicate an average of 2.9 visits within three months, compared to 1.6 visits among patients without anxiety disorders (Kroenke, Spitzer, Williams, Monahan & Löwe, 2007). Furthermore, individuals with anxiety disorders receive a greater number of medical leave days. The total costs associated with medication use, medical referrals, and additional testing are also considerably higher compared to other patients.

Anxiety among university students is considered highly common. Estimates indicate that approximately 75% of all individuals with anxiety disorders experience them during their years of study (Bolden, 2008; Margarita, 2008). Yılmaz and Ocakçı (2010) found that 77.2% of students experienced mild levels of anxiety, while 19.6% reported moderate levels. Anxiety may interfere with and complicate daily functioning, including academic studies, routine activities, and students' social lives. Anxiety is considered a major predictor of academic performance (McCraty, 2007; McCraty, Dana, Mike, Pam & Stephen, 2000), and various studies have shown that it has a detrimental effect on academic achievement (McCraty, 2007; Luigi, Francesca, Maria, Eleonora, Valentina & Benedetto, 2007). Findings from a study conducted among high school students in

India demonstrated that anxiety prevalence was 20.1% among boys, while 17.9% of girls were found to suffer from high levels of anxiety (Chatterjee & Walsh, 2010).

Relaxation techniques are increasingly being used as non-pharmacological interventions by nurses, professional therapists, and medical practitioners in different healthcare environments. In a review of relaxation techniques, Kerr (2000) cited studies demonstrating reductions in stress levels across both physiological and psychological indicators following the application of progressive relaxation training. The findings suggested that progressive relaxation has considerable potential to induce relaxation (Kerr, 2000). However, when progressive relaxation was compared with other relaxation techniques, no significant differences in effectiveness were identified. Differences were observed between genders, between healthy individuals and patients, and between physiological and psychological responses.

Similarly, Crist & Richard (1993) did not identify substantial differences between muscular relaxation and imagery relaxation among 100 healthy students, although both experimental conditions produced significant training effects.

Although anxiety has been widely examined, relatively few studies have focused on intervention programs aimed at reducing anxiety levels among students (Vitasari, Wahab, Othman, & Awang, 2010). Relaxation techniques have been considered supportive therapeutic methods in the treatment of stress, anxiety, and depression and may provide patients with coping and self-management skills to reduce these symptoms (Chida, Steptoe, Hirakawa, Sudo, & Kubo, 2007).

Among the various relaxation methods, Progressive Muscle Relaxation (PMR) has been found to be effective in disorders with a strong psychological component (Vickers & Zollman, 1999). Paul (1969) demonstrated that even a single session resulted in significant reductions in physiological measures such as heart rate, muscle tension, and respiratory rate compared to control procedures. Nickel et al. (2005) also provided support for a single PMR session, proving that one session significantly reduced systolic blood pressure and heart rate variability.

In 2005, Pavlov and Jones (2005) confirmed that a single 20-minute PMR session produced significant changes in immune system functioning. Research conducted by Rausch et al. (2006) suggested that the application of PMR among individuals suffering from clinically elevated levels of anxiety may be beneficial. Results demonstrated that the group treated with PMR experienced a significant reduction in somatic anxiety levels. Wolf and Abell (2003) supported these findings by showing that PMR was effective in reducing anxiety levels under normal conditions. Conrad & Roth (2007) stated that PMR continues to play an important role in the modern treatment of anxiety disorders.

Mishera (2004) conducted an experimental study in India and concluded that music, Progressive Muscle Relaxation (PMR), and music combined with PMR had a significant effect on reducing anxiety and fatigue, while also improving quality of life.

Schereiber & Schereiber (1995) carried out a study on relaxation techniques and the reduction of academic stress in order to improve university students' academic achievement. The relaxation group achieved significantly higher grades compared to the control group. Research in this field indicates that Progressive Muscle Relaxation improves quality of life and reduces the unpleasant physiological effects of tension. Another study by Dress, Ayres & Beechley (2009) found that learning relaxation techniques improves cognitive functioning, emotional and behavioral balance, and quality of life.

Visualization in the treatment of clinical conditions is often combined with Progressive Muscle Relaxation techniques. For example, Cupal & Brewer (2001) found significantly lower levels of pain and anxiety following relaxation and imagery interventions among individuals undergoing rehabilitation after knee reconstruction. Similarly, Johnson (2000) demonstrated that mood levels among adults coping with long-term injuries could be significantly improved through relaxation and imagery techniques.

Experiments conducted by Hammer (1996), who used guided imagery through music and relaxation techniques, demonstrated a statistically significant reduction in anxiety states from pre-test to post-test. Pelletier (2004) conducted a meta-analytic review of research articles in which music was used to reduce arousal levels caused by stress. The findings revealed that both music alone and music assisted by relaxation techniques significantly reduced arousal. Thus, the overall literature demonstrated that engaging in music therapy activities, particularly listening to music combined with Progressive Muscle Relaxation, may successfully reduce anxiety levels among individuals (Hernandez-Ruiz, 2005).

Several studies have evaluated the effectiveness of relaxation techniques in anxiety disorders in comparison with waiting-list control groups or other psychotherapeutic approaches. In some cases, reductions in anxiety levels were significant compared to situations where no intervention was applied. Different authors have shown that, when compared with other psychotherapies, the effectiveness of relaxation techniques is comparable to cognitive therapy or cognitive-behavioral therapy. No major differences have been identified in comparison with other therapeutic approaches.

A search of databases including the Joanna Briggs Institute Library of Systematic Reviews, the Cochrane Database of Systematic Reviews, PubMed, CINAHL, Prospero, and DARE identified only one systematic review related to the proposed research topic, published in 2008, which evaluated the effectiveness of relaxation techniques in reducing anxiety (Manzoni, Pagnini, Castelnuovo, & Molinari, 2008). This review highlighted several limitations: the inclusion of studies conducted on patients with diverse conditions, healthy individuals, and patients with very different pathologies without specifying the type of anxiety disorder; the limited timeframe of included studies (between 1997 and 2007); and the lack of an initial evaluation of the methodological quality of the included studies (Manzoni, Pagnini, Castelnuovo, & Molinari, 2008). The authors found considerable heterogeneity in the meta-analysis of the included studies.

This heterogeneity may have resulted from the use of different relaxation techniques, samples, and assessment instruments (Bermejo-Caja, Martin-Garcia, Garcia-Laborda, Perez-Quintana, Diaz-Rodriguez, & Marques-Andres, 2013).

In a study comparing Progressive Relaxation, meditation, and a waiting-list control group, physiological and self-report data were collected from anxious participants (Lehrer, Woolfolk, Rooney, McCann, & Carrington, 1983). Results demonstrated that similarities between the techniques were greater than the differences, both in physiological measures and self-report data. Both techniques generated positive expectations and reduced a variety of self-reported symptoms. Progressive Relaxation produced greater reductions in EMG responsiveness to difficult stimulation and showed a generally stronger therapeutic effect compared to meditation. Meditation, however, produced greater cardiac orienting responses to stressful stimuli, greater task engagement, and better practice motivation than Progressive Relaxation, but it also resulted in more reports of temporary increases in anxiety (Lehrer, Woolfolk, Rooney, McCann, & Carrington, 1983).

Leboeuf and Lodge (1980) observed that Progressive Relaxation (PR) was equivalent to electromyography biofeedback methods, while Raskin, Bali, and Peeke (1980) found that PR was equivalent to EMG-biofeedback combined with PR. Borkovec and Mathews (1988) incorporated PR into cognitive therapy, nondirective therapy, and systematic desensitization, respectively, and reported similar results across these three conditions. Later, Barlow, Rapee, and Brown (1992) observed that PR, cognitive therapy, and the combination of both interventions functioned better than the waiting-list control condition.

A development derived from PR, known as Applied Relaxation (AR) (Öst, 1987), is considered an effective coping technique for panic disorders (Öst, 1988; Öst & Westling, 1995), agoraphobia (Öst, Westling & Hellstrom, 1993), social phobia (Öst, Jerremalm & Johansson, 1981), and specific phobias (Öst, Johansson & Jerremalm, 1982). In the case of GAD, it had only been tested in two studies at that time. Tarrier and Main (1986) used a very brief intervention consisting of a single one-hour session and reported that the three components of AR performed very well, similarly to the complete treatment, and all were superior to the waiting-list control condition. In one of the strongest methodological studies in the field of GAD, Borkovec and Costello (1993) compared AR, CBT (cognitive therapy + AR), and nondirective therapy in a study involving 14 sessions over a six-week period. Both AR and CBT performed better than nondirective therapy.

Another study (Öst & Breitholtz, 2000) examined the effectiveness of Applied Relaxation (AR) and Cognitive Therapy (CT) in the treatment of Generalized Anxiety Disorder. Thirty-six outpatients meeting DSM-III-R criteria for GAD participated in the study. Patients were randomly assigned and individually treated for 12 weekly sessions. Results demonstrated that both treatments produced substantial improvements, which were maintained or further improved during follow-up assessments. No differences between AR and CT were found on any measure. The proportions of clinically improved patients were 53% and 62% for AR and CT respectively at post-

treatment. In addition to reducing generalized anxiety, both treatments produced notable and stable changes in levels of worry, cognitive anxiety, somatic anxiety, and depression. The authors concluded that both AR and CT show considerable potential as treatments for GAD, although they require further development to achieve first-line effectiveness levels similar to those observed in panic disorders, where approximately 80–85% of patients improve clinically (Öst & Breitholtz, 2000).

Cognitive Therapy (CT) and Applied Relaxation (AR) as treatments for GAD were also compared in a target group of 45 patients from a community mental health center, randomly assigned to treatment conditions. Patients were evaluated before and after 12 treatment sessions, as well as during a six-month follow-up period. Both completer analyses and intent-to-treat analyses revealed that both treatments were effective, with effect sizes ranging from 0.53 to 1.14 (Arntz, 2003). During a one-month follow-up, AR appeared slightly superior to CT, whereas CT reached similar outcomes to AR after six months. Rates of improvement and proportions of patients demonstrating reliable change were comparable to other studies on AR and CT, with 55% of CT patients and 53.3% of AR patients showing improvement on STAI-trait measures during the six-month follow-up. These findings confirm that both CT and AR are effective treatments for GAD, although there remains room for further improvement (Arntz, 2003).

AR, a treatment approach developed by several authors (Bernstein & Borkovec, 1973; Öst, 1987), has also been presented in various clinical trials (Barlow, Rapee, & Brown, 1992; Borkovec & Costello, 1993) and has frequently formed part of CBT programs (e.g., Borkovec & Costello, 1993; Power, Simpson, Swanson, & Wallace, 1990). According to DeRubeis and Crits-Cristoph (1998), CBT has demonstrated both effectiveness and specificity, whereas AR has demonstrated effectiveness alone. Only three studies directly compared these two approaches. The first identified no statistically significant differences but had limited statistical power (Barlow, Rapee & Brown, 1992). The second did not identify major differences immediately after treatment, although during the 12-month follow-up CT appeared superior to AR (Borkovec & Costello, 1993). The third study concluded that both approaches were effective (Öst & Breitholtz, 2000).

In a later review of six controlled trials, Fisher and Durham (1999), using the STAI-T (State-Trait Anxiety Inventory) as a common outcome measure, compared seven psychological treatments for GAD. Individuals treated with AR and those treated with CBT were shown to be the most effective and the most stable in maintaining positive outcomes, with approximately 63% improvement immediately after AR and 48% after CBT. During a six-month follow-up, 60% of AR patients and 51% of CBT patients remained improved. Nondirective therapy, group CBT, and group BT demonstrated moderate effectiveness (31–38% recovery after one and a half years of follow-up), whereas BT alone (11%) and analytic psychotherapy (4%) showed lower recovery rates. Therefore, the study served as an important independent test to determine whether the positive results of AR and CBT achieved in other centers could be replicated, as well as a necessary direct comparison between CT and AR.

One potential threat to the external validity of these studies is the recruitment of participants through media advertisements and other "unnatural" recruitment procedures, as occurred in typical GAD treatment studies (e.g., Ladouceur, Dugas, Freeston, Leger, Gagnon, & Thibodeau, 2000; Öst & Breitholtz, 2000). Two of the three previous studies directly comparing AR and CT for GAD used advertisements to recruit participants (Borkovec & Costello, 1993; Öst & Breitholtz, 2000). In contrast, patients with GAD in the present study were not specifically recruited for research purposes but came from the ordinary population referred to a community mental health center.

Three additional studies compared Clark and Salkovskis' CT for panic disorders with Öst's AR package in the treatment of panic disorders, where Clark and colleagues concluded that CT was superior to AR (Clark, Salkovskis, Hackman, Middleton, Anastasiades, & Gelder, 1994).

In another study, nondirective Applied Relaxation and Cognitive-Behavioral Therapy (CBT) were compared as treatments for Generalized Anxiety Disorder (GAD). The latter two conditions were generally equivalent in outcomes but superior to nondirective therapy at post-assessment. Follow-up findings demonstrated losses in improvement within nondirective therapy, whereas improvements were maintained in the other two conditions, especially CBT. Thus, AR and CBT appear to contain the active components in the treatment of GAD. Support exists for the further development of imagery exposure methods or cognitive therapy because of their possible role in maintaining therapeutic change within this disorder. Expectations for improvement were also associated with treatment outcomes, suggesting the need for further research on this construct in order to better understand the nature of GAD and its improvement process (Borkovec & Costello, 1993).

3. Methodology

Students were provided with an informed consent form through which voluntary participation in the study was confirmed, while anonymity and the protection of personal data were guaranteed. Considering the in-depth nature of the study, only information agreed upon by both the researcher and the participants was reported or published. Participants were informed in advance about the purpose of the study, the therapeutic procedures, the duration of the sessions, and their right to withdraw from the study at any stage without consequences.

This research was conducted in accordance with institutional ethical standards. During the first phase of the study, the target group consisted of 100 university students aged between 19 and 25 years who were selected based on their GAD-7 results, presenting mild and moderate levels of generalized anxiety. The sample included students randomly selected from both public and private universities. Out of the 100 completed questionnaires, 8 questionnaires were considered invalid. After excluding these questionnaires, the final valid sample consisted of 92 students.

In terms of gender distribution, the sample included 39 males (42.4%) and 53 females (57.6%). Participants were students from private universities (N = 49; 53.3%) and public universities (N = 43; 46.7%). This target group was selected because participants were able to voluntarily decide to participate in the study, were at an age where they could make informed decisions, and represented the most appropriate population for the objectives of the research.

Based on the GAD-7 questionnaire results, among the 92 students who completed the questionnaires:

36 participants (39.1%) did not meet the criteria for GAD; 35 participants (38%) presented mild levels of GAD;
15 participants (16.3%) presented moderate levels of GAD; 6 participants (6.6%) presented high levels of GAD.

The findings showed no statistically significant differences between students from private and public universities regarding anxiety levels; therefore, this variable was not considered in the further selection process of the target group. An independent samples t-test was used to compare the results. Findings indicated no significant differences between private university students (M = 6.49; SD = 4.52) and public university students (M = 6.06; SD = 4.27), $t(92) = .720$, $p = .47$.

Among the total target group of 92 students, only 5 participants had previously attended other forms of psychological treatment and were therefore excluded from the next phase of the study. This exclusion criterion was applied in order to avoid the influence of previous therapeutic experiences on the outcomes of the Progressive Muscle Relaxation intervention. Students were also asked whether they had previously received any psychological treatment. Results indicated that 87 students (94.6%) had not received treatment, whereas 5 students (5.4%) had previously undergone psychological treatment.

Second Phase of the Study

In the second phase of the study, the baseline data were filtered into 35 students with mild GAD levels (5–9) and 15 students with moderate GAD levels (10–14). Subsequently, participants were randomly selected while maintaining balance in terms of gender and anxiety levels. A total of 24 university students aged 19–25 years were selected, half of whom were female and half male. From this group, 20 participants were directly included in the study, while 4 participants were kept as reserves in case of withdrawal from participation.

The findings demonstrated significant gender differences in anxiety levels. Male participants presented lower mean anxiety scores ($M = 5.01$; $SD = 4.00$) compared to female participants ($M = 7.24$; $SD = 4.46$), $t(92) = 3.83$, $p = .00$. For this reason, the groups were balanced according to gender.

At this stage, participants were randomly assigned into two groups:

The Progressive Muscle Relaxation (PMR) Group, and

The Control Group, which did not receive any therapeutic intervention during the study period.

Regarding anxiety levels before treatment, ANOVA results indicated no statistically significant differences between the groups prior to the intervention.

Participants included in the study met the following criteria:

- Anxiety levels between 5 and 14 according to the GAD-7;
- No previous participation in psychological therapy or relaxation-based interventions;
- Non-users of alcohol or psychoactive substances;
- Single and without children;
- Free from serious medical conditions and not under pharmacological treatment.

Third Phase of the Study

After participant selection, individual meetings were conducted with each participant in order to provide information regarding the purpose and procedures of the study. Weekly therapeutic sessions were then organized over a six-week period. Each session lasted approximately 25–30 minutes, while the first session lasted 60–70 minutes due to the collection of personal and clinical background information.

Progressive Muscle Relaxation sessions were conducted once per week for each participant. The intervention involved university students aged 19–25 years who had been selected from the initial sample of 100 students based on mild and moderate anxiety levels measured through the GAD-7 questionnaire. During the sessions, no music or additional sound effects were used in order to minimize the influence of external variables on treatment outcomes. The treatment procedure, therapeutic environment, and assessment instruments were identical for all participants. Furthermore, to control the effects of the intervention, the same tone of voice, communication rhythm, and interaction style were maintained throughout all sessions.

Within the Progressive Muscle Relaxation scripts, simple and clear language was used in order to facilitate physical and emotional relaxation. Positive and calming formulations were primarily applied with the aim of reducing physical tension and psychological anxiety. The same therapist conducted all therapeutic sessions in order to eliminate the influence of therapist-related variables such as communication style, tone of voice, and therapeutic interaction.

During the first session, personal information was collected, including gender, age, medical and psychiatric history, leisure activities, and reported symptoms. The Generalized Anxiety Disorder Questionnaire (GAD-7) was used to assess anxiety levels and was administered before and after the therapeutic intervention in order to evaluate changes in anxiety symptoms. In addition to the GAD-7, difficulties in daily functioning were also assessed, including academic performance, interpersonal relationships, and everyday activities.

For data analysis, statistical methods such as the independent samples t-test and ANOVA were used in order to compare results between groups and identify statistically significant differences in anxiety levels before and after treatment.

This research was conducted in accordance with institutional ethical standards.

Research Instruments

The Generalized Anxiety Disorder Questionnaire (GAD-7) (Spitzer, Kroenke, Williams, & Löwe, 2006) was used for data collection in this study, together with several additional questions related to difficulties in academic performance, daily responsibilities, and interpersonal relationships among university students aged 19–25 years. The GAD-7 questionnaire has been widely used as a severity assessment tool for individuals experiencing generalized anxiety disorder (Spitzer, Kroenke, Williams, & Löwe, 2006; Swinson, 2006). The instrument presents a one-dimensional structure consistent with the DSM-IV-TR criteria for Generalized Anxiety Disorder (GAD).

The GAD-7 consists of seven items, with each item rated on a scale ranging from 0 to 3. The total score ranges from 0 to 21 (Spitzer, Kroenke, Williams, & Löwe, 2006). Research examining the use of the GAD-7 within the general population (Löwe, Decker, Müller, Brähler, Schellberg, Herzog, & Herzberg, 2008) concluded that the instrument can be considered a reliable assessment tool for use in community samples. Good psychometric properties have also been demonstrated in general population studies conducted in the Netherlands (Donker, Van Straten, Marks, & Cuijpers, 2011) and Portugal (Sousa, Viveiros, Chai, Vicente, Jesus, Carnot, Gordo, & Ferreira, 2015).

In the present study, the questionnaire was administered to an initial sample of 100 university students aged between 19 and 25 years in order to identify participants presenting mild and moderate levels of generalized anxiety for inclusion in the intervention phase of the research.

The internal consistency of the instrument in the present study was high (Cronbach's alpha = .843).

The levels of generalized anxiety according to the GAD-7 scoring system were classified as follows:

0–4 points: Minimal anxiety 5–
9 points: Mild anxiety
10–14 points: Moderate anxiety
Above 14 points: Severe anxiety

4. Results

The findings are presented according to the corresponding research questions and hypotheses. The quantitative analysis focused exclusively on the effects of Progressive Muscle Relaxation (PMR) on generalized anxiety and quality of life among university students aged 19–25 years.

1.1 Quantitative Analysis: The Effect of Progressive Muscle Relaxation on Generalized Anxiety

A paired-samples t-test was conducted to evaluate the effectiveness of Progressive Muscle Relaxation in reducing generalized anxiety levels after the intervention. The results demonstrated a statistically significant decrease in anxiety scores following treatment. Anxiety levels before treatment were higher ($M = 8.40$; $SD = 2.50$) compared to anxiety levels after treatment ($M = 5.00$; $SD = 1.33$), $t(19) = 5.20$, $p < .001$ (two-tailed). The mean reduction was 3.40, with a 95% confidence interval ranging from 1.92 to 4.87. The eta squared value (.75) indicated a large effect size, suggesting that Progressive Muscle Relaxation had a strong impact on reducing generalized anxiety symptoms among participants.

Further statistical analysis using ANOVA indicated that there were no statistically significant differences between the groups before the intervention, $F = 1.01$, $p = .403$. However, statistically significant differences emerged after treatment, $F = 23.485$, $p < .001$, confirming the effectiveness of the intervention in reducing generalized anxiety symptoms among university students aged 19–25 years.

The impact of Progressive Muscle Relaxation on quality of life was assessed through participants' reported difficulties related to academic functioning, daily responsibilities, and interpersonal relationships among university students aged 19–25 years. A paired-samples t-test demonstrated a statistically significant reduction in academic and daily functioning difficulties after treatment. Before treatment, participants reported higher levels of difficulties ($M = 1.80$; $SD = .63$), whereas after treatment lower scores were observed ($M = 1.20$; $SD = .42$), $t(19) = 2.753$, $p < .022$ (two-tailed). The mean reduction was .80, with a 95% confidence interval ranging from .142 to 1.457. The eta squared value (.45) suggested a large effect size.

No statistically significant reductions were observed in difficulties related to interpersonal relationships following the intervention.

4.3. Qualitative Findings from Participants' Interviews

Qualitative data from interviews with university students aged 19–25 years supported the quantitative findings regarding the effectiveness of Progressive Muscle Relaxation. Participants consistently described the technique as effective in promoting physical relaxation and reducing stress-related tension associated with academic and daily life demands.

Participants reported that Progressive Muscle Relaxation contributed mainly to physical calmness, particularly through the reduction of muscle tension throughout the body. Several participants emphasized that the technique promoted emotional stability, stress management, and relaxation through controlled breathing and muscular relaxation exercises.

Many participants stated that the intervention improved their sense of physical comfort and psychological calmness during the six-week intervention period. However, some participants also noted that the effects of the technique were primarily temporary and more closely associated with short-term physical relaxation rather than long-term emotional change. A number of participants reported that anxiety symptoms occasionally reappeared after a period of time following the sessions.

Additional qualitative findings indicated that several participants perceived Progressive Muscle Relaxation as a useful supportive intervention for anxiety management among university students. Nevertheless, some participants believed that the technique did not entirely address the cognitive aspects of anxiety. Participants also highlighted the importance of maintaining a calm and comfortable therapeutic environment during the sessions, emphasizing that environmental conditions played an important role in the effectiveness of the intervention.

5. Discussion

The aim of this study was to examine the effectiveness of Progressive Muscle Relaxation (PMR) in reducing generalized anxiety symptoms and improving quality of life among university students

aged 19–25 years. The findings from both the quantitative and qualitative analyses demonstrated that Progressive Muscle Relaxation was effective in reducing anxiety levels and improving certain aspects of daily functioning, particularly academic and daily functioning among university students selected from an initial sample of 100 participants.

The quantitative findings revealed a statistically significant reduction in generalized anxiety symptoms following the intervention. Participants reported lower GAD-7 scores after completing the six-week Progressive Muscle Relaxation program, indicating that the technique contributed positively to anxiety reduction. These findings are consistent with previous studies which have shown that Progressive Muscle Relaxation is an effective intervention for anxiety management (Nikel et al., 2005; Rausch et al., 2006; Conrad & Roth, 2007).

The qualitative findings further supported the quantitative results. Participants described the technique as relaxing, calming, and helpful in reducing physical tension associated with anxiety. Most participants emphasized the strong physical relaxation effects of the intervention, particularly muscle relaxation and reduction of bodily tension. Some participants also reported improved emotional calmness and stress management after the sessions.

The findings may be theoretically explained through the physiological relationship between anxiety and muscular tension. Anxiety is commonly associated with increased physiological arousal and muscle tension; therefore, reducing physical tension through relaxation techniques may contribute to lower anxiety symptoms. Previous literature has similarly highlighted that relaxation-based interventions influence emotional regulation by decreasing bodily arousal and promoting calmness (Pango, 2004).

Despite the positive outcomes, participants reported that the effects of Progressive Muscle Relaxation were more strongly associated with physical relaxation than with long-term cognitive or emotional change. Several participants stated that although they experienced immediate calmness and reduced tension, anxiety symptoms sometimes returned after a short period of time. These findings suggest that Progressive Muscle Relaxation may be particularly effective as a short-term anxiety management strategy rather than as a complete psychological treatment for generalized anxiety.

Regarding quality of life, the results indicated improvement mainly in academic functioning and daily stress management. Participants reported feeling calmer, more focused, and better able to

manage academic stress after the intervention. However, no statistically significant improvements were observed in interpersonal relationships. This finding may suggest that the intervention primarily affected stress regulation and physical functioning rather than broader social or emotional dimensions of daily life. Similar findings have been reported in previous research indicating that relaxation techniques may improve emotional balance and functional well-being, particularly in stress-related contexts (Dress, Ayres & Beechley, 2009).

The practical implications of this study are important for psychological counseling services, particularly in university settings. Progressive Muscle Relaxation may serve as a low-cost, accessible, and easy-to-learn intervention for students aged 19–25 years experiencing mild to moderate generalized anxiety symptoms. Because participants reported that the technique could be learned and practiced independently, PMR may also be useful as a self-help coping strategy for stress and anxiety management.

Overall, the findings suggest that Progressive Muscle Relaxation is an effective intervention for reducing generalized anxiety symptoms and improving selected aspects of quality of life among university students. However, future studies should examine the long-term effectiveness of the technique, include larger samples beyond the initial 100-student population, and explore whether combining Progressive Muscle Relaxation with cognitive or counseling-based interventions may produce stronger psychological outcomes.

6. Conclusion

This study examined the effectiveness of Progressive Muscle Relaxation (PMR) in reducing generalized anxiety symptoms and improving quality of life among university students aged 19–25 years selected from an initial sample of 100 participants. The findings demonstrated that Progressive Muscle Relaxation contributed to a significant reduction in anxiety symptoms and positively influenced certain dimensions of daily functioning, particularly academic functioning and stress management. Participants reported improvements in physical relaxation, emotional calmness, and overall coping with anxiety-related symptoms.

The study contributes to the existing literature by providing additional evidence supporting the effectiveness of Progressive Muscle Relaxation as a non-pharmacological intervention for anxiety reduction among university students. The findings are consistent with previous studies emphasizing the positive role of relaxation-based interventions in decreasing physiological arousal and improving psychological well-being. Furthermore, this study highlights the practical value of PMR as a low-cost, accessible, and easy-to-implement technique that may be integrated into university counseling services and mental health support programs.

Despite its contributions, the study has several limitations that should be acknowledged. First, the use of questionnaires presents inherent methodological limitations. The GAD-7 instrument alone is not sufficient for a comprehensive clinical assessment of anxiety symptoms. Additionally, the GAD-7 has not been standardized within the Albanian population, which may affect the reliability and validity of the obtained results. The same researcher both administered the questionnaires and conducted the intervention sessions, which may have increased the possibility of subjective bias. Moreover, participants were not clinically evaluated by psychiatrists or clinical psychologists; inclusion was based solely on GAD-7 criteria.

Another limitation concerns the measurement of quality of life. The assessment included only a limited number of broad questions regarding academic functioning, daily responsibilities, and interpersonal relationships. Consequently, the instrument may not have fully captured the complexity of quality-of-life experiences or the influence of external life factors before and after treatment.

The study sample was relatively small and consisted exclusively of university students aged 19–25 years selected from an initial sample of 100 university students. Therefore, the findings cannot be generalized to the broader population or to clinically diagnosed individuals with Generalized Anxiety Disorder. In addition, the study did not consider participants' regional or sociocultural backgrounds, which may influence perceptions of anxiety and responses to therapeutic interventions.

An additional limitation relates to the timing of the measurements. Anxiety levels were assessed only before and immediately after the intervention, without long-term follow-up assessment. As anxiety symptoms may fluctuate naturally over time, the absence of follow-up measurements limits conclusions regarding the long-term effectiveness and stability of the intervention outcomes.

Future research should include larger and more diverse samples, including clinically diagnosed populations, in order to improve the generalizability of findings. Further studies should also incorporate standardized quality-of-life instruments and long-term follow-up assessments to evaluate the durability of treatment effects over time. Additionally, future investigations may explore the effectiveness of combining Progressive Muscle Relaxation with cognitive-behavioral interventions or psychological counseling approaches to achieve broader emotional and cognitive improvements

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ORGANIZATION AND CREATION OF A SAFE WORKING ENVIRONMENT IN OPERATING ROOMS

Armela Bara[1], Kujtime Vakeflliu[1], Arben Baboci[1], Etleva Rustami[2], Alma Pula[2]

[1] Department of Technical Medical Sciences,
"Barleti" University, Tirana, Albania
[2] Department of Technical Medical Sciences
University of Medicine, Tirana, Albania

Corresponding author: a.zylfo@umb.edu.al

Abstract

This study examines occupational hazards in operating rooms, with particular emphasis on healthcare personnel exposure to biological, chemical, ergonomic, and psychosocial risk factors. The study aimed to identify the primary sources of occupational risk and evaluate the influence of organizational factors on staff safety within complex surgical environments.

A quantitative research approach was employed using a structured questionnaire administered to healthcare professionals working in operating rooms. The collected data were analyzed to identify major exposure patterns and participants' perceptions regarding workplace safety.

The findings revealed high levels of exposure to biological hazards, particularly injuries caused by sharp instruments and contact with potentially infectious materials. A substantial proportion of participants also reported exposure to anesthetic gases, as well as ergonomic problems and occupational stress affecting their well-being and professional performance. Furthermore, the results highlighted the influence of organizational factors, including workload, staffing limitations, and inconsistencies in the implementation of safety protocols.

The study concludes that occupational hazards in operating rooms are multifaceted and require an integrated management approach. Improving working conditions, strengthening compliance with safety protocols, investing in infrastructure and protective measures, and providing continuous staff training are essential for reducing occupational risks and improving the quality of healthcare services.

Keywords: Workplace safety; Occupational hazards; Occupational health; Operating rooms; Personnel protection

1. Introduction

Workplace safety represents an essential component of the effective functioning of healthcare systems, directly influencing the quality of patient care and the well-being of healthcare personnel. In particular, operating rooms represent one of the most complex and high-risk environments due

to the invasive nature of procedures and continuous exposure to multiple risk factors, including biological, chemical, physical, ergonomic, and psychosocial hazards.

According to the World Health Organization, healthcare workers are among the groups most exposed to occupational hazards globally, with millions of cases of exposure to potentially infectious biological materials each year. Likewise, the Centers for Disease Control and Prevention reports that injuries caused by sharp instruments constitute one of the primary causes of occupational exposure in hospital environments, particularly in operating blocks.

Beyond biological risks, studies indicate that ergonomic and psychosocial factors play an important role in the occurrence of musculoskeletal disorders and occupational stress among surgical personnel. The European Agency for Safety and Health at Work emphasizes that working conditions, physical workload, and work process organization significantly contribute to the increased risk of injury and reduced performance.

Globally, workplace safety in the healthcare sector has become a strategic priority for international organizations and national governments, as it is directly associated with the quality of healthcare services and clinical outcomes. An unsafe working environment not only increases the risk of occupational injuries and diseases, but also negatively affects staff efficiency and patient safety.

Particularly in developing countries, challenges related to limited resources, lack of adequate infrastructure, and incomplete implementation of international safety standards make this issue even more pronounced. Studies indicate that a considerable gap exists between international guidelines and real-world practices, creating conditions that increase exposure to occupational risks.

In this context, work organization and implementation of safety protocols are considered key factors in reducing risks and improving the quality of healthcare services. However, empirical evidence on this issue remains limited in certain specific contexts, highlighting the need for further studies.

In particular, the relationship between healthcare worker safety and patient safety has been widely emphasized in international literature. An unsafe working environment for healthcare professionals significantly increases the likelihood of medical errors, complications during surgical procedures, and a decline in the quality of healthcare services. Consequently, ensuring safe working conditions is not only an issue of employee protection but also a fundamental component of patient safety and overall healthcare system performance.

Furthermore, occupational hazards in the healthcare sector have significant economic and organizational implications. Costs associated with workplace injuries, staff shortages, reduced productivity, and the need for medical treatment represent a considerable burden for healthcare institutions. This makes workplace safety a strategic priority not only from a healthcare perspective but also from managerial and economic perspectives.

The purpose of this study is to identify and analyze the main occupational hazards in operating rooms, as well as to assess the role of work organization and adherence to safety protocols in creating a safe working environment. This study also aims to contribute to the existing literature by providing empirical data and suggesting concrete measures for improving safety practices in surgical environments.

The World Health Organization (WHO, 2023) emphasizes that the use of surgical safety checklists is one of the most effective tools for reducing complications and increasing safety in surgical environments.

2. Literature Review

International literature in the field of workplace safety in the healthcare sector consistently demonstrates that healthcare personnel are among the groups most exposed to occupational hazards. These hazards include exposure to biological, chemical, physical, ergonomic, and psychosocial factors, all of which directly affect the health and performance of healthcare professionals. These challenges are particularly pronounced in surgical environments, where the complexity of procedures and the intensity of work significantly increase the likelihood of exposure.

In the global context, workplace safety in the healthcare sector is considered an important healthcare policy priority, given its direct impact on the quality of patient care. An unsafe work environment not only increases the risk of occupational injuries and diseases, but also negatively affects staff performance and clinical outcomes.

Biological and Accidental Hazards

Biological hazards are considered among the most significant risks in hospital environments. According to the World Health Organization, more than 3 million healthcare workers worldwide are exposed annually to bloodborne pathogens, including hepatitis B, hepatitis C, and HIV viruses. This exposure is mainly associated with injuries caused by sharp instruments and contact with biological materials during invasive procedures.

Similarly, the Centers for Disease Control and Prevention emphasizes that needle-stick injuries and injuries caused by sharp instruments represent one of the primary sources of risk in hospital environments, particularly in operating rooms. Empirical studies show that the incidence of such injuries varies from 44% to 65%, depending on working conditions and the level of implementation of safety protocols (Tarigan et al., 2015).

Other studies have shown that the lack of continuous training and the incorrect use of personal protective equipment are factors that significantly contribute to the increase in these incidents. Furthermore, in developing countries, reporting of such injuries is often limited, suggesting that the actual magnitude of the problem may be even greater than reported.

Chemical Hazards: Anesthetic Gases

In addition to biological risks, exposure to anesthetic gases represents a major concern for surgical

personnel. According to studies published in international literature, chronic exposure to these gases may lead to neurological effects, reproductive disorders, and cardiovascular problems (Allegranzi et al., 2016).

The National Institute for Occupational Safety and Health recommends the use of ventilation and air-monitoring systems to reduce exposure to anesthetic gases. However, in many healthcare systems, particularly in resource-limited countries, these measures are not fully implemented.

International comparative studies show that exposure levels to anesthetic gases are significantly lower in developed countries, where hospital infrastructure and safety standards are more advanced. This highlights the importance of investments in technology and infrastructure to ensure personnel safety.

Ergonomic Factors

Ergonomic factors represent another critical component of workplace safety in operating rooms. The European Agency for Safety and Health at Work reports that healthcare professionals experience high levels of musculoskeletal disorders due to prolonged static postures, repetitive movements, and physical workload.

Further studies (Carayon et al., 2020) indicate that poor workplace design and lack of ergonomic principles directly contribute to increased physical fatigue and reduced professional performance. This has important implications not only for staff health but also for patient safety.

Moreover, the use of modern technologies and ergonomically designed equipment has been shown to significantly reduce physical workload and the risk of long-term injuries. Nevertheless, such solutions are not always available in all healthcare contexts.

Psychosocial and Organizational Factors

In addition to physical and chemical hazards, the literature also highlights the importance of psychosocial factors in surgical environments. Stress, heavy workload, and pressure to perform are factors that may significantly increase the likelihood of human errors and occupational incidents.

According to Weaver and Dy (2017), creating a strong culture of safety within healthcare institutions is a key factor in reducing incidents and improving clinical outcomes. Such a culture includes effective communication, interdisciplinary collaboration, and organizational support.

At the same time, staff shortages and excessive workload have been identified as factors that negatively affect personnel well-being and increase the risk of errors. Studies indicate that long working hours and chronic fatigue are directly associated with reduced performance and increased risk of incidents in operating rooms.

International literature also emphasizes the importance of organizational factors and safety climate in reducing occupational hazards. Studies show that a positive safety climate and effective work organization are directly associated with reduced incidents and improved safety practices in

healthcare institutions (DeJoy et al., 2006).

Impact on Patient Safety and the Healthcare System

An important aspect emphasized in the literature is the direct relationship between staff safety and patient safety. An unsafe work environment for healthcare professionals increases the likelihood of medical errors and complications during surgical procedures.

Recent studies have highlighted the fundamental role of the World Health Organization's surgical safety checklist in improving clinical outcomes and reducing postoperative complications. Research by Qaiser et al. (2024) and Gasoma et al. (2024) demonstrates that the implementation of standardized safety protocols significantly contributes to reducing complications and improving coordination within the surgical team. Similarly, studies by Bielka et al. (2023) and Dirie et al. (2024) emphasize the importance of continuous and consistent use of these instruments, particularly in low-resource settings.

Furthermore, occupational hazards have economic implications for the healthcare system, including costs related to treatment of injuries, work absences, and reduced productivity. This makes workplace safety not only a healthcare issue but also a strategic priority for healthcare system management.

Synthesis of the Literature

In summary, international literature converges on the conclusion that occupational hazards in operating rooms are multifaceted and require an integrated approach to their management. This includes rigorous implementation of safety protocols, use of personal protective equipment, improvement of ergonomic conditions, continuous staff training, and strengthening of the organizational safety culture.

However, despite these recommendations, many studies indicate that a considerable gap still exists between international standards and actual practices in the field, particularly in developing countries. This gap justifies the need for empirical studies that analyze the specific situation and propose evidence-based interventions, as is the case with this study.

3. Methodology

This study uses a descriptive and analytical research design with a quantitative approach, aiming to identify and assess occupational hazards in operating rooms, as well as to analyze organizational factors influencing the level of these risks.

Study Design and Population

The study was conducted in a healthcare institution and included medical and nursing personnel directly engaged in operating rooms. The study population included professionals with different roles, enabling a comprehensive perspective on occupational hazards within this environment.

The sample was selected using the convenience sampling method, including individuals who were available and willing to participate during the data collection period. Although this method limits the generalizability of results, it is commonly used in exploratory studies conducted in clinical environments.

Data Collection Instrument

Data were collected through a structured questionnaire containing closed-ended and semi-open questions. The questionnaire was divided into several main sections:

- demographic characteristics of participants
- exposure to biological hazards
- exposure to chemical hazards (anesthetic gases)
- ergonomic factors
- organizational and psychosocial factors

The questions were designed based on existing literature and guidelines from international organizations, such as the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC), ensuring consistency with international workplace safety standards.

Validity and Reliability of the Instrument

To ensure content validity, the questionnaire was reviewed by experts in public health and workplace safety, who assessed the clarity, relevance, and structure of the questions. Their suggestions were incorporated into the final version of the instrument.

The reliability of the instrument was indirectly assessed through the consistency of responses and the logical structure of the questions. Future studies are recommended to use statistical indicators, such as Cronbach's alpha, to more accurately measure the internal consistency of the instrument.

Data Collection Procedure

Data collection was carried out over a defined period of time. Participants were informed in advance about the purpose of the study and the importance of their participation.

The questionnaires were completed anonymously to encourage honest responses and reduce response bias.

Participation in the study was voluntary, and participants had the right to withdraw at any time without consequences.

Data Analysis

The collected data were analyzed using descriptive statistical methods, including frequencies and percentages (%), to present the distribution of the main variables. The results were presented in tables to facilitate interpretation.

Although inferential analysis was not the primary focus of this study, its use in future studies would be

beneficial for identifying statistically significant relationships between variables.

Ethical Considerations

The study was conducted in accordance with the basic principles of research ethics, including confidentiality, anonymity, and informed consent of participants. Data were used solely for research purposes and were treated confidentially.

Methodological Limitations

This study presents several limitations that should be taken into consideration. The use of convenience sampling limits the generalizability of the results to broader populations. In addition,

the use of a self-reported questionnaire may affect data accuracy due to recall bias or the desire to provide socially acceptable responses.

Furthermore, the absence of inferential analyses limits the identification of cause-and-effect relationships between variables. Nevertheless, despite these limitations, the study provides valuable insight into occupational hazards in operating rooms and serves as a basis for further research.

4. Results

This section presents the main findings of the study regarding exposure to occupational hazards in operating rooms, as well as participants' perceptions of organizational factors and working conditions.

Demographic Characteristics

Participants in the study included healthcare professionals with different roles in operating rooms, including physicians and nurses. The distribution of participants according to work experience and professional role indicates moderate diversity, enabling a relatively broad overview of the situation in this environment.

This diversity is important for interpreting the results, as exposure to occupational hazards may vary depending on the individual's role and experience.

Exposure to Biological Hazards

The results show that a very high percentage of participants (94.7%) reported exposure to biological hazards, including contact with potentially infectious materials and injuries caused by sharp instruments.

This high percentage suggests that exposure to biological hazards is an almost universal phenomenon in this work environment. It also indicates that despite the existence of safety protocols, exposure remains a persistent problem in daily practice.

In particular, injuries caused by sharp instruments were reported as one of the most frequent forms of exposure, reflecting the invasive nature of surgical procedures and the need for immediate interventions to reduce these incidents.

Exposure to Chemical Hazards

Regarding chemical hazards, 78.9% of participants reported exposure to anesthetic gases. This result indicates that a considerable proportion of surgical staff are regularly exposed to these substances.

This level of exposure may be associated with ventilation conditions in operating rooms and the use of gas-control equipment. The findings suggest that, in some cases, deficiencies may exist in infrastructure or in the implementation of safety standards.

Ergonomic Factors

The results indicate that 71.1% of participants reported problems related to ergonomic factors, such as prolonged postures, repetitive movements, and physical fatigue.

These findings demonstrate that the physical workload in operating rooms is considerable and may directly affect staff well-being. Furthermore, ergonomic problems may also affect performance during procedures, increasing the risk of errors.

Organizational and Psychosocial Factors

A considerable proportion of participants reported high levels of stress and workload. These factors are directly associated with work organization and the conditions under which surgical personnel operate.

The results indicate that staff shortages, pressure to complete procedures on time, and lack of organizational support are among the main factors contributing to increased occupational stress.

Perceptions Regarding Safety and Protocols

Participants also expressed different perceptions regarding the level of workplace safety and the implementation of safety protocols. While some reported that protocols exist and are implemented, others suggested that their implementation is not always complete and consistent.

This variation in perceptions may indicate a lack of standardization in work practices or differences between departments and teams.

Summary of Results

Overall, the results of this study indicate a high level of exposure to occupational hazards in operating rooms, including biological, chemical, ergonomic, and psychosocial risks. These findings suggest the need for immediate interventions to improve working conditions and reduce risks.

The results also emphasize the importance of organizational factors and the implementation of safety protocols in determining the level of exposure to occupational hazards.

Table 1. Distribution of participants according to exposure to occupational hazards in operating rooms

Type of Hazard	Percentage (%)
Biological/accidental hazards	94.7%
Anesthetic gases	78.9%
Ergonomic factors	71.1%
Ionizing radiation	26.3%

5. Discussion

The findings of this study highlight a high level of exposure to occupational hazards in operating rooms, confirming that these environments represent one of the most critical areas regarding healthcare personnel safety. In particular, the very high prevalence of injuries caused by sharp instruments and exposure to biological materials (94.7%) represents a serious concern and significantly exceeds the levels reported in international literature, where incidence usually ranges from 44% to 65% (Tarigan et al., 2015). This marked difference between the findings of this study and those reported in the literature may be explained by several interconnected factors. First, the incomplete implementation of standard safety protocols recommended by the World Health Organization and the Centers for Disease Control and Prevention may significantly contribute to the increase in incidents. In many cases, although protocols exist at the institutional level, the lack of monitoring and safety culture prevents their effective implementation in daily practice.

Second, organizational factors such as excessive workload, staff shortages, and pressure to complete procedures within limited timeframes may increase the probability of human error. In operating rooms, where high levels of concentration and coordination are required, even small deviations from standard practices may lead to incidents with serious consequences.

Another factor that may contribute to the high reported levels is the lack of continuous training and awareness regarding occupational hazards. Studies indicate that regular training and educational programs in workplace safety are directly associated with reduced incidents and improved work practices.

Regarding exposure to anesthetic gases (78.9%), the results of this study are also higher compared to many international studies. This high level of exposure suggests the existence of infrastructural problems, particularly in ventilation systems and air pollution control systems. According to recommendations of the National Institute for Occupational Safety and Health, the use of effective ventilation systems is essential for reducing exposure to anesthetic gases. The absence or suboptimal functioning of these systems may significantly increase the risk of long-term adverse health effects among personnel.

Comparison with developed countries indicates that exposure levels to anesthetic gases are generally lower in healthcare systems that have invested in modern technology and high safety standards. This suggests that structural and economic factors play an important role in determining the level of occupational risk.

The results of this study are also supported by literature analyzing anesthesia-related risks, which emphasizes that continuous exposure to factors associated with anesthesiology procedures may have serious implications for personnel health and requires strong preventive measures (Merry & Mitchell, 2018).

Regarding ergonomic factors, the high reported percentage (71.1%) is consistent with the findings of the European Agency for Safety and Health at Work, confirming that musculoskeletal disorders are a widespread problem among healthcare professionals. Prolonged static postures, the use of surgical instruments, and the nature of procedures contribute to the physical burden on staff.

However, it is important to emphasize that these problems are often neglected in daily practice, as they are considered a “normal” part of the profession. Such an approach may lead to deterioration of personnel health and reduced professional performance in the long term.

From a psychosocial perspective, the results of this study should be interpreted within the context of working conditions in operating rooms. Stress, fatigue, and performance pressure are factors that directly affect work quality and procedural safety. According to studies by Weaver and Dy (2017), a strong culture of safety and a supportive work environment may significantly reduce the incidence of errors and incidents.

An important aspect emerging from the analysis is the direct relationship between staff safety and patient safety. An unsafe work environment for healthcare professionals increases the likelihood of medical errors, negatively affecting clinical outcomes. This relationship has also been emphasized in international literature, where patient safety and personnel safety are considered inseparable dimensions.

The findings of this study are further supported by recent literature emphasizing the importance of using surgical safety checklists as an effective mechanism for reducing occupational hazards and improving team performance. Studies such as those by Turley et al. (2024) and Etheridge et al. (2024) demonstrate that the use of standardized structures improves communication among team members and reduces the likelihood of errors during surgical procedures.

These findings are also consistent with other studies emphasizing that safety culture and healthcare organization are key factors in improving clinical outcomes and reducing risks for both patients and personnel (Ulrich & Kear, 2014).

Furthermore, occupational hazards have significant implications for the healthcare system as a whole. Workplace injuries, staff absences, and reduced productivity create a considerable economic burden for healthcare institutions. This makes it essential for workplace safety to be treated as a strategic priority rather than merely an operational issue.

From a practical perspective, the findings of this study suggest several concrete measures for improving the situation. First, it is necessary to strengthen the implementation of safety protocols

through continuous monitoring and control mechanisms. Second, investments in infrastructure, particularly ventilation systems and protective equipment, are essential for reducing chemical and biological risks.

Additionally, improving ergonomic conditions and better work organization may contribute to reducing physical fatigue and stress. Continuous training and awareness programs regarding workplace safety should be an integral part of institutional policies.

However, despite the clear benefits, several studies emphasize that full implementation of these protocols remains a challenge. According to Habtie et al. (2025) and Van Zyl et al. (2023), the

level of compliance with the surgical safety checklist varies significantly depending on working conditions and organizational culture.

Another important dimension that should be considered is the impact of organizational culture on the level of occupational hazards. In institutions where workplace safety is not considered a strategic priority, employees are less likely to follow safety protocols and report incidents. This creates a negative cycle in which underreporting leads to a lack of interventions, allowing unsafe practices to continue. In contrast, studies indicate that institutions promoting an open and supportive safety culture achieve lower incident rates and better clinical outcomes.

Another aspect deserving attention is the role of leadership and management in ensuring workplace safety. Leaders of healthcare institutions play a key role in creating policies and mechanisms that support personnel safety. Lack of commitment from management often results in poor implementation of protocols and insufficient resources for improving working conditions. In this regard, active leadership involvement in promoting safety may have a direct impact on reducing occupational hazards.

Nevertheless, this study presents several limitations that should be considered when interpreting the results. The relatively small sample size and the use of a self-reported questionnaire may affect the accuracy and generalizability of the findings. Furthermore, the absence of inferential analyses limits the possibility of identifying cause-and-effect relationships between variables.

For this reason, future studies with larger samples and more advanced analytical methods are needed to further deepen the understanding of occupational hazards in operating rooms and evaluate the effectiveness of different interventions.

6. Conclusion

This study aimed to identify and analyze occupational hazards in operating rooms, as well as to assess the role of organizational factors and implementation of safety protocols in creating a safe working environment. The findings clearly demonstrate that healthcare personnel operating in these environments face high levels of exposure to a wide range of hazards, including biological, chemical, ergonomic, and psychosocial risks.

The results indicate that exposure to biological hazards is almost universal, reflecting the invasive nature of surgical procedures and the complexity of this work environment. Likewise, the high levels

of exposure to anesthetic gases and ergonomic factors suggest deficiencies in infrastructure and work organization that require immediate attention.

One of the main conclusions of this study is that occupational hazards in operating rooms are not only the result of the nature of the work itself, but also of organizational and systemic factors. Incomplete implementation of safety protocols, excessive workload, and insufficient resources significantly contribute to increasing these risks.

Furthermore, the study emphasizes the direct relationship between personnel safety and patient safety. An unsafe work environment for healthcare professionals significantly increases the likelihood of medical errors and negatively affects the quality of healthcare services. This makes workplace safety an essential component of the overall performance of the healthcare system.

From the perspective of healthcare policies, these findings suggest that improving safety in operating rooms should be treated as a strategic priority. Investments in infrastructure, continuous staff training, and strengthening the culture of safety are key elements for reducing risks and improving clinical outcomes.

Nevertheless, this study presents several limitations, including the limited sample size and the use of a self-reported instrument, which may affect the generalizability of the findings. Despite these limitations, the study provides a valuable contribution to the existing literature and serves as a basis for further research in this field.

In conclusion, improving workplace safety in operating rooms requires an integrated and multidimensional approach that addresses not only individual factors, but also organizational and structural factors.

7. Recommendations

Based on the findings of this study and in accordance with international best practices recommended by the World Health Organization and the Centers for Disease Control and Prevention, a series of concrete measures are proposed to improve safety in operating rooms.

Improving the Implementation of Safety Protocols

Healthcare institutions should strengthen monitoring and control mechanisms to ensure rigorous implementation of safety protocols. This includes regular audits, performance evaluations, and the creation of systems for incident reporting without fear of penalization.

Investments in Infrastructure and Equipment

Investments are needed to improve infrastructure, particularly ventilation systems and equipment for controlling anesthetic gases. The use of modern equipment and advanced technologies may significantly reduce exposure to chemical and biological hazards.

Continuous Staff Training

Training and educational programs in workplace safety should be continuous and structured. These programs should focus on the correct use of protective equipment, risk management, and response to incidents.

Improvement of Ergonomic Conditions

Institutions should take measures to improve ergonomic conditions, including the use of appropriate equipment and work organization strategies aimed at reducing physical workload and staff fatigue.

Strengthening the Organizational Culture of Safety

Creating a strong culture of safety requires continuous commitment from management and active involvement of personnel. Promoting open communication, collaboration, and incident reporting is essential for reducing risks.

Improvement of Management and Leadership

Leaders of healthcare institutions should play an active role in promoting workplace safety by ensuring adequate resources and supporting initiatives aimed at improving working conditions.

Further Research

Further studies with larger samples and more advanced analytical methods are recommended in order to deepen the understanding of occupational hazards and evaluate the effectiveness of different interventions.

8. Implications for Practice and Policy

The findings of this study have important implications for clinical practice and policy development in the healthcare sector, particularly regarding the improvement of safety in operating rooms. The high levels of exposure to occupational hazards identified in this study indicate that immediate and structured interventions are needed to ensure a safer working environment for healthcare personnel.

From the perspective of clinical practice, healthcare institutions should focus on strengthening the implementation of existing safety protocols. Although these protocols are often established in accordance with international standards, the main challenge lies in their consistent implementation in daily practice. This requires the development of effective monitoring and evaluation mechanisms, as well as the creation of a reliable system for reporting incidents and near-miss events.

In this context, strengthening the use of surgical safety checklists represents a key intervention at both practical and policy levels. Studies by Gong et al. (2021) and Tully et al. (2021) indicate that improved implementation of these instruments directly contributes to increasing the safety of both patients and healthcare personnel.

Another important implication relates to the need for sustainable investments in infrastructure and technology. The high exposure to anesthetic gases and ergonomic factors suggests that physical working conditions are not always aligned with optimal standards. In this regard, improving ventilation systems, using modern equipment, and applying ergonomic principles may significantly contribute to reducing occupational hazards.

From the perspective of healthcare policies, the results of this study emphasize the need for the development and implementation of national strategies for workplace safety in the healthcare sector. Organizations such as the World Health Organization and the Centers for Disease Control and Prevention have continuously emphasized the importance of integrating personnel safety into healthcare policies. However, translating these recommendations into concrete practices requires institutional commitment and financial support.

Another critical aspect is the role of leadership and management in promoting a strong culture of safety. Leaders of healthcare institutions should take an active role in creating a work environment in which safety is considered a priority and where employees feel supported to report problems and incidents without fear of penalization. This approach is essential for building a sustainable and effective risk-management system.

Furthermore, the findings of this study suggest that continuous staff training should be a key component of strategies aimed at improving workplace safety. Training programs should focus not only on technical aspects, but also on developing communication skills, stress management, and teamwork, all of which are essential in surgical environments.

At a broader level, these implications indicate that improving safety in operating rooms requires an integrated approach that combines interventions at the individual, organizational, and policy levels. Only through such an approach can a sustainable reduction in occupational hazards and an improvement in the quality of healthcare services be achieved.

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ARTIFICIAL INTELLIGENCE AS A CATALYST FOR SUSTAINABLE ECONOMIC GROWTH AND PRODUCTIVITY

Amra Sala

Department of Applied and Computer Sciences
Barleti University, Tirana, Albania

salaamra25@gmail.com

Abstract

Artificial intelligence (AI) has undergone a fundamental transition from an academic curiosity to a central engine of global value management. Sustainable economic growth—defined as the ability to maintain long-term economic expansion without creating structural imbalances or depleting natural resources—serves as a critical framework for evaluating this transformation. This paper explores the role of AI as a strategic catalyst for sustainable economic growth, focusing on its capacity to reshape productivity through task automation, big data analytics, and real-time decision optimization. By analyzing recent experimental data and macroeconomic trends, the study identifies that AI acts as a productivity multiplier rather than a standalone driver, with its effectiveness being highly dependent on institutional readiness and human capital. While AI offers significant potential for enhancing environmental efficiency and enabling sectoral transformation, it also introduces risks such as skill polarization and market concentration. The research concludes that achieving truly sustainable growth requires robust public policies focused on reskilling, digital infrastructure, and ethical transparency, ensuring that AI-driven progress supports long-term economic stability, enhances living standards, and preserves environmental resources.

Keywords

Artificial intelligence; Sustainable economic growth; Productivity; General-Purpose Technology; Public policy; Digital transformation

1. Introduction

Artificial intelligence (AI) has undergone a fundamental transition from an academic curiosity to a central engine of global value management. Sustainable economic growth—defined as the ability to maintain long-term economic expansion without creating structural imbalances or depleting natural resources—serves as a critical framework for evaluating this transformation. This paper explores the role of AI as a strategic catalyst for sustainable economic growth, focusing on its capacity to reshape productivity through task automation, big data analytics, and real-time decision optimization. By analyzing recent experimental data and macroeconomic trends, the study identifies that AI acts as a productivity multiplier rather than a standalone driver, with its effectiveness being highly dependent on institutional readiness and human capital. While AI offers

significant potential for enhancing environmental efficiency and enabling sectoral transformation, it also introduces risks such as skill polarization and market concentration. The research concludes that achieving truly sustainable growth requires robust public policies focused on reskilling, digital infrastructure, and ethical transparency, ensuring that AI-driven progress supports long-term economic stability, enhances living standards, and preserves environmental resources.

2. Literature Review

The Evolution of Economic Growth Models

For decades, sustainable economic growth has been defined as the ability to balance rising productivity with social inclusion and environmental protection. Classical growth models, pioneered by Solow (1956), emphasized capital accumulation and labor input, while endogenous growth theories by Romer (1990) highlighted the role of innovation and knowledge spillovers. However, the landscape of 2026 presents a radical shift. AI is no longer viewed merely as an incremental digital tool; it is now recognized as a new Factor of Production. AI is categorized as a General-Purpose Technology (GPT), comparable in historical impact to the steam engine, electricity, and the internet. Its defining characteristic is its broad applicability across all sectors—including manufacturing, finance, energy, healthcare, and public administration—and its capacity to transform entire economic systems. By enabling machines to learn, recognize patterns, and support complex decision-making, AI enhances both automation and human augmentation.

Global Economic Landscape 2026

Current data highlights the measurable macroeconomic impact of AI. The International Monetary Fund (IMF) has raised the global growth forecast for 2026 to 3.3%, citing massive investments in AI as the primary motor. Projections from PwC suggest that AI could contribute up to $15.7 trillion to the global economy by 2030, while Goldman Sachs estimates a 7% increase in global GDP within a single decade. This “miracle or myth” debate is being settled by evidence of firms adopting AI experiencing higher productivity growth compared to non-adopters, particularly when complemented by organizational change and skilled labor.

3. Methodology

Research Design and Approach

This study employs a qualitative, analytical, and integrative research design to examine AI’s multi-dimensional impact on sustainable growth. Given that AI influences diverse domains such as finance, labor markets, and environmental science, a multidisciplinary perspective is essential. The study integrates theoretical foundations from economics with experimental evidence to uncover the causal relations between AI deployment and economic outcomes.

The analysis relies on secondary data and documentary analysis, including:

- Experimental Research: A critical review of recent studies analyzing task automation, innovation, and entrepreneurship.
- Institutional Reports: Data from the OECD (2025), IMF (2026), and World Bank, focusing on productivity metrics and policy frameworks.
- Sectoral Case Studies: Real-world examples from corporations like General Electric, JPMorgan Chase, and John Deere to illustrate microeconomic applications.

The analytical strategy involves thematic synthesis, identifying consistent patterns of AI's economic impact while acknowledging methodological limitations such as the difficulty of capturing long-term impacts in rapidly evolving fields.

4. Results

AI as a General-Purpose Technology and the Multi-Channel Impact on Productivity

Productivity measures the efficiency with which production inputs are used to create outputs and it is a key engine of sustainable economic growth. Its dimensions and drivers are manifold, and productivity varies hugely across countries, industries, and even across firms. Therefore, measures derived from microdata complement aggregate productivity indicators to offer a comprehensive understanding of countries' productivity. The integration of Artificial Intelligence into the global economy of 2026 marks a decisive shift from its previous status as a specialized academic tool to its current role as a fundamental factor of production, standing alongside capital and labor. As a General-Purpose Technology (GPT), AI exerts a horizontal influence across the entire economic spectrum, characterized by its broad applicability and capacity to transform existing production functions. This transformation is not merely a theoretical projection; empirical data from early 2026 demonstrates that AI has begun providing measurable macroeconomic effects, contributing to a revised global growth forecast of 3.3%. These gains are largely driven by massive investments in AI architectures, which act as a strategic engine for productivity in both advanced and emerging economies. A primary channel through which AI enhances productivity is the radical optimization of task execution through automation and human augmentation. Unlike previous digital revolutions, generative AI specifically targets knowledge-intensive tasks, providing a significant boost to labor efficiency. Experimental research shows that professionals utilizing AI-driven systems can complete incentivized writing tasks approximately 40% faster while simultaneously achieving an 18% improvement in output quality. This surge in efficiency is particularly evident in high-exposure sectors such as software development, where tools like GitHub Copilot have enabled developers to complete tasks 56% faster than those working without such assistance. This shift allows the workforce to move away from routine "rough drafting" and data processing toward high-value creative oversight and strategic problem-solving.

Sectoral Applications and Total Factor Productivity

The sectoral transformation catalyzed by AI extends into the core operations of manufacturing, energy, and finance. In the manufacturing sector, AI-powered predictive maintenance systems have redefined operational efficiency by identifying potential equipment failures before they occur, thereby reducing downtime and optimizing production schedules. This leads to a higher output generated with lower resource consumption, aligning economic growth with environmental sustainability goals. A concrete illustration of artificial intelligence as a driver of Total Factor Productivity (TFP) is provided by Samsung through its deployment of AI in semiconductor fabrication and electronics manufacturing. Machine learning–based computer vision systems are used for defect detection in chip production, improving yield rates and reducing material waste, while predictive maintenance minimizes downtime in capital-intensive fabrication facilities. These applications increase output relative to given inputs, directly enhancing TFP. Consistent with endogenous growth theory, the continuous accumulation of production data further strengthens innovation capabilities within the firm. At the macro level, given Samsung's role in global semiconductor supply chains, these efficiency gains contribute to lower component costs and improved supply stability, generating productivity spillovers across industries such as electronics and automotive manufacturing.

A complementary example is Lenovo, which integrates AI into enterprise infrastructure and data center operations. Through predictive maintenance in its infrastructure services, Lenovo reduces system failures and downtime, while AI-driven workload optimization improves resource allocation and energy efficiency in cloud and edge environments. These improvements enhance the productivity of digital capital, increasing output efficiency without proportional increases in inputs. From an endogenous growth perspective, the diffusion of such AI-enabled solutions across client firms generates knowledge spillovers and accelerates innovation. At the aggregate level, more efficient digital infrastructure supports productivity growth across sectors reliant on data-intensive operations, including finance, logistics, and digital services.

In the energy sector, AI algorithms are currently reducing energy consumption in data centers and electrical grids by up to 15% through intelligent load management. Siemens demonstrates the application of artificial intelligence in optimizing energy systems and enhancing grid efficiency. Through its AI-enabled energy management platforms, Siemens applies predictive analytics to monitor power grid stability, forecast energy demand, and optimize the integration of renewable energy sources such as wind and solar. These systems improve load balancing and reduce energy losses, thereby increasing the operational efficiency of energy infrastructure. From a Total Factor Productivity perspective, AI reduces the amount of energy input required per unit of output, while simultaneously improving system reliability. Within the framework of endogenous growth theory, these efficiency gains support long-term sustainable development by enabling the transition toward low-carbon energy systems and by reducing the marginal cost of renewable energy integration.

Tesla also plays a significant role in the energy sector through its AI-driven energy storage and grid optimization systems, particularly via products such as the Powerwall and utility-scale batteries. Tesla employs machine learning algorithms to predict electricity demand patterns and

optimize energy storage and discharge cycles, thereby improving the efficiency of renewable energy utilization. These systems reduce reliance on peak-load fossil fuel generation and enhance grid stability by dynamically balancing supply and demand. In terms of Total Factor Productivity, AI increases the efficiency of energy utilization and storage infrastructure, allowing higher energy output services from the same physical capital base. From an endogenous growth perspective, these innovations accelerate the diffusion of clean energy technologies and contribute to long-term sustainable economic growth by reducing energy intensity across the economy.

In finance, AI improves systemic efficiency by reducing information asymmetry and enhancing risk assessment capabilities across lending and investment platforms. By leveraging transaction data rather than traditional collateral, AI-enabled lending provides a vital lifeline to small and medium enterprises (SMEs), thereby supporting broader economic inclusion and entrepreneurship. A salient example of artificial intelligence enhancing productivity in the financial sector is provided by JPMorgan Chase through its deployment of AI-driven platforms such as COiN (Contract Intelligence). This system utilizes natural language processing to analyze complex legal and financial documents, reducing manual review time from hundreds of thousands of hours to seconds. Additionally, JPMorgan applies machine learning models for fraud detection, credit risk assessment, and algorithmic trading, enabling more efficient allocation of financial capital and improved risk-adjusted decision-making. These applications increase operational efficiency by reducing labor-intensive processes and improving the accuracy of financial forecasting, thereby enhancing sectoral Total Factor Productivity (TFP). Within an endogenous growth framework, such improvements contribute to better capital allocation across the economy, amplifying investment efficiency and generating productivity spillovers into real economic activity.

The democratization of technical skills through AI also serves as a significant driver for new business creation and early-stage growth. By lowering entry barriers, AI empowers entrepreneurs with limited technical expertise to develop products and business models that were previously inaccessible due to high initial costs. Experimental evidence from 2025–2026 reveals that software startups leveraging generative AI experienced a 20% reduction in the time required to secure initial funding. Moreover, AI's ability to generate and assess strategic simulations allows founders to refine their market fit and scale their operations with greater precision. Collectively, these results indicate that AI is functioning as a productivity multiplier that rewards firms and economies possessing the "absorptive capacity" to integrate these advanced tools into their institutional and organizational frameworks.

The Convergence of Artificial Intelligence and Sustainability

The convergence of Artificial Intelligence and sustainability in 2026 represents a paradigm shift where technological progress is no longer viewed as an alternative to environmental protection but as its primary facilitator. The analytical framework suggests that AI-driven "Green Growth" is achieved through the decoupling of economic expansion from resource intensity. At the macroeconomic level, AI acts as a system-wide optimizer for environmental efficiency,

particularly in energy-intensive industries. Experimental evidence from 2025 indicates that AI-driven energy optimization systems, widely utilized in smart grids and industrial facilities, have achieved measurable reductions in electricity consumption by approximately 15% through real-time demand-pattern adjustments. This aligns with the strategic goal of aligning economic incentives with long-term sustainability, where AI-based precision farming and circular economy models minimize material waste and optimize supply-chain logistics to reduce the global carbon footprint.

Beyond the environmental dimension, AI fosters social sustainability by promoting economic inclusion through the democratization of financial and technical resources. AI-enhanced financial intermediation reduces information asymmetry by processing vast volumes of transaction data to evaluate creditworthiness, thereby expanding access to finance for underserved small firms and entrepreneurs who may lack traditional collateral. This broadening of economic participation supports entrepreneurship and inclusive growth, ensuring that the benefits of technological progress are distributed across a wider socio-economic base. However, this study also identifies a critical trade-off regarding the environmental footprint of AI infrastructure itself, which consumes significant computational power and energy. The sustainability of AI-driven growth is therefore not automatic; it remains contingent upon the integration of AI deployment with clean energy strategies and ethical data governance to prevent the creation of new technological or social imbalances.

5. Discussion

Challenges and Risks: The Macro-Micro Interplay

The implementation of Artificial Intelligence within the global economy introduces a complex set of macro- and microeconomic challenges that must be addressed to ensure long-term stability. At the macroeconomic level, the most pressing concern is labor market displacement and the resulting skill polarization. Experimental research confirms that AI-driven automation tends to replace routine and repetitive tasks while simultaneously increasing the demand for non-routine, analytical, and creative skills. This structural shift risks exacerbating income inequality and social instability if the workforce is not rapidly reskilled to adapt to the new digital landscape. Furthermore, there is a risk of market concentration where “Superstar Firms” with superior access to data and computational resources dominate the AI frontier, potentially stifling competition from smaller startups and slowing the overall pace of creative destruction.

At the microeconomic level, firms face the “jagged technological frontier,” where AI excels at certain complex tasks but fails at others of seemingly similar difficulty, leading to potential performance decreases if not managed with human oversight. There is also a psychological risk identified as “metacognitive laziness,” where an overreliance on AI-generated content may erode critical thinking and independent problem-solving skills over time. For entrepreneurs, while AI lowers entry barriers by making technical tools more accessible, the disparity in individual “absorptive capacity”—the ability to acquire and apply new knowledge—can lead to uneven

performance outcomes, where only high-performing firms see significant gains while others may experience a decline. These challenges underscore that AI is not a standalone solution but a strategic resource that requires active management at all levels of the economy.

The Role of Public Policy and Future Outlook

The conclusion of this multidisciplinary study is that Artificial Intelligence serves as a transformative force capable of catalyzing sustainable economic growth, but its positive impact is a conditional outcome rather than a guaranteed result. To maximize the 7% global GDP increase projected by 2030, public policy must play a central role in shaping the institutional environment. Governments must prioritize investments in digital and data infrastructure to ensure that digital gaps do not lead to fragmented adoption or uneven growth effects across regions. Education and workforce policies must be fundamentally realigned toward human capital development, emphasizing reskilling, STEM education, and labor augmentation to transform potential job displacement into new economic opportunities.

Regulatory frameworks must achieve a balance between encouraging innovation and ensuring accountability through transparency and ethical AI use. By aligning AI incentives with sustainability-oriented goals and green growth strategies, policymakers can ensure that technological innovation serves society as a whole while maintaining public trust. As AI continues to evolve through 2026 and beyond, its potential to support long-term development will depend on collective choices that treat technology as a strategic resource for inclusive and environmentally responsible growth. Ultimately, the successful integration of AI requires a robust human-AI collaboration that considers both the technical capabilities of the models and the deep domain knowledge of human experts.

6. Conclusion

This study has demonstrated that Artificial Intelligence serves as a transformative force capable of catalyzing sustainable economic growth, functioning as a productivity multiplier across manufacturing, energy, and finance sectors. Empirical evidence confirms that AI's effectiveness is highly dependent on institutional readiness and human capital, and that achieving truly sustainable growth requires robust public policies focused on reskilling, digital infrastructure, and ethical transparency. The convergence of AI with sustainability goals represents a paradigm shift where technological progress and environmental protection are no longer in opposition. However, risks including skill polarization, market concentration, and the environmental footprint of AI infrastructure itself must be actively managed. Ensuring that AI-driven progress supports long-term economic stability, enhances living standards, and preserves environmental resources remains the central policy challenge of our era.

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CASE STUDY OF A WASTEWATER TREATMENT PLANT DESIGN AND IMPLEMENTATION USING A TRICKLING FILTER SYSTEM

Blerina Beqaj[1], Enkeleda Shkurta[2]

[1] Department of Environmental Engineering
Polytechnic University of Tirana, Tirana, Albania
[2] National Environmental Agency, Tirana, Albania

Corresponding author: blerina.beqaj@fin.edu.al
(ORCID: 0000-0002-6251-1784)

Abstract

The aim of the study is to improve wastewater management, contributing to the protection of surface and groundwater resources, enhancing the overall sanitation standards. The study addresses the technical and environmental aspects of the project, including the collection, treatment, and disposal of wastewater to minimize the impact on the local ecosystem. The study analyzes the existing wastewater infrastructure in Peja region, highlighting deficiencies such as the lack of proper treatment facilities, outdated sewer systems, and direct discharge of untreated wastewater into river water bodies. The proposed treatment plant aims to mitigate these issues by introducing modern filtration and disinfection technologies, which align with EU standards for wastewater management. Wastewater treatment is a critical aspect of environmental management, aimed at mitigating the adverse effects of urbanization and industrialization on water bodies. The design incorporates a trickling filter system that will remove organic pollutants, followed by anaerobic sludge digestion, ensuring both environmental sustainability and operational efficiency. The proposed scheme will significantly reduce water pollution and health risks in Peja, providing long-term benefits for both the local population and the environment. The implementation of this system is expected to serve as a model for similar developments in the region, promoting sustainable water management practices.

Keywords: Wastewater treatment plant; Wastewater infrastructure; Wastewater management; Trickling filter system, Water management practices; Environmental sustainability.

1. Introduction

The main objective of the wastewater treatment design and implementation is to improve the disposal and treatment of wastewater in the city of Peja. This project will contribute to the protection of surface and groundwater resources in the project area, adaptation to climate change and improvement of the living conditions of the inhabitants of this city. There is no adequate wastewater network in the project area that meets the necessary hygienic and ecological standards. While the built-up area is covered by a large-scale sewage network, the collected wastewater is discharged into the Lumbardhi river without any prior treatment, causing environmental pollution, environmental problems and a health hazard for the population. In order to stabilize this situation, the investment measures foreseen within the project include the closure of the current raw

wastewater discharges into the Lumbardhi river and the connection of the existing sewage networks with the new main trunk lines.

The main components of the project are the construction of the transmission network on one hand and the realization of the Peja wastewater treatment plant (first phase of implementation) on the other. In order to support the operation and maintenance of the wastewater network, it is also foreseen that the existing operating company will be supplied with operation/maintenance equipment (e.g. suction and flushing truck). A full detailed engineering design has been prepared for the sewerage component (main collectors, transmission network and special structures). The wastewater treatment plant will be implemented through a specific construction contract. In order to define the framework conditions for the implementation of the wastewater treatment plant design, a conceptual design was developed for this specific component of the project. In addition to defining the design parameters, the final design report includes the system diagrams for the new sewerage infrastructure, layout plans, the most important hydraulic and process design calculations, structural drawings and static analyses, as well as the results of supplementary studies.

2. Literature Review

Wastewater management is vital for environmental sustainability and public health amid rapid urbanization and industrial growth. The escalating production of wastewater demands effective strategies for water resource preservation and pollution control. This review offers a thorough analysis of wastewater attributes, treatment techniques, and disposal options, emphasizing the importance of holistic management strategies. By understanding wastewater characteristics and implementing appropriate treatment and disposal methods, we can mitigate environmental degradation, safeguard public health, and ensure the sustainable use of water resources in the face of increasing urbanization and industrial activities (Silva, 2023). Etsuyankpa et.al. (2024) argue that domestic wastewater, commonly referred to as sewage, emanates from residential dwellings, commercial establishments, and institutional facilities. It contains a myriad of contaminants, including organic matter, nutrients (such as nitrogen and phosphorus), pathogens, and suspended solids. Industrial wastewater, derived from manufacturing plants, mining operations, and other industrial processes, often contains elevated concentrations of specific pollutants, such as heavy metals, organic chemicals, and hazardous substances. The composition of wastewater exhibits variability based on its source, geographic location, and prevalent land use practices. Urban locales typically yield wastewater with heightened organic and nutrient content due to concentrated human activities, while industrial areas may produce wastewater laden with industry-specific pollutants. A thorough comprehension of wastewater characteristics is imperative for devising tailored treatment strategies and selecting appropriate disposal methodologies (Capodaglio, 2023). Wastewater treatment involves several methods to remove contaminants before discharge or reuse. Primary treatment involves physical processes like screening and sedimentation to remove large

solids. Secondary treatment utilizes biological processes like activated sludge or trickling filters to break down organic matter.

Tertiary treatment employs advanced processes such as filtration, chemical precipitation, and UV disinfection to further purify water. Advanced treatment methods like membrane filtration and reverse osmosis are used for highly contaminated wastewater or to produce high-quality effluent for specific purposes like drinking water reuse. Each method plays a crucial role in ensuring wastewater is treated effectively, protecting public health and the environment (Adetunji et al., 2024).

Trickling filters are a biological treatment technology used in wastewater treatment to remove organic matter and suspended solids. They consist of a bed of porous media, such as rocks, gravel, or synthetic materials, through which wastewater are trickled or sprayed. The wastewater flows over the surface of the media, creating a thin film or "biofilm" where microbial communities develop and attach. As the wastewater passes through the biofilm, organic pollutants are metabolized and degraded by the microorganisms present in the biofilm. This biological process converts organic matter into simpler, less harmful substances, such as carbon dioxide and water. Trickling filters can operate under aerobic or anaerobic conditions, depending on the level of oxygen availability within the biofilm. Aerobic trickling filters require the continuous supply of oxygen to support microbial activity, while anaerobic trickling filters operate in the absence of oxygen. After passing through the trickling filter, the treated wastewater undergoes clarification to separate the treated effluent from any remaining suspended solids or biomass. The clarified effluent can then be discharged into receiving water bodies or subjected to further treatment processes. Trickling filters are an effective and economical method for biological waste water treatment, particularly in smaller-scale or decentralized treatment systems (Koul et al., 2022).

3. Methodology

The existing sewage system in Peja was originally designed as a single network but currently functions as a combined system due to incorrect connections of rainwater and a combined sewage network that is connected to the existing network in the eastern part of the city. The estimated overall connection rate to the public sewage network is between 85% (rural areas) and 95% (city center). The remaining 5-15% of the population discharges mainly into existing open sewers or uses septic tanks. The majority of the wastewater collected in Peja is transported through three main collectors, namely: northern collector, southern collector, and, new eastern collector, continuing through free flow towards the Lumbardhi river. Figure 1, presents an overview of the existing sewerage network in Peja, showing the main collectors and wastewater discharge points. The total length of the wastewater sewerage system is approximately 80.2 km. The manholes of the old main system are generally built at distances not longer than 50 m. The pipe diameters generally vary from ND 200 to ND 1000. There are only small diameter sewage pipes ND 100 and ND 150.

The slope of the pipes varies with the terrain slope from 2 to 27%. The predominant material of the pipes is cementations' aggregate (AC) with a percentage of 73%. The rest are plastic pipes (PVC, HDPE) (23%) and concrete pipes (4%).

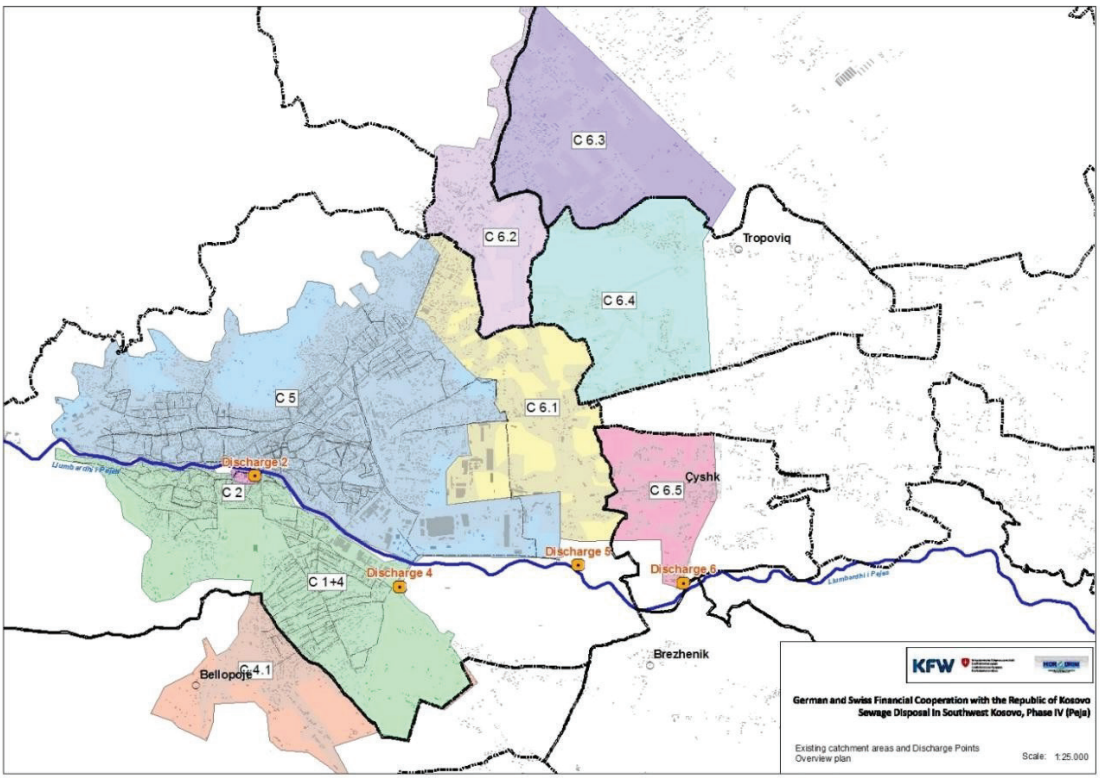

Figure 1. Plan of the existing wastewater network in Peja, water collection areas and discharge points

Based on a least-cost and multi-criteria analysis, a treatment plant with trickling filters and sludge mixing was proposed as the optimal and preferred solution for wastewater treatment technology for the sludge. The trickling filter process technology (fixed bed) for secondary treatment (carbon removal) combined with anaerobic mesophilic sludge mixing was considered to be the best process solution for the final phase of the expansion (design year 2036). For the interim option in the medium term (design year 2026), the construction of an aerobic sludge mixing plant was considered. The current wastewater implementation project includes, in addition to the works on the wastewater network defined above, the main components:

- Construction of a wastewater treatment plant: with bio-mechanical treatment (primary and secondary treatment) and sludge treatment, meeting EU standards for non-sensitive areas;
- Secondary treatment with spray filtration;
- Disinfection of the treated water;
- Mesophilic mixing of the wastewater and mechanical drying of the sludge.

At least a five-year operational period will be required, after the start of operation of the WWTP, in order to start the procedure for the expansion of the wastewater plant. The implementation and design horizon were defined as follows:

- Expansion Phase 1 (implementation 2019/2020; design horizon 2026)
- Expansion Phase 2 (implementation 2025; design horizon 2036)

This implies an operational period of approximately 5 years for phase 1, and another operational period of 10 years for phase 2. For the dimensioning of the wastewater sewerage network, it is most important to look at the built-up areas that are already equipped with sewerage systems or the construction of sewerage networks that is planned in the near future. Furthermore, the current and projected sewerage connection rates must be taken into account. The municipal drinking water consumption is currently 146 l/cap/d. It is assumed that by the target year 2026 (Phase I) the drinking water consumption is 137 l/cap/d, and to be reduced to 120 l/cap/d in 2036 (Phase II). The return ratio was chosen to be 80%. Thus, the specific wastewater production is 110 l/cap/d in 2026 (Phase I) and 96 l/cap/d in 2036 (Phase II). The urban area of Peja has a population of > 50,000 inhabitants. According to ATV 118 (07/1977), the ratio Q_h / Q_d is 1/14 which corresponds to a peak factor P_{dom} = 1.71. The main peak factor for industrial/commercial wastewater depends on the production hours per day and the production days per year. For design purposes, 8 hours of operation per day have been assumed. Thus, the peak factor for industrial and commercial wastewater is 3. The peak wastewater factor in dry weather conditions is calculated below:

$$Q_{DWF} = (Q_{dom} \bullet P_{dom} + \Sigma\, Q_{ind} \bullet P_{ind}) / 24$$

where:

Q_{DWF}	*Peak factor in dry season*	*[m³/h]*
Q_{dom}	*Household wastewater flow*	*[m³/d]*
Q_{ind}	*Industrial wastewater flow*	*[m³/d]*
Q_{inf}	*Infiltration*	*[m³/d]*
P_{dom}	*Peak factor, household wastewater*	*[-]*
P_{ind}	*Industrial & private peak factor*	*[-]*

Although the project area will mainly have a separate sewerage system (with the exception of the eastern catchment area), the infiltration into the Q_{inf} sewerage system should be taken into account when calculating the daily wastewater flow. For the design of the main collectors and the WWTP hydraulic load, an infiltration rate of 30% of the wastewater flow has been assumed. In the event of rain, the additional amount of rainwater entering the sewerage network through manholes or faulty connections must be taken into account. Considering that there is a good storm water drainage system (mainly consisting of open concrete channels) in the project area, it is recommended allowing storm water to be 70% of the wastewater flow. The maximum flow under wet conditions (in case of rain) is calculated from:

$$Q_{WWF} = Q_{DWPF} + Q_{inf} + Q_{SWF}$$

$= Q_{DWPF} + 0.3 \cdot Q_{DWPF} + 0.7 \cdot Q_{DWPF}$

$= 2 \cdot Q_{DWPF}$

Where: Q_{DWPF} *Peak flow factor in dry season* $[m^3/h]$ Q_{inf} *Infiltration* $[m^3/h]$

$Q_{SËF}$ *Rainwater Inflow* $[m^3/h]$

Table 1. Hydraulic Design Flows - Peja Sewerage Systems

Basic Design Data			Phase 1			Phase 2
Year	Unit	2018	202	**2026**	2031	**2036**
Sewage flows						
Quantity of municipal wastewater						
Minimum yield factor x	h/d	40	40	40	40	40
Average yield factor x	h/d	24	24	24	24	24
Maximum yield factor x	h/d	14	14	14	14	14
Hourly nighttime flow of municipal wastewater	m^3/h	166	166	162	167	170
Paverage hourly sewage discharge from the municipal sewage system	m^3/h	277	277	270	278	283
Peak hourly municipal wastewater flow	m^3/h	476	476	464	477	485
Amount of industrial wastewater						
The supply factor	h/d	8	8	8	8	8
River flow of industrial wastewater	m^3/h	149	154	156	154	149
Infiltrated water						
Percentage of Fds	%	30	30	30	30	30
Total average daily infiltration water flow.F_{ind}	m^3/h	1.997	1.997	1.947	2.004	2.039
Average of the supply factor x	h/d	24	24	24	24	24
Hourly flow of infiltrated water	m^3/h	83	83	81	83	85
Rainwater runoff into the system						
Percentage of Fds	%	70	70	70	70	70
Total flowaverage daily water rainfall Fr	m^3/h	7.989	7.988	7.789	8.016	8.154
Average x-factor of inclination	h/d	14	14	14	14	14
Hourly flow of rainwater	m^3/h	571	571	556	573	582
Hydraulic Loads						
Minimum flow during the night	m^3/h	250	250	243	250	255
(municipal sewerage + infiltration)	l/s	69	69	68	70	71
Average flow in dry weather	m^3/h	12.230	12.353	12.178	12.382	12.409
(municipal / industrial sewage + infiltration)	m^3/h	510	515	507	516	517
	l/s	142	143	141	143	144
Peak flows in dry weather	m^3/h	708	713	701	715	719
	l/s	197	198	195	199	200
Peak flows in rainy weather	m^3/h	1.278	1.283	1.257	1.287	1.302
(municipal / industrial sewage + infiltration + rain)	l/s	355	357	349	358	362

The minimum flow is usually the night flow. It is assumed that the minimum flow is distributed over 40 hours of rainwater generation per day (40 hours per 24 hours). This results in the determination of the minimum factor f_{min} = 24/40 = 0.60. The minimum flow is calculated from:

$$Q_{min} = f_{min} \cdot Q_{MWF} + Q_{inf}$$

$$= Q_{DWF} + 0.3 \cdot Q_{DWF} + 0.7 \cdot Q_{DWF}$$

$$= 2 \cdot Q_{DWF}$$

where:	Q_{MWF}	*Flow in dry weather $Q_d/24$*	*[m³/h]*
	Q_{inf}	*Infiltration*	*[m³/h]*
	f_{min}	*Nighttime lead factor*	*[m3/h]*

4. Results and discussions

The primary treatment process consists of screens, an inlet pumping station (to enable the WWTP to reach flood-safe heights) and a network of small channels followed by a sand collection tank and a primary sedimentation tank. It is proposed that the primary sedimentation tank should be designed large enough to ensure efficient mechanical treatment and thus facilitate and reduce the need for further biological treatment steps. The secondary biological treatment stage includes the trickling filter and final cleaning. Trickling filter technology has been applied in biological wastewater treatment for almost 100 years and is still acceptable. In this process, pretreated wastewater is continuously distributed over a trickling filter. Active bacteria and biomass grow a biofilm on the surface of the trickling filters. In modern trickling filter systems, plastic filler material with a high specific surface area is widely used. The oxygen requirement for biological treatment is covered by natural aeration using a holding effect within the trickling filter structure, generally making the process efficient and cost-effective.

According to current regulations and discharge requirements, only organic carbon removal is required, to meet BOD_5<25 mg/l and COD<125 mg/l, respectively. The trickling filters will be dimensioned as intermediate filters with medium or low filtration rates. Thus, the organic carbon removal efficiency is 80-90% and the discharge is partially nitrified or, under optimal conditions, nitrified. De-nitrification and phosphorus removal to a significant extent do not occur. For the disinfection of discharged waters, after the final treatment tanks, a UV irradiation plant will be constructed to meet the microbiological flow values required for irrigation water. If in the future and with the extension of the final phase higher WWTP discharge standards (classification as a water body) are to be respected, the project should be improved to increase the removal of nitrogen and phosphorus, e.g. according to EU Directive 91/271/EEC (N_{tot}<15 mg/l, P_{tot}<2 mg/l). Therefore, the trickling filtration process does not show the same flexibility as an activated sludge plant.

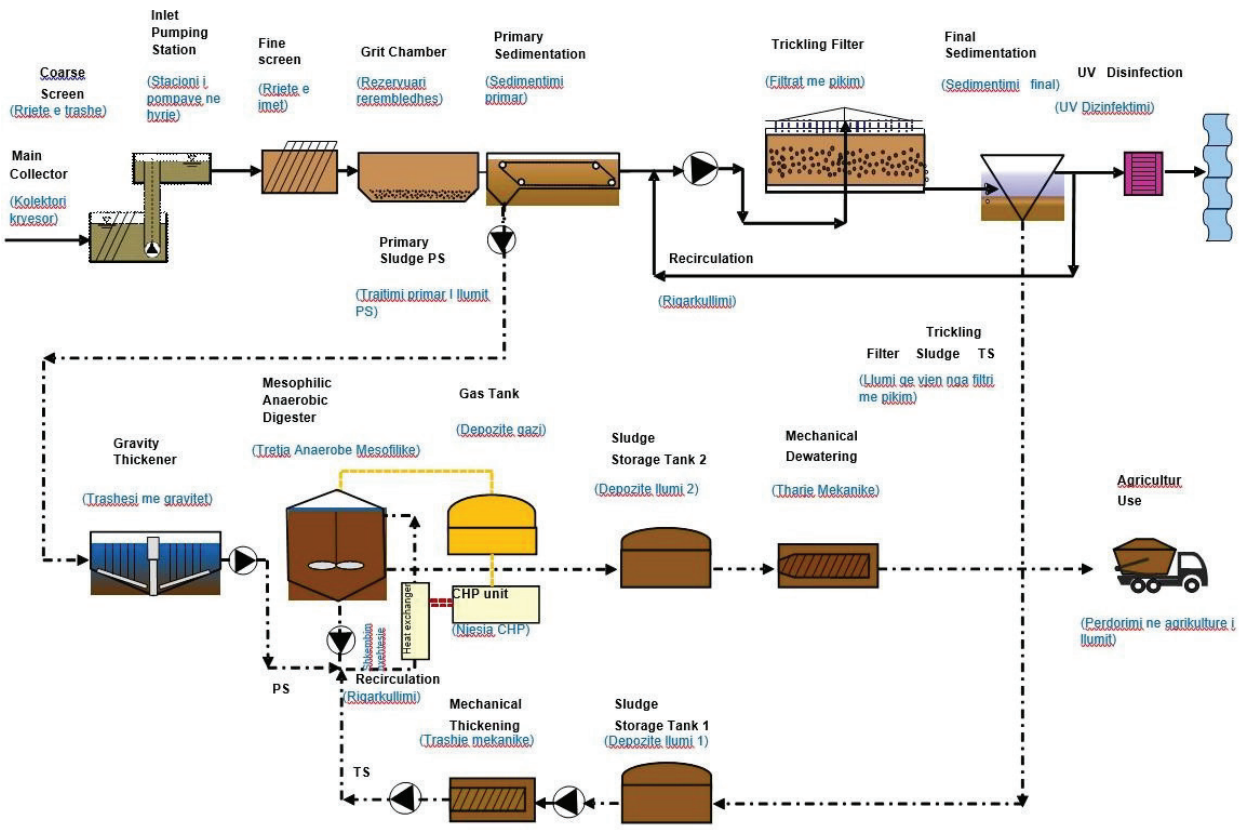

Figure 2. WWTP Flow Process Scheme

In addition to the construction of an additional anoxic tank for denitrification, the former primary treatment tanks will be used as intermediate treatment tanks and will be upgraded accordingly (up to 10 tanks of 200 m² each). The sludge collected in the intermediate treatment tanks is returned to the inlet of the anoxic tank and the produced sludge will be evacuated and discharged into the gravity sump. To ensure the nitrification process, the trickling filter must take on a lower volumetric load of only 0.2 kg $BOD_5/m^3/d$ (instead of 0.6 $BOD_5/m^3/d$ as required for carbon removal). For this reason, the volume of the trickling filter must be tripled. In order to improve the WWTP for nitrogen and phosphorus removal, it may also be considered to convert the WWTP from a trickling filtration process to a conventional activated sludge plant in the future. The former trickling filters will be out of service and can be dismantled or converted for another purpose. After the filter material is removed, the cylindrical concrete structure can still be used as an additional sludge storage tank. Regarding the design horizons 2026 and 2036, the sludge treatment facilities should be designed for 2036. The total amount of raw sludge is in 2036 (6,063 kg DS/d) only 17% higher than in the first phase of 2026 (5,174 kg DS/d). Due to this small increase, it does not make sense to tender the sludge treatment facilities in two phases. Mechanical drying of sludge is necessary to reduce the volume of sludge and restore the DS content to 20-25% of the excess material content. It can also be considered an option if the sludge is to be deposited in a landfill where better mechanical stability of the sludge is required.

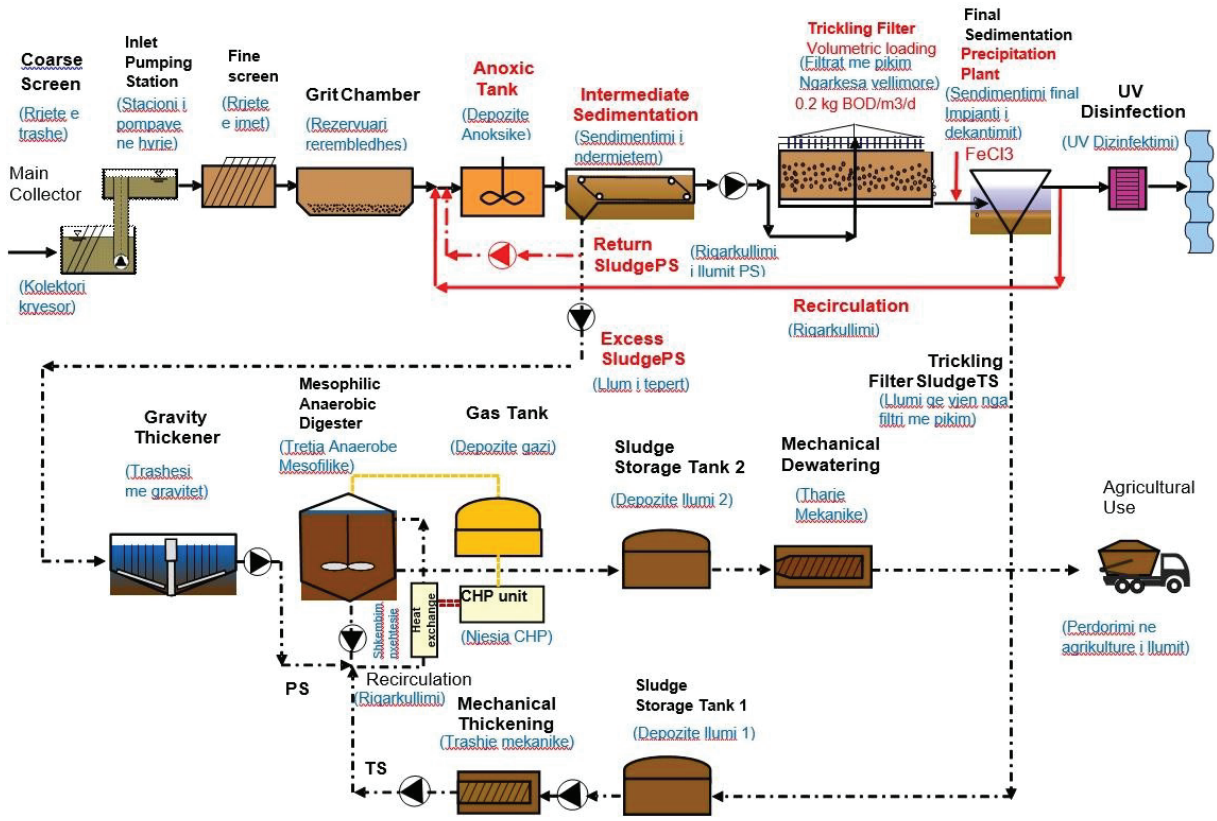

Figure 3. ITUN Peja process table (improvement for denitrification - removal of nitrification and phosphorus)

The heat produced by the biogas exceeds the requirement, which is required to heat the primary sludge at the inlet and the trickling filter sludge and to cover the transmission losses on the mixer surface. Project calculations show that the annual thermal energy requirement will be in the range of 1,300,000 kWh/year. With a modern combined heat and power generation with a thermal efficiency of 55%, the annual heat production using gas from the WWTP Peja coal-fired power plant will be around 1,800,000 kWh/year. The excess heat produced can be used e.g. to heat the operating buildings.

The main transmission pipe ND 800, which transports the wastewater accumulated in the built-up area of Peja, enters the suction pump of the pumping station at the entrance to WWTP at an altitude of -4.20 m above ground level (IL +462.80 m.a.s.l.). In general, the pumping station is divided into a substructure and a superstructure. While the substructure consisting of a wet room and a machine room (dry room for pump installation) is approximately 8 m deep, the superstructure is a small one-story building measuring 10 m x 10 m. The superstructure will mainly contain the low voltage equipment. For monitoring and control of the pumping station, water level measuring devices are necessary to determine the maximum water level, to protect the pump from running dry and to indicate the levels of switching on and off the pumps. For this purpose, water level gauges with galvanic switches will be installed in the wet room near the hinged lid.

Table 2. Process Units – Wastewater Treatment

Unit	Unit number	Unit dimension	Capacity	Comments
Primary treatment				
Thick mesh	1			Basket net
Pumping station at the entrance	2+1		Qp,i = 630 m^3/h H_{man} = 12 m	Surface-mounted installation, not submersible
Fine mesh	2	Channel Width 0.90 m		
Grit Chamber	2	Width1.75 m Length 17.50 m Depth 2.20 m	Holding time 10 min	Longitudinal storage Ventilated Including a grease trap
Primary sedimentation tank	2	Width 5.00 m Length 40.00 m Depth 3.50 m	Holding time 2.0 hr	
Secondary treatment				
Recirculation Pumping Station	2 x 2		Qp,i = 315 m3/h H_{man} = 10 m	Centrifugal Submersible Pump
Drip Filters	2	Diameter25.00 m Height 5.25 m		Plastic Filter
Sedimentation Tank	2	Diameter 32.00 m Depth 4.00 m		Circular Tank
Tertiary treatment				
Disinfection	1			UV rays

In order to achieve simultaneous operation of all pumps, including the standby pump, their switching will be controlled depending on the time they are in operation. In the peripheral areas of Peja and the surrounding areas, where there is no sewage system, wastewater is usually collected in decentralized wastewater treatment systems (septic tanks). In order to create a sustainable way of septic sludge disposal, a combined suction and washing truck will be purchased within the project. With this vehicle, a regular septic tank emptying service can be organized by RWCH. The first operating unit involved in mechanical wastewater Treatment after the inlet pumping station is the fine screen. The arrangement of the fine screen will allow the protection of pumps, valves, pipes and other equipment against damage or obstruction by solid particles and to avoid disturbances in the subsequent biological treatment units.After the fine screen, the second stage of mechanical treatment is the collection tanks. Two sludge collection chambers are planned to remove sludge and grease from the wastewater inflow. The collection tanks have a rectangular shape with a length of 17.5 m, a width of 1.75 m and a depth of 2.2 m each. The retention time is 10 minutes at peak dry weather inflow and 5-6 min at wet weather inflow. Under peak dry weather conditions, the surface load is about 11 $m^3/(m^2*h)$. This is sufficient to remove more than 95% of the total content of the raw wastewater.

The mechanical equipment of the sand collecting tank mainly includes the scraper, sand pumps, grease pumping station and air enrichment system. Rotary piston air enrichment will be used for outdoor installation. They should be installed with a noise cover to minimize noise emission.

Table 3. Process Unit –Sewage Treatment

Unit	Unit number	Unit dimension	Capacity	Comments
Sludge Treatment				
Gravity Thickener Pump Station	1	Diameter 7.50 m Depth 3.30 m	90 kg /(m^2xd)	With a fence
Sludge Deposits I	1	Volume 350 m^3		
TFS Mechanical Thickening Unit	1		65 m^3/h	
Anaerobic digestion	1	Volume 2,175 m^3 Height 18.50 m Diameter 13.50 m	Holding time 21 days	mesophic
Circulation pumps	1+1		Qp,i = 125 m^3/h H_{man} = 3 m	Installation of non-submersible centrifugal pumps
CHP unit	2+0		2 x 250 kW cv 2 x 100 kW el	
Gas Deposit (calorific value)	1	Volume 900 m^3		
Sludge Deposits II	1	Volume 350 m^3		
Mechanical drying	1		17 m^3/h	centrifuge
Sludge storage area	1	Area 300 m^2		cover

For the rest, two primary sedimentation tanks are planned, located in parallel. One can be maintained by a bypass pipe, because one line can always be in use even if the second tank has to be taken out of service for maintenance. The primary sedimentation units are designed as rectangular tanks that pass through a horizontal flow. Each primary sedimentation tank has a length of 40 m, a width of 5 m and a total depth of 3.5 m. From the selected surface area, a hydraulic surface area of 1.75 $m^3/(m^2*h)$ is maintained. In order to achieve a high efficiency of organic matter reduction, a long retention time of about 2 hours was foreseen by the plant design at the point of inflow in dry weather. According to the standards the reduction efficiency for suspended solids is 64% and for BOD_5/COD 33%. In this way, the pollution loaded into the subsequent trickling filters, being the biological treatment unit, is significantly reduced. A chain scraper is provided at the bottom of the tank to collect and transport the primary sludge. The scraper blades move in the direction opposite to the flow of the wastewater to move the primary sludge over the bottom plate towards the tank inlet. The floating sludge is removed from the water surface while the scraper blades move 'in the opposite direction' from the inlet to the tank outlet.

Biological treatment of wastewater will be achieved by trickling filters allowing the reduction of the organic content of wastewater. The dimensioning is made according to ATV DVWK A 281 E

Dimensioning of trickling filters and biological rotating mechanism. In total, two trickling filters with a diameter of 25 m and a height of 5.25 meters are required in Phase 1 of the WWTP. These dimensions ensure sufficient treatment volume to maintain the specific organic pollution load of 0.60 kg $BOD_5/(m^3*d)$ as required to maintain a treatment efficiency of over 90% in terms of organic carbon removal. Depending on the wastewater temperature conditions, the process may allow additional nitrification during the summer season and even during the first phase of application. Drip filters consist of a highly permeable medium bed to which microorganisms are attached and although the wastewater is filtered. The drip filter is a very good and economical treatment process that is applied in many countries. For the WWTP in Peja, plastic filter materials with a high specific surface area of 150 m^2/m^3 must be installed, in order to obtain efficient and cost-effective filtration. The polyethylene filter material is resistant to ultraviolet radiation and has a long service life. In the first phase of construction, two in-line filters will be provided. Each filter will be fed by a separate pump station equipped with three submersible pumps (2 in operation and 1 standby pump). Adequate recirculation will be ensured by the mechanical operation of the check valves at the outlet of the circulation pipes, which can be controlled by the water level in the drip filter pump station. Recirculation of the in-line drip filter is mandatory for two reasons. On the one hand, the inlet to the drip filters must be diluted to achieve a maximum influent concentration of <150 mg BOD_5/l, regardless of the actual inlet concentration to the plant. On the other hand, a minimum hydraulic surface load of > 0.80 $m^3/(m^2*h)$ must be maintained to ensure permanent flushing of the filters even during night-time flow conditions to avoid filter blockage. To maintain a permanent and constant hydraulic load on the surface of the drip filters, for each drip filter pumping station, two pumps with a capacity of 315 m^3/h are selected against a manometric head of 10 meters. After the final cleaning, the flow is avoided in the Disinfection Plant. The treated wastewater at this point still has a count of about 1,257 fecal coliform bacteria/100 ml. In order to reduce the concentration of coliform bacteria to the limit value of 1,000 coliform bacteria/100 ml as required by the World Health Organization (WHO) for unrestricted irrigation, it is planned that a UV irradiation plant will be installed in an outlet channel. The UV open channel system has an integrated compact automatic lifting device to facilitate maintenance and replacement of the fluorescent tubular lamps. In order to achieve a good cycle time through the lamps, the lamp modules are either horizontally arranged or inclined at 45 degrees. Cleaning should be simple and safe by an automatic cleaning system without chemicals. The cleaners consist of a ring and brush design, proven even in waters with high pollution potential. Hydraulically, the disinfection plant will be designed for an average flow of 500 m^3/h and a peak flow of 1300 m^3/h. The water level in the channel will be kept the same by an automatic water control device installed downstream of the UV modules. After the UV disinfection plant, the amount of water flowing out of the Peja WWTP will be continuously recorded by an electromagnetic inductive flow meter MID ND 500. The flow meter is placed in a concrete well. The flow data will be transferred from there to the central SCADA system.

An additional increase in the solids content of the primary sludge is recommended before the subsequent sludge treatment steps. The efficiency and process yield of the subsequent units is

improved with a higher concentration of solids in the primary sludge. Especially in the function of subsequent aerobic sludge digestion and sludge drainage, an increase in the solids concentration is desirable, because a reduced sludge volume simultaneously minimizes the volume of the digester or the required capacity of the mechanical drying equipment. Similar to primary sludge, the trickling filter sludge removed from the final sedimentation tank also requires pre-thickening before digestion. Since the solids content of the trickling filter sludge is low at 0.80% DS, a mechanical thickener is proposed for sludge thickening. This unit is installed in the sludge drying building. With mechanical thickening with either a sludge disc thickener or a cylindrical thickener, a DS concentration of at least 5.0% can be achieved.

Figure 4: Unit of thickness of the disk of the sludge (left), unit of thickness of the cylinder (right)

Final Sedimentation Tanks are designed to allow the trickling filter sludge to settle while the clean water is discharged into the river. Two final sedimentation tanks are planned for the Peja WWTP, and they operate in parallel. In front of the final sedimentation tank itself, there is a device that divides the flow equally. Circular final sedimentation tanks with a diameter of 32.0 m and a depth of 3.5 m at the outer edge and 5.0 m in the center have been designed for the Peja WWTP. From the trickling filters, the treated wastewater flows through an ND 600 pipeline into a cylindrical structure with a central inlet, the so-called inlet cylinder.

Figure 5: WWTP Uelzen, Entrance of the Final Cylindrical Cleaner (left), ITUN Rehburg Loccum (right

For the dimensioning of anaerobic sludge digestion it has been considered to respect a holding time of 21 days in implementation phase 1 and a holding time of 18 days in phase 2 to achieve a fully stabilized sludge. It is important to respect a maximum volumetric load of <2kg oDS/m^3*d as required for mesophilic digesters. With a full design load in the first phase of WWTP implementation, the amount of solids from 5,174 kg ds/d was reduced to 3,343 kg ds/d. As deposits for collecting the sludge from the trickling filters, respectively the mixed sludge, two storage tanks are planned to ensure the storage capacity before the mechanical thickening unit or the sludge drying system. The effective volume of the two sludge storage tanks is 350 m^3. The amount of sludge from the trickling filter is 271 m^3/d before mechanical thickening in stage 1 of the operation and 322 m^3/d in stage 2 of the operation. The retention time of more than one day makes it possible to carry out repair work on the mechanical thickener unit. If longer maintenance periods are required, the mechanical thickener unit must be bypassed and the sludge from the trickling filter will be discharged directly into the digester.

After anaerobic digestion, the amount of sludge with solids is reduced by the decomposition of organic matter. The digested amount of sludge is 102 m^3/d. For this reason, the maximum storage period of sludge tank 2 is more than three days, which is suitable for routine centrifuge maintenance. The filtered water from the mechanical thickening unit and the centrifuge flows into a gravity feed into a concrete tank with a diameter of 12 m and a volume of 450 m^3. The daily amount of sludge produced by the mechanical thickening unit MTU for the trickling filter sludge is 229 m^3/d. In addition, 85 m^3/d of sludge is discharged from the centrifuge. Both the MTU and the centrifuge must be constantly cleaned with process water, which requires another 15 m^3/d of rinsing water. Therefore, the total amount of sludge water is about 330 m^3/d in the 1st stage of the expansion and 450 m^3/d in the 2nd stage of the expansion. The selected volume of the liquid sludge tank ensures a volume reserve for the final stage of solidification. Before its final cleaning, the dewatered sludge is transported by a spiral shaft conveyor from the centrifuge to the sludge drying building to a nearby sludge storage location. The amount of dried sludge with a solids content of 20% ds is in phase 1 about 17 m^3/d. Generally, the sludge storage location consists of a concrete bottom plate with a slight slope to the front. The sludge liquid is collected in a drain which is connected to the internal sewage system of the wastewater treatment plant.

5. Conclusion

Wastewater management is a critical aspect of environmental stewardship and public health. This review has provided an overview of wastewater characteristics, treatment methods, and disposal options, highlighting the complexity and importance of managing this ubiquitous byproduct of human activity. Wastewater varies widely in composition, depending on its source and the activities it has been exposed to. Effective treatment processes are essential to remove pollutants, pathogens, and nutrients, ensuring that discharged effluent meets regulatory standards and does not pose a risk to human health or the environment. Various treatment technologies, ranging from physical and chemical processes to biological treatments, offer versatile approaches to wastewater treatment.

These methods must be tailored to the specific characteristics of the wastewater and the desired quality of the treated effluent. Furthermore, the selection of appropriate disposal options, such as surface water discharge, land application, or groundwater recharge, requires careful consideration of environmental impacts, regulatory requirements, and sustainability considerations. Overall, integrated approaches that prioritize pollution prevention, resource recovery, and ecosystem protection are essential for sustainable wastewater management. Continued research, innovation, and collaboration are needed to address emerging challenges and ensure the long-term viability of wastewater treatment and disposal practices.

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GOVERNING ARTIFICIAL INTELLIGENCE: ETHICS, LAW, AND RISK-BASED COMPLIANCE (WORKING DRAFT, APRIL 2026)

Bujar Taho
Mediterranean University of Albania
Email: bujar.taho@umsh.edu.al

(ORCID: 0009-0008-6754-1983)

Abstract

This article examines the governance of artificial intelligence (AI) in Europe by focusing on its ethical, legal, and compliance frameworks. It explores the responsibilities of different stakeholders involving both private and public entities as well as how obligations vary across sectors where AI is designed and applied. Particular attention is given to the intersection between technolocial innovation and fundamental rights protection.

Methodologically, the article relies on the analysis of statutory law, case law, and academic literature, especially in areas of data protection, algorithmic accountability, and automated decision-making. It situates the risk-based European model along side the American and Chinese models, highlighting both its normative ambitions and practical limitations.

The findings suggest that the European risk-based approach stands out as a relatively comprehensive model, as it seeks to translate ethical concerns into binding legal obligations through structured risk assessment, compliance requirements, and sector-specific regulation. However, persistent challenges, including algorithmic opacity, limited access to proprietary systems, and weak enforcement capacities risk undermining its full effectiveness.

This article argues for a combined rights-centered perspective with a robust compliance-based framework. It suggests that ethical principles be embodied in concrete practices of AI design, deployment, and post-market monitoring. It further supports a continuous alignment between fundamental rights and technical development, ensuring that innovation remains accountable to democratic and constitutional values throughout the entire lifecycle of AI systems.

Keywords

Artificial intelligence; AI Governance; Risk-based regulation; AI Ethics, Compliance; Fundamental Rights

1. Introduction

Artificial intelligence (AI) is becoming an increasingly central component of decision-making across key domains of social life, including education, employment, healthcare, public administration, and law enforcement. As a result, decisions affecting fundamental rights and life opportunities are progressively mediated, and is some cases determined, by algorithmic systems. This development represents a structural transformation in how authority is exercised, how decisions are justified, and how they are contested in democratic societies, reshaping the relationship between human judgement, technological systems, and normative legitimacy (loriidi et al., 2018); Smuha, 2025).

Unlike earlier technological innovations, AI systems are characterized by their capacity for autonomous learning, scalability, and adaptive data processing. In particular, machine learning systems, especially those based on deep learning architechtures, often function as "black boxes," generating a persistent tension between performance, explainability, and human control (Russell & Norvig, 2021). This tension reshapes the epistemological foundations of decision-making, where statistically accurate outputs may nevertheless remain normatively opaque. Consequently, serious concerns arise regarding accountability, due process, and the protection of fundamental rights (Mittelstadt, 2019; Wachter et al., 2017).

The implementation of this transformation extends beyond technical considerations and directly affect the structure of legal and institutional governance. AI can be understood as a normative intermediary that reshapes not only how decisions are made but also the criteria upon which they are justified. Traditional legal frameworks are built on assumptions of human agency, traceability, and identifiable responsibility. However, in AI-driven systems, decision-making is distributed across complex socio-technical networks involing developers, data providers, deployers, and public institutions. This distributed architechture significantly complicates causal attribution and challenges classical doctrines of liability and causation (Calo, 2017). In paralel, ethical discourse

an AI has expanded significantly, producing widely recognized principles such as fairness, accountability, transparency, and human oversight, which now dominate both academic literature and policy frameworks (Floridi et al., 2018; Jobin et al., 2019). However, critical scholarship emphasizes that these principles often remain abstact and difficult to operationalize, risking their reduction to symbolic compliance tools rather than effective governance mechanisms, a phenomenon widely referred to as “ethics washing” (Mittelstadt, 2019; Schutz et al., 2025)

In this context, a clear gap emerges between ethical aspirations and the legal-institutional capacity to implement them. While risks such as algorithmic discrimination, lack of transparency, and violations of fundamental rights are widely acknowledged, existing legal instruments often remain fragmented or insufficient in addressing the pace and complexity of technological innovation. As highlighted in contemporary scholarship on AI governance, the central challenge is no longer the idenfitication of principles, but their translation into enforceable obligation and effective oversight mechanism (Smuha, 2025; Veale & Borgesius, 2021).

Within this framework, the jurisprudence of the Court of Justice of the European Union (CJEU) and the European Court of Human Rights (ECtHR) provides an important interpretative dimension for understanding the limits and possibilities of rights-based AI governance. Cases such as Google Spain (CJEU, 2014), Facebook Ireland (CJEU, 2019), Schrems II (CJEU, 2020), and Schufa Holding AG (CJEU, 2023) illustrate efforts to operationalize data protection and privacy rights in increasingly algorithmic environments. Similarly, ECtHR judgments such as S. and Marper v. the United Kingdom (2008), Roman Zakharov v. Russia (2015), Big Brother Watch and Others v. the United Kingdom (2021), M.L and W.W. v. Germany (2018), and Barbulescu v. Romania (2017) reflect the Court’s evolving approach to balancing surveillance, security, and fundamental rights in the digital age.

Against this background,this article addresses the governance gap through an integrated analytical framework linking ethics, law and compliance. It argues that the effectiveness of AI governance depends on the coherent interaction of these three layers: ethical principles as a normative foundation, legal frameworks as binding instruments, and compliance mechanisms as operational structures that enable implementation in practice.

Building on a critical and interdisciplinary approach, the article further examines risk-based regulatory models, particularly as developed in the European Union through the AI Act, and evaluates their practical implementations. Finally, it proposes a compliance-centered governance model in which compliance is understood not as a static legal obligation, but as a dynamic institutional process that connects abstract normative principles with concrete enforcement across the entire lifecycle of AI systems, from design and development to deployment and post-deployment monitoring.

2. Literature Review

2.1 Ethical Foundations of AI Governance

The ethics of artificial intelligence (AI) has rapidly developed into a multidisciplinary field combining moral philosophy, legal theory, computer science, and public policy. A central feature of this development is the proliferation of ethical guidelines aimed at fostering "reasonable AI." A landmark study by Jobin, Ienca, and Vayena (2019) identifies a high degree of global normative convergence, particularly around principles such as fairness, accountability, transparency, and privacy. Floridi et al., (2018), through the AI4People framework, propose a structured ethical model grounded in bioethical principles of beneficence, non-maleficence, autonomy, justice, and explicability, thereby linking AI governance to established traditions of moral philosophy. This convergence is further reinforced in contemporary scholarship, particularly in The Cambridge Handbook of Artificial Intelligence (Smuha, 2025), where Smuha emphasizes the emergence of a shared normative baseline across jurisdictions.

However, this apparent consensus has been critically challenged. Mittelstadt (2019) argues that ethical principles are inherently under-specified and operationally weak, requiring interpretation, prioritization, and institutional embedding. In practice, these principles often fail to guide real-world decision-making, especially when trade-offs arise. Hendrycks (2024) further illustrates how optimizing AI systems for societal benefit may conflict with individual rights, highliting tensions inherent in consequentialist approaches.

Recent scholarship movers beyond abstract princiles toward contextual and design-oriented approaches. Buijsman, Klen, and van den Hoven (2025) advocated a "design for values"

methodology, embedding ethical considerations directly into technological systems. Similarly, Hladikoba, Wand, and Martinho (2025) describe a “third moment” of AI ethics, emphasizing the need for relatable, context-sensitive, and operational tools. At the same time, the literature identifies a growing risk of ethic washing. Schuttz, Conti and Seele (2025) provide a systematic analysis of “digital ethics washing”, demonstrating how ethical framework are often deployed as reputational tools without substantive organizations change. This critique aligns with earlier concerns that ethical discourse remains detached from institutional realities.

Overall, the literature reveals a structural limitation: while ethical principles are widely accepted they remain insufficiently translated into actionable governance mechanisms, necessitating stronger links with legal and compliance frameworks.

2.2 Legal and Regulatory Approaches

The legal regulation of AI has evolved significantly, reflecting increasing concerns about its implact on fundamental rights, markets, and democratic institutions. A central development is the emergence of the risk-based regulatory model, particularly within the European Union. Veale and Borgesius (2021) provide a foundatinal analysis of the EU AI Act, explaining its classification of AI systems according to risk levels and the imposition of proportionate obligations. This framework is further critically examined by Smuha and Yeung (2025), who argue that the AI Act represents a significant regulatory innovation but faces challenges in balancing ambition with enforceability.

The risk-based model operationalizes ethical principles into binding legal requirements, particularly for high-risk systems, which must comply with oblications such as conformity assessment, transparency, and human oversight. Almada (2023) conceptualizes this approach as “regulation by design”, where governance is embedded into technological development processes rather than applied ex post. However, the literature highlights persistent challenges. Risk classification involves normative and political judgments, leading to potential inconsistencies and uncertainty. Moreover, as Calo (2017) notes in the context of the United States, alternative regulatory models rely on sectoral and market-based approaches, which prioritize innovation but often lack systematic coherence.

Within the EU, the General Data Protetion Regulation (GDPR) remains a cornerstone of AI governance. Dewitte (2025) explores the interaction between AI systems and data protection law emphasizing the regulatory constraints imposed by GDPR principles. However, the effectiveness of these safeguards in contested. Wachter, Mittelstandt, and Floridi (2017) argue that a legally enforceable "right to explanation" does not clearly exist, while Brkan (2019) questions whether algorithms are effectively reshaping legal authority and decision-making processes.

Taken together, the literature suggests that while legal frameworks are becoming more sophisticated, they face significantly challenges in implementation, interpretation, and enforcement, particularly in rapidly evolving technological contexts.

2.3 Accountability, Liability, and Algorithmic Opacity

Accountablity remains one of the most complex issues in AI governance. Traditional legal frameworks assume clearly identifiable actors, yet AI systems distribute decision-making across multiple states and stakeholders (Calo, 2017). This fragmentation complicates the attribution of responsibility. A central challenge is algorithmic opacity. As Wachter, Mittelstadt, and Floridi (2017) demonstrate, the technical complexity of AI systems limits transparency and undermines meaningful accountability. This opacity creates barriers to establishing causation and accessing legal remedies. Brkan (2019) further explores how algorithmic decision-makinng challenges traditional legal concepts, raising concerns about the shifting locus of authority from human actors to automated systems. These development necessitate rethinking liability frameworks. The literature proposes several responses, including adapting existing doctrines and developing new liability regimes. Raji et al. (2020) emphasize the importance of institutional accountability mechanisms, arguing that technical solutions alone are insufficient. Instead, governance must incorporate auditing, oversight, and operational responsibility structures. Despite these proposals, a consensus remains elusive. Accountability in AI systems continues to be constrained by both technical limitations and institutional fragmentation, reinforcing the need for integrated governance approaches.

2.4 Compliance and Sectore-Specific Governance

Recent scholarship increasingly identifies compliance as the critical intermediary layer between ethical principles and legal norms. Rather than viewing compliance as mere rule-following, it is conceptualized as a dynamic governance process involcing risk assessment, auditing, monitoring, and continuous adaptation (Raji et al., 2020).This perspective aligns with broader developments in AI governance. Russel and Norvig (2021) highlight the technical complexity and evolving nature of AI systems, underscoring the need for adaptive and iterative governance mechanisms. Compliane tools such as impact assessment, audits, and monitoring enable the operationalization of both ethical and legal requirements.

The concept of regulation by design (Almada, 2023) further reinforces this shift, integrating compliance mechanisms directly into system development. This approach reflects a move toward proactive governance, where risks are anticipated and mitigated throughout the lifecycle of AI systems. Sector-specific governance remains essential in this context. Different domains such as healthcare, finance, and public administation, require tailored compliance frameworks reflecting their specific risks and regulatory environments. As emphasized across contributions in Smuha (2025), effective AI governance depends on context-sensitive implementation rather than one-size-fits-all solutions. Hybrid governance models combining hard law and solf law instruments are increasingly advocated. These models offer flexibility while maintaining enforceability, enabling regulators to respond to technological change without sacrificing accountability.

2.5 Rearch Gap

A key insight emerging from recent scholarship, particularly Hladikova et al. (2025) and Raji et al.(2020), is the need to move beyond abstract principles toward contextualized, operational governance tools. At the same time, critiques of ethics washing (Schultz et. al., 2025) highlight the risk of relying on non-binding frameworks without institutional enforcement. The central research gap, therefore, lies in the absence of a fully integrated governance model that systematically links ethical principles, legal obligation, and compliance mechanisms. Most existing studies treat these dimensions separately, resulting in fragmented analysis and partial solutions.

3. Theoretical Framework and Methodology

3.1 Theoretical framework

This article relies on interpretivist (Dworikin, 1986) and normativist (Kelzen) approaches to legal rules, allowing for contextual and evolving legal responses to the socio-technological change sourrounding the AI governance. Interpretivism, as articulated by Dworkin (1986), understands law not merely as a system of fixed rules but as an interpretive practice that seeks coherence between legal principles and their application. This approach is particularly relevant to AI governance, where legal norms must continuously adapt to rapidly evolving and often unpredictable technological developments. Complementing this, normative legal theory provides the basis for evaluating not only what the law is, but what it out to be in order to ensure justice and the protection of fundamental rights (Raz, 1979). This dimension is essential for analyzing the tension between technological innovation and fundamental rights protection in algorithmic systems.

3.2 Research Design

The research design is structured around three complementary methodological components, combining doctrinal, comparative, and compliance-based approaches to analyze the interaction between between ethical principles, legal frameworks, and operational mechanisms. First, doctrinal legal analysis is used to examine existing legal framework governing AI, including European legislation and case law as well as relevant academic commentary. This method enables a contextual understanding of principles, rules and their implementation. Second, comparative legal analysis is employed to evaluate the European risk-based model in comparison with the more fragmented, market-oriented approach in the United States (Calo, 2017; Veale & Borgesius, 2021), and the state-centric and centralized governance model in China (Zeng et al., 2021). This comparative approach allows for the identification of alternative solutions to the same problem. Third, interdisciplinary synthesis insights from law, ethics, and compliance studies. This approach conceptualizes AI governance as multi-layered system in which normative principels, legal rules, and operational practices interact dynamically to shape regulatory outcomes.

3.3 Data Collection and Sources

Primary sources include key legal and policy instruments shaping data protection and AI governance. First, the General Data Protection Regulation (GDPR), applicable since May 2018

establishes a comprehensive framework for personal data protection, grounded in principles of transparency, security, and accountability in data processing. (Regulation (EU) 2016/679). Second, the EU Artificial Intelligence Act introduces a risk-based regulatory model for AI systems, ranging from unacceptable (prohibited) to minimal risk. It applies to companies deploying AI systems on the EU market, regardless of where they are located, with administrative fines for noncompliance reaching up to 7% of the annual turnover or 35 million EUR. (Regulation (EU) 2024/1689). Third, the OECD AI Principles, adopted in 2019 and updated in 2024, set global standards for trustworthy AI aligned with human rights and democratic values, emphasizing inclusive growth, human-centered-values, transparency, robustness, and accountability. Finally, the UNESCO Recommendation on the Ethics of Articifial Intelligence provides a global normative framework calling for AI systems to be human-centured, fair, and subject to effective oversight, offering guidance to policymakers, regulators, academia, and the private sector in addressing emerging AI challenges.

Secondary sources consist of peer-reviewed academic literature published primarily between 2016-2025, with selective inclusion of foundational theoretical works. Key studies include Floridi et al. (2018), Handrycks (2024), Smuha (ed.2025)', particularly The *Cambridge Handbook of AI Ethics, Law and Policy*, which synthesizes current developments in AI ethics, law, and governance.

Although there is not yet direct jurisprudence interpreting the EU AI Act, existing case law on data protection and fundamental rights provides important interpretative guidance. In particular, jurisprudence from the CJEU and ECtHR is used as a proxy for understanding how courts may approach AI-related issues. Key CJEU cases include *Google Spain* (CJEU, 2014), *Nowak* (CJEU, 2017), *Schrems II* (CJEU, 2020), *Facebook Ireland* (CJEU, 2019), *SCHUFA Holding AG* (CJEU, 2023). Complementary ECtHR jurisprudence includes *S. and Marper v the UK* (ECtHR, 2008), *Roman Zakharov v. Russia* (ECtHR, 2015), *Barkulescu v Romania* (ECtHR, 2017), *M.L. and W.W v Germany* (ECtHR, 2018), *Big Brother Watch and Others v the UK* (ECtHR, 2021). These cases are treated not only as binding or persuasive precedents within their respective jurisdiction, but also as normative benchmarks illustrating how courts construct a balance fundamentatl rights, particularly privacy, data protection, and freedom of expression, in contexts increasingly shaped by algorithmic decision-making and large-scale surveillance.

3.4 Analytical Framework

The analytical framework is structured into three interrelated layers. The first layer identifies ethical principles as normative foundations of AI governance. The second layer examines how these principles are translated into binding legal obligations though regulatory instruments, including GDPR and the AI Act. The third layer focuses on compliance mechanisms, including auditing, risk assessment, documentation, and continuous monitoring, as key operational tools for implementation (Raji et. al., 2020). The analysis is further guided by normative legal criteria such as proportionality, non-discrimination, and due process, which are used to assess the effectiveness of regulatory mechanisms in light of relevant jurisprudenc from the CJEU and ECtHR, thereby linking abstract principles to their judicial application in data protection, surveillance, and algorithmic decision-making contexts.

3.5 Limitations

This medogolog has several limitations. First, the absence of an empirical component limits the ability to assess how regulatory frameworks are implemented in practice within organization and institutions. Second, the focus on the European regulatory context restricts the comparative breadth of global AI governance models. Third, given the rapidly evoling nature of AI technologies and regulatory developments, some findings may require future updating to reflect emerging legal and technical changes.

4. Results

This study identifies four interrelated findings concerning the ethical, legal, and operational dimensions of AI governance. While the analysis reveals significant progress in structuring AI governance at European and international levels, it also highlights persistent gaps that limit its practical effectiveness. Each finding reflects a distinct analytical dimension, grounded in doctrinal interpretation, literature systhesis, and comparative regulatory analysis.

4.1 Ethical principles as normative foundations: Widespread recognition, limited operationalization

The analysis confirms a high degree of convergence regarding the ethical principles guiding AI development and deployment. Across academic literature and international policy frameworks, principle such as fairness, accountability, transparency, and human oversight consistenly emerge as foundational (Floridi et al., 2018; Jobin et al., 2019). This convergence indicates the existence of a shared global normative baseline. However, this alignment at the level of principles is not matched by consisten operationalization. As highlighted by Mittelstadt (2019), ethical principles remain abstract, under-specified, and difficult to translate into actionable standard. For instance, fairness lacks a universal accepted definition and encompasses multiple completing interpretation, which complicates implementation in practice (Smuha, 2025).

Similary, transparencey, particularly in complex machine learning systems, is constrained by technical limitations. As demonstrated by Wachter, Mittelstadt, and Floridi (2017), meaningful explanaibility is often unattainable without compromising performance or revealing proprietary information. Consequently, transparency is frequently reduced to procedural measures (e.g., documentation or disclosure), rather than substantive interpretability. Accountability presents similar challenges. While widely endorsed, it remains unclear how responsibility should be allocated across the AI lifecycle, which involves multiple actors and stages. Human oversight, although formally embedded in many frameworks, often operates as a formal rather than substantive safeguard, limiting its effectiveness.

Overall, this finding demonstrates that ethical principles function as a consolidated normative foundation, but lack sufficient precision and institutional embedding to ensure consistent implementation. The tension between ethical principles and their operational limits is reflected also in CJEU jurisprudence on data processing transparency and explainability, particularly in *Nowak v Data Protection Commissioner*, which undescores the legal importance of meaningful interpretability in automated decision contexts.

4.2 Risk-based regulation: Structured Governance with Implementation Challenges

The analysis identifies the risk-based approach as the dominant regulatory model, particularly within the European Union through the AI Act (Veale & Borgesius, 2021; Smuha & Yeung, 2025). This framework structures regulatory intervention by linking the intensity of legal obligation to the level of risk posed by AI systems. Under this model, AI systems are categorized, from minimal to unacceptable risk, and subject to differentiated regulatory requirements. High-risk systems, especially in domains such as healthcare, public administration, and law enformcement, must comply with stringent obligations, including conformity assessment, technical documentation, data governance, and human oversight mechanisms. This approach enhances regulatory proportionality and differentiation, aligning governace intensity with potential harm. It also reflects broader shifts toward "regulatory by design" (Almada, 2023), embedding governance requirements into the lifecycle of AI systems. Nevertheless, the analysis reveals significant implementation challenges. Risk classification involves both technical and normative judgments, leading to interpretative variability and potential inconsistencies. Furthermore, compliance requirements, such as auditing, documentation, and risk management, demand substantial technical and organizational capacity, which is uneven distributed across actors.

Thus, while the risk-based model provides a structured and systematic governance framework, its effectiveness is constrained by variability in implementation, enforcement capacity, and institutional readiness. The regulatory emphasis on risk differentiation and proportional obligations resonates with the EU's broader fundamental rights framework as interpreted by the ECtHR in cases requiring proportionality in interference with individual rights, particularly in data-driven regulatory contexts.

4.3 Fragmented Responsibility: Distributed Causation and Doctrinal Misalignment

The findings highlight a significant fragmentation of responsibility in AI systems, stemming from their multi-actor and multi-stage nature. Unlike traditional technologies, AI systems involve a complex chain of actors, including developers, data providers, deployers, and end-users, each contributing to system outcomes (Calo, 2017).This distributed structure complicates the attribution of causation. Outcomes often result from the interaction of models, data, and human inputs, making it difficult to isolate a single responsible actor. As a result, establishing legal responsibility becomes increasingly complex.

The problem is exacerbated by algorithmic opacity. As argued by Wachter, Mittelstadt, and Floridi (2017) and further discussed by Brkan (2019), limited transparency restricts the ability to reconstruct decision-making processes, thereby undermining accountability and acces to remedies. Existing legal doctrines, such as negligence and product liability, appear misaligned with the distributed and dynamic nature of AI systems. These frameworks rely on identifiable actors and clear casual link, which are often absent in AI contexts.

This finding reveals a structural mismatch between traditional liability frameworks and contemporary AI architectures, resuling in gaps in accountability and enforcement. The problem of fragmented accountability in AI systems is directly reflected in jurisprudence such as *Schufa Holding AG*, which illustrates the difficulty of attributing legal responsibility within complex algorithmic decision-making chains.

4.4. Sector-specific compliance: Uneven development and contextual Differentiation

The analysis demonstrates that compliance mechanisms in AI governance are unevenly developed across sectors, reflecting differencies in risk levels, regulatory maturity, and institutional capacity. High-risk sectors such as healthcare, finance, and public administration exhibit more advanced regulatory and compliance frameworks. In healthcare, strict requirements for safety, efficacy, and validation are enforced; in finance, emphasis is placed on fairness, transparency, and consumer protection; while in public administration and law enforcement, concerns focus on proportionality, discrimination, and fundamental rights (Dewitte, 2025; Smuha, 2025). However, this development is fragmented, Some sectors benefit from robust compliance infrastructures, while others remain under-regulated or wealy enforced. This creates an uneven regulatory landscape, with varying levels of protection and accountability.At the organizational level, there is a growing adoption of internal compliance systems, including audits, risk assessments, and governance structures for AI (Raji et al., 2020). These mechanisms paly a crucial role in translating legal requirments into operational practice.

Overall, this finding indicates that compliance in AI governance evolves along sectoral and institutional trajectories, resulting in differentiated implementation patterns rather than uniform application. Sector-specific compliance variation aligns with the ECtHR jurisprudence on context-

senstive proportionality, particularly in survelliance and data protection cases such as Big Brother Watch and Others v UK, which emphasizes differentiated safeguards depending on institutional settings.

5. Discussion

The findings in section 4 reveal an AI governance landscape characterized by normative convergence but operational fragmentation. Ethical principles are widely recognized but difficult to implement; risk-based regulation provides structure but faces practical challenges; responsibility is distributed and often unclear; and compliance mechanisms develop unevenly across sectors. This section interprets the findings in light of doctrinal debates on regulation, legal responsibility, and technical governance, arguing that an emerging model of compliance-centered governance is gradually becoming the key mediating layer between normative aspirations and legal enforceability.

5.1 From normative convergence to operational indeterminacy

As demonstrated in Finding 4.1, there is strong convergence on foundational ethical principles such as fairness, transparency, accountability, and human oversight (Floridi et. al., 2018; Jobin et. al., 2019). This reflects what can be described as normative harmonization without operational precision, a recurring theme in AI governance literature. This tension is also visible in EU and human rights jurisprudence, where courts acknowledge the importance of data protecton and informational self-determination but struggle with operational translation in algorithmic contects. In *Google Spain v AEPD* (CJEU, 2014), the Court establishes the "right to be forgotten," grounding data governance in dignity and privacy, yet leaving open complex questions regarding algorithmic indexing and automated visibility control. Similarly, in *Nowak* (CJEU, 2017), the Court adopted a broad interpretation of "personal data", reinformcing an expansive protective regime. However, this conceltual breadth does not resolve how such rights are operationalized within opaque machine learning systems. *The Facebook Ireland* (CJEU, 2019) judgment further highlights the limits of abstract rights when confronted with large-scale data processing, particularly regarding lawful basis and secondary data use. Likewise, Schrems II (CJEU, 2020), illustrates how fundamental rights reasoning constrains data flows but creats substantial compliance uncertainty

for global AI infrastructure. In this sense, CJEU case law reflects the same structural issue identified in the results: strong normative commitment but weak operational determinacy.

At the human right level, ECtHR jurisprudence reinforces this patern. In *S. and Marper v UK* (2008), the Court emphasized the importance of data retention limits, establishing strong proportionality reasoning. However, in technology complex environments, proportionality often become indeterminate and context-sensitive, requiring case-by-case balancing rather than systemic rules. Similarly, Roman Zakharov v Russia (2015) and Big Brother Watch v UK (2021) demonstrate the Court's increasing concern with mass surveillance systems, while also revealing the difficulty of translating abstract proportionality standards into concrete algorithmic governance requirements.

Overall, both doctrinal and jurisprudential developments confirm that normative convergence does not eliminate operational ambiguity, but rather shifts the burden to institutional interpretation and compliance structures, particularly within judicial and regulatory institutions.

5.2 Risk-Based Regulation as Structured Governance: Between proportionality and inderminancy

Finding 4.2 identifies the risk-based regulatory model, particularly the EU AI Act, as the dominant governance structure (Veale & Borgesius, 2021; Smuha & Yeung, 2025). This reflects a doctrinal shift toward proportionality-based regulation, consistent with broader regulatory theoretical and policy frameworks (Almada, 2023); (UNESCO, 2019/2024). However, jurisprudence shows that proportionality is not a fixed standard but a dynamic interpretive technique. In CJEU's *Data Protection Commissioner v Facebook Ireland and Schrems* (Schrems II, 2020), proportionality analysis led to the invalidation of the Privacy Shielf Framework, demonstrating how risk assessment can destabilize regulatory arrangements. Similarly, ECtHR jurisprudence in *Big Brother Watch and Others v UK* (2021) shows that even structured surveillance regimes must be continuously justified under evolving proportionality standards.

This doctrinal fluidity mirrors the finding that risk classrification is not purely technical but involves normative judgment about acceptable harm, societal priorities, and political values (Yeung, 2018). The ECtHR's reasoning in *Roman Zakharov* (2015) further illustrates this point. The Court emphasized systemic safeguards rather than individual harm, effectively shifting from

ex post liability to ex ante structural governance, an approach that closely parallels the logic of risk-based regulation of AI. At the same time, the ECtHR's insistence on "adequate and effective safeguards" demonstrats the importance of institutional capacity, reinforcing the study's finding that compliance burdens are unevenly distributed across actors.

Thus, risk-based regulation emerges as a hybrid governance model, combining normative classification, legal obligations, and operational compliance. However, its effectiveness depends on institutional capacity and interpretive consistency, both of which remain uneven.

5.3 Fragmented responsibility and the limits of legal causation

Finding 4.3 highlights a fundamental mismatch between distributed AI systems and traditional doctrines of legal responsibility. Classical frameworks such as negligence and product liability presupposes linear causation and identifiable actors (Calo, 2017). This assumption is increasingly challenged by the architechture of AI systems, where causation is distributed across datasets, models, and deployment environments.

EU case law on data protection indirectly reflects these tensions. In *Nowak* (CJEU, 2017) and *Facebook Ireland and Schrems* (2019), the Court expanded the notion of personal data and controller responsibility, implicitly acknowledging distributed processing structures. However, these rulings still rely on identifiable "controllers", which may not map clearly onto AI ecosystems involving multiple autonomous components. Similarly, *Google Spain* (2014) introduces a form of distributed responsibility between search engines and content originators, foreshadowing challenges in assigning liability in algorithmic evironments. At the ECtHR level, *S. and Marper* (2008) and *M.L. and W.W. v Germany* (2018) emphasize the importance of data retention proportionality, but do not resolve issues of algorithmic causation. *Roman Zakharov* (2015) and *Big Brother Watch* (2021) further illustrate a shift toward systemic responsibility, where states are held accountable for structural surveillance regimes rather than individual acts.

This jurisprudence suggests an emerging but incomplete transition from individual causation to systemic responsibility frameworks. The finding of fragmented responsibility thus reflects a deeper doctrinal limitation: legal systems are increasingly required to govern non-linear, socio-technical causation structures, for which traditional liability models are insufficient.

5.4 Sectoral Diffentiation and the Institutionalization of Compliance

Finding 4.4 demostrates that compliance mechanisms in AI governance are unevenly developed across sectors, reflecting differences in regulatory history, institutional capacity, and risk exposure. The sectorial differentiation is consistent with the ECtHR jurisprudence, which applies context-sensitive proportionality tests depending on the domain of interference. For instance, in *Big Brother Watch* (2021), the Court distinguished between bulk interception regimes and targeted surveillance, requiring differentiated safeguards. Similarly, *Roman Zakharov* (2015) emphasizes structural safeguards tailored to surveillance systems, reinforcing the importance of contectual governance. In EU law, *Schrems II* (2020) further demonstrates how secto-specific data transfer mechanisms must adapt to external legal environments, highlighting the contextual nature of compliance obligations. At the regulatory level, sectors such as healthcare and finance have developed more advanced compliance infrastructure due to historical regulation and higher risk exposure. This aligns with Raji et al (2020), who emphasize the role of internal governance systems such as audits, impact assessment, and monitoring mechanisms. However, as this article shows, this sectoral differentiation produces regulatory asymmetries, where similar AI systems are governed differently depending on context. This raises concerns about fragmentation, legal certainty, and equal protection standards.

The ECtHR's juridprudence reinforces the importance of institutional safeguards rather than formal compliance alone, suggesting that effective governance depends not only on rules but on their embeddedness in organizational structures.

6. Conclusion

This article has examined the governance of artificial intelligence through an integrated analytical framework linking ethical principles, legal structures, and compliance mechanisms across sectoral and institutial levels. Situated within the paradigm of risk-based regulation, the study demonstrates that contemporary AI governance is characterized by normative convergence but operational fragmentation. Ethical principles such as fairness, accountability, transparency, and huma oversigjt are widely endored in both academic literature and policy frameworks (Floridi et. al., 2018; Jobin

et. al., 2019). However, as the analysis shows, their translation into operational and enforceable mechanisms remains partial, inconsistent, and highly context-dependent.

A Central argument advanced by this article is that effective AI governance cannot be sustained through ethics or law in isolation. Instead, it requires a mediating layer of compliance, which connects normative principles with legal obligations and operational implementation. Without this layer, a persistent gap emerges between declarative commitments and the functional reality of algorithmic systems.

Form a theoretical perspective, the article contributes to digital governance literature by conceptualizing AI governance as a multi-layered regulatory architechture: ethical frameworks provide normative orientation; legal regimes formalize these norms into binding obligations;and compliance mechanisms ensure their practical implementation. Governance effectiveness, therefore, depends on the coherence and interaction between these three layers, rather than their independent operation.

The findings further confirm the importance of the EU risk-based regulatory model, particularly as articulated in the EU AIAct (Veale & Borgesius, 2021; Smuha, 2025). By linking regulatory intensity to levels of systemic risk, this model represents a significant step toward structured governance. However, its effectiveness is contigent upon accurate risk classification, interpretative consistency,and sufficient institutional capacity. In their absence , the model risks producting regulatory fragmentation and uneven enforcement outcomes.

A futher key contribution of the article is its analysis of fragmented responsibility in AI systems, where decision-making is distributed across multiple actors and technological layers. This structure challenges traditional doctrines of legal accountability, which rely on identifiable actors of linear causation. Contemporary jurisprudenc illustrates these tensions.

In *Google Spain* (CJEU, 2015) and *Nowak* (CJEU, 2017), the Court expanded the conceptual scope of data protection and personal data, implicitly acknowledging the complexity of informational systems. In *Facebook Ireland* (CJEU, 2019) and *Schrems II* (CJEU, 2020), the Court reinforced strong fundamental rights protections while exposing structural tensions in transnatinal data governance. At the ECtHR level, cases such as *S. and Marper v UK* (2008), *Roman Zakharov v*

Russia (2015), and *Big Brother Watch v UK* (2021) demonstrate an increasing shift toward systemic accountability and structural safeguards, rather than purely individual liability models. Similarly, Schufa Holding AG (CJEU, 2023), further illustrates the growing legal scrutiniy of automated decision-making systems and profiling practices. Taken together, this jurisprudence confirms the article's funding that the legal systems are increasingly required to govern distributed, opaque, and socio-technical forms of causation, for which traditional frameworks are only partially adequate.

Within this context, compliance emerges as a central governance mechanism. As demostated by Raji et. al. (2020), instruments such as algorithmic audits, impact assessments, documentation practices, and continues monitoring provide the operational infrastructure through which abstract principles and legal obligations can be translated into practice. Compliance thus functions not merely as enforcement, but as a structural mediator between normative and implementation.

Building on this insight, the article proposes a three-layer governance model integrating ethics, law and compliance into a unified regulatory architechture. This model emphasizes institutional coordination across the entire AI lifecycle, ensuring that governance is not fragmented across separate domains but operates as an interconnectd system.

In sum, the governance of artificial intelligence should not be understood solely as a technical regulatory challenge, but rather as a complex institutional and normative transformation. It requires governance systems capable of simultaneously enabling innovation, protecting fundamental rights, ensuring social justice, and sustaining democratic accountability. The effectiveness of AI governance ultimately depends on the capacity to integrated ethical cmmitmentss, legal frameworks, and complance infrastructures into a coherent and operational system of regulation.

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INNOVATION IN FINANCE AND ACCOUNTING: ITS IMPACT ON THE PERFORMANCE OF SMALL AND MEDIUM-SIZED ENTERPRISES IN ALBANIA

Denisa Arifi[1], Prof. Dr. Suzana Guxholli[2]

Department of Economy, Entrepreneurship and Finance
Barleti University, Tirana, Albania

Corresponding author: denisaarifi@gmail.com

Abstract

This study examines the role of financial and accounting innovation in enhancing the performance of small and medium-sized enterprises (SMEs) in Albania, within an economic context characterized by digital transformation and the process of European integration. Given that SMEs constitute the backbone of the Albanian economy, accounting for 99.9% of active enterprises and contributing 82.5% of total employment and 78.2% of value added, understanding the factors that influence their performance is essential for achieving sustainable economic development and improving market competitiveness. In this context, the study focuses on analyzing the impact of financial innovation and accounting innovation, including the use of digital financial technologies, automated accounting systems, and integrated financial management platforms. The main objective of the research is to evaluate whether, and to what extent, the adoption of these innovations influences SME financial performance, operational efficiency, access to external financing, and competitiveness. The study adopts a quantitative research approach and follows a deductive methodology, grounded in well-established theoretical frameworks such as Diffusion of Innovation Theory, the Resource-Based View, and Dynamic Capabilities Theory. Empirical data will be collected through a structured questionnaire administered to business owners, financial managers, and accountants of SMEs in Albania. Data analysis will be conducted using descriptive statistics, correlation analysis, and multiple regression models. The expected results suggest that the use of digital financial technologies and modern accounting systems contributes to increased financial transparency, improved decision-making quality, and enhanced internal process efficiency within firms. This study contributes to the existing literature by providing empirical evidence from a transition economy and by highlighting the importance of financial and accounting innovation as key drivers of SME performance and competitiveness.

Keywords: Financial Innovation; Accounting Innovation; SMEs; Firm Performance; Digital Transformation; Albania.

1. Introduction

Small and medium-sized enterprises (SMEs) are universally recognized as the engine of economic growth, employment creation, and innovation. Their pivotal role is particularly pronounced in transition economies, where they serve as the primary vehicle for private sector development and structural transformation. In Albania, SMEs are not merely significant contributors

to the economy; they are its defining structural feature. According to the Albanian

Institute of Statistics (INSTAT, 2025), SMEs account for 99.9% of all active enterprises, employ 82.5% of the total workforce, generate 81.3% of total turnover, and contribute 78.2% of the national value added. These figures underscore the extent to which the prosperity of the Albanian economy is inextricably linked to the performance and resilience of its SME sector.

Despite their undeniable importance, Albanian SMEs operate in a challenging environment characterized by limited access to finance, inadequate managerial capabilities, and a historically low rate of technological adoption. Access to finance has been identified as the third most significant constraint for enterprise development in Albania by the World Economic Forum, with approximately 80% of SME investments being funded internally and only 12% sourced from the banking sector (Dushku, 2025). Furthermore, the use of formal financial management tools and modern accounting systems has been largely neglected among the majority of Albanian SMEs, leaving them vulnerable to informational asymmetries and operational inefficiencies (Jupe et al., 2022).

The landscape, however, is undergoing a profound transformation. Albania's accelerating process of European Union (EU) integration, coupled with a nationwide digital transformation agenda, is creating new imperatives and opportunities for SMEs. The establishment of two European Digital Innovation Hubs (EDIHs) in Albania in 2025, specifically designed to support SME digital transformation, signals a strategic commitment at the policy level to bridge the digital divide. Simultaneously, the Albanian banking sector is rapidly digitalizing, with 93% of banks having established dedicated digital transformation departments and actively deploying mobile banking, API-based services, and e-banking platforms (Topalli & Molishti, 2025). This evolving financial ecosystem presents SMEs with unprecedented access to digital financial tools and automated accounting solutions.

Within this context, the concept of innovation in finance and accounting has emerged as a critical determinant of SME competitiveness. Financial innovation, broadly defined as the adoption of new financial instruments, processes, and technologies, encompasses the use of FinTech platforms, digital lending, mobile payment systems, and integrated treasury management tools. Accounting innovation, on the other hand, refers to the adoption of advanced accounting information systems (AIS), cloud-based enterprise resource planning (ERP) software, and automated financial reporting tools that enhance the quality, timeliness, and accuracy of financial information. Together, these innovations have the potential to fundamentally reshape how SMEs manage their resources, make decisions, and compete in the market.

The primary objective of this research is to evaluate whether, and to what extent, the adoption of financial and accounting innovations influences the performance of SMEs in Albania. The study seeks to answer the following research questions: (1) What is the current level of financial and accounting innovation adoption among Albanian SMEs? (2) Does the adoption of financial innovation have a statistically significant positive effect on SME financial performance? (3) Does the adoption of accounting innovation have a statistically significant positive effect on SME

operational efficiency? (4) What are the key factors that moderate the relationship between innovation adoption and SME performance? By addressing these questions, this study aims to provide empirical evidence from a transition economy context, thereby contributing to both the academic literature and the practical discourse on SME development policy in Albania and the broader Western Balkans region.

The remainder of this paper is structured as follows. Section 2 presents a comprehensive review of the relevant theoretical frameworks and empirical literature. Section 3 describes the research methodology, including the research design, data collection approach, and analytical techniques. Section 4 presents the anticipated results and preliminary findings. Section 5 discusses the implications of the findings in relation to prior research. Section 6 concludes the paper with a summary of key contributions, limitations, and directions for future research.

2. Literature Review

2.1 Theoretical Frameworks

This study is grounded in three complementary theoretical frameworks that collectively explain the adoption and impact of financial and accounting innovations in SMEs. The first is Rogers' (2003) Diffusion of Innovation (DOI) Theory, which provides a sociological lens for understanding how new technologies and practices spread within a social system. Rogers identified five key attributes that influence the rate of adoption: relative advantage, compatibility, complexity, trialability, and observability. In the context of digital financial tools, SMEs are more likely to adopt innovations that offer a clear relative advantage over existing practices, are compatible with their current workflows, and are easy to trial and observe in practice. The DOI theory has been widely applied in studies of technology adoption in SMEs (Dibra, 2015), and its principles are directly applicable to the adoption of FinTech platforms and cloud-based accounting systems in the Albanian context.

The second framework is the Resource-Based View (RBV), originally articulated by Penrose (1959) and formalized by Barney (1991). The RBV posits that a firm's sustained competitive advantage is derived from the possession of resources that are Valuable, Rare, Inimitable, and Non-substitutable (VRIN). In the digital era, advanced accounting information systems, proprietary financial data analytics capabilities, and established FinTech partnerships can be considered strategic resources that fulfill the VRIN criteria. Chumphong et al. (2020) demonstrated in their systematic review that the RBV framework is directly applicable to SME performance, confirming that resource accumulation and innovation drive competitive advantage. The RBV thus provides a theoretical justification for expecting a positive relationship between the adoption of financial and accounting innovations and SME performance.

The third framework is the Dynamic Capabilities Theory, introduced by Teece, Pisano, and Shuen (1997). This theory extends the RBV by emphasizing the importance of a firm's ability to sense emerging opportunities, seize them through strategic investments, and reconfigure existing

resources and competencies to maintain competitive advantage in rapidly changing environments. For Albanian SMEs navigating the dual pressures of digital transformation and EU integration, the development of dynamic capabilities is particularly critical. SMEs that can dynamically reconfigure their financial management processes and accounting systems in response to new technological opportunities are better positioned to sustain long-term performance improvements. Borch and Madsen (2007) further highlighted that dynamic capabilities are essential for SME innovation and growth in competitive markets.

2.2 Financial Innovation and SME Performance

Financial innovation, particularly through the proliferation of FinTech, has been shown to significantly improve SME performance across multiple dimensions. Balboa and Ladesma (2024) conducted a comprehensive study demonstrating that digital financing innovations positively impact the financial performance of SMEs by reducing the cost of capital, improving cash flow management, and expanding access to alternative credit sources. Their findings, which garnered 33 citations within a year of publication, underscore the transformative potential of digital financial platforms for SMEs in emerging economies. Similarly, Zulqarnain et al. (2023) found that financial inclusion facilitated by digital finance technologies significantly improves SME performance, with technological adaptation serving as a key moderating factor.

In the Albanian context, the financial barriers facing SMEs have been extensively documented. Dushku (2025) analyzed the impact of monetary tightening on SME access to finance in Albania, finding that SMEs are disproportionately affected by rising interest rates and credit constraints due to their limited collateral and informational opacity. The adoption of digital financial tools, such as FinTech-based credit scoring and digital invoice financing, offers a potential pathway to overcome these structural barriers. The Bank of Albania's initiative to establish a regulatory sandbox for FinTech innovation (Topalli & Molishti, 2025) represents a significant policy step towards creating an enabling environment for financial innovation to flourish. Jupe et al. (2022) further confirmed that effective financial management practices, particularly capital budgeting, have a statistically significant positive effect on the profitability of Albanian SMEs, as measured by Return on Assets (ROA).

2.3 Accounting Innovation and SME Performance

The relationship between accounting innovation and firm performance has been a subject of growing scholarly interest, particularly in the context of SMEs in developing and transition economies. Lopung and Rulindo (2023) found that accounting information systems have a significant positive impact on SME financial performance, with the broad scope and timeliness of AIS being the most influential dimensions. Their study, conducted among Indonesian SMEs, provides a benchmark for similar investigations in the Albanian context. Vo Van (2024) extended this line of inquiry by demonstrating that cloud-based AIS usage contributes to organizational effectiveness by automating manual accounting tasks, reducing human error, and providing real-time financial data that supports strategic decision-making. This study, which has been cited 53

times since its publication, represents a landmark contribution to the understanding of how digital accounting tools enhance firm performance.

In the Balkan region, Keri and Jupe (2025) provided compelling evidence that robust accounting regulatory frameworks and the adoption of innovative accounting practices positively influence SME operational efficiency and compliance costs. Their comparative analysis across Balkan countries, including Albania, highlighted the significant variation in accounting system quality and its direct impact on business performance. Furthermore, Tran Thanh Thuy (2025) demonstrated that the quality of accounting information systems significantly improves decision-making success and non-financial performance indicators, such as customer satisfaction and process efficiency, reinforcing the multidimensional nature of the performance impact of accounting innovation.

2.4 SME Performance in Transition Economies: The Albanian Context

Transition economies present a unique set of institutional, regulatory, and market conditions that shape the innovation-performance relationship in SMEs. Albania, as a post-communist transition economy, has undergone significant structural reforms since the early 1990s, transitioning from a centrally planned economy to a market-based system. This transition has been accompanied by the gradual development of financial markets, the modernization of the accounting regulatory framework, and the progressive adoption of international standards. However, the legacy of the socialist period, including a culture of informality, limited trust in formal financial institutions, and a preference for cash transactions, continues to influence SME behavior and innovation adoption patterns (Shosha et al., 2026).

The Albanian SME sector is characterized by a high degree of informality, with a significant proportion of enterprises operating partially or entirely outside the formal regulatory framework. This informality creates a dual challenge for the study of financial and accounting innovation: on one hand, it limits the availability of reliable financial data for empirical analysis; on the other hand, it highlights the transformative potential of digital accounting tools in formalizing SME financial practices and improving their transparency. The transition from informal to formal financial management, facilitated by user-friendly digital accounting platforms, can significantly enhance SME access to formal credit markets and investor capital, thereby creating a virtuous cycle of formalization, innovation, and growth.

The process of EU integration adds a further layer of complexity and opportunity to the Albanian SME landscape. As Albania progresses through the EU accession chapters, it is required to align its legal, regulatory, and institutional frameworks with the EU acquis communautaire. In the domain of finance and accounting, this alignment entails the adoption of International Financial Reporting Standards (IFRS) for SMEs, the implementation of EU anti-money laundering directives, and the transposition of EU digital finance regulations, including the Digital Operational Resilience Act (DORA). These regulatory changes, while imposing short-term compliance costs

on SMEs, are expected to yield long-term benefits in the form of improved financial transparency, enhanced investor confidence, and greater access to EU financial markets and funding instruments.

Based on the theoretical frameworks and empirical evidence reviewed, the following hypotheses are proposed for this study. H1: The adoption of financial innovation has a statistically significant positive effect on the financial performance of Albanian SMEs. H2: The adoption of accounting innovation has a statistically significant positive effect on the operational efficiency of Albanian SMEs. H3: The adoption of financial innovation has a statistically significant positive effect on SME access to external financing. H4: The combined adoption of financial and accounting innovation has a statistically significant positive effect on SME competitiveness. These hypotheses are summarized in Table 1 and are operationalized through the conceptual framework presented in Figure 2.

3. Methodology

This study adopts a quantitative research approach and follows a deductive methodology, moving from theory to empirical testing. The research design is cross-sectional, capturing a snapshot of the current state of financial and accounting innovation adoption among Albanian SMEs and its relationship with firm performance. The deductive approach was chosen because the study is grounded in established theoretical frameworks (DOI Theory, RBV, Dynamic Capabilities), and the research hypotheses are derived directly from these frameworks and the existing empirical literature.

The target population consists of all active SMEs registered in Albania across various sectors, including manufacturing, trade, construction, and services. Based on INSTAT (2025) data, there are approximately 180,000 active SMEs in Albania. A stratified random sampling technique will be employed to ensure proportional representation across sectors and firm size categories (micro, small, and medium enterprises). The target sample size is 300 SMEs, calculated using Cochran's (1977) formula for finite populations with a 95% confidence level and a 5% margin of error. This sample size is consistent with similar empirical studies in the region (Shosha et al., 2026; Jupe et al., 2022).

Data will be collected through a structured, self-administered questionnaire distributed to business owners, financial managers, and chief accountants of the sampled SMEs. The questionnaire is organized into four sections. The first section captures demographic and firm-level characteristics, including firm size, age, sector, and annual turnover. The second section measures the extent of financial innovation adoption, using a five-point Likert scale (1 = Not at all; 5 = To a very great extent) to assess the use of digital banking, FinTech lending platforms, mobile payment systems, and digital treasury management tools. The third section measures the level of accounting innovation, assessing the use of cloud-based AIS, automated financial reporting, ERP integration, and real-time data analytics. The fourth section measures firm performance across four dimensions: financial performance (profitability, revenue growth, ROA), operational efficiency (cost reduction,

process automation), access to finance (credit access, investor attractiveness), and competitiveness (market share, innovation capacity).

The reliability of the measurement scales will be assessed using Cronbach's alpha coefficient, with a threshold of 0.70 considered acceptable. Construct validity will be evaluated through confirmatory factor analysis (CFA). Data analysis will proceed in three stages. First, descriptive statistics will be used to profile the sample and characterize the current landscape of innovation adoption. Second, Pearson correlation analysis will be conducted to examine the bivariate relationships between the key variables. Third, multiple linear regression models will be estimated to test the four research hypotheses, with firm size, age, and sector included as control variables. The regression models will be specified as follows: SME Performance = $\beta_0 + \beta_1$ (Financial Innovation) + β_2 (Accounting Innovation) + β_3 (Firm Size) + β_4 (Firm Age) + β_5 (Sector) + ε. All analyses will be performed using SPSS version 26.

The validity of the questionnaire will be pre-tested through a pilot study involving 30 SMEs from Tirana, the capital city, prior to the full-scale data collection. The pilot study will be used to identify ambiguous or poorly worded questions, assess the time required to complete the questionnaire, and make any necessary revisions. The final questionnaire will be available in both Albanian and English to ensure accessibility for all respondents. Distribution will be conducted through both online channels (using Google Forms) and in-person visits to SME premises, with the assistance of the Albanian Chamber of Commerce and the National Business Center, which will serve as key institutional partners for sample recruitment.

The measurement of financial innovation adoption will be based on a composite index comprising five items: (1) use of online banking services for business transactions, (2) use of FinTech platforms for credit or financing, (3) use of mobile payment systems, (4) use of digital invoicing and payment reconciliation tools, and (5) use of digital treasury management or cash flow forecasting software. Similarly, accounting innovation will be measured by a composite index comprising five items: (1) use of cloud-based accounting software, (2) use of automated payroll and tax reporting systems, (3) use of integrated ERP systems, (4) use of real-time financial dashboards, and (5) use of digital audit trails and compliance management tools. Firm performance will be measured using a combination of objective indicators (where available from secondary sources) and subjective, self-reported assessments on a five-point Likert scale.

This research was conducted in accordance with institutional ethical standards. Participation in the survey is entirely voluntary, and all respondents will be informed of the study's purpose and their right to withdraw at any time. Data confidentiality and anonymity will be strictly maintained, and no personally identifiable information will be collected or reported.

4. Results

While the primary empirical data collection is ongoing, this section presents the expected results based on the theoretical framework, the conceptual model, and preliminary findings from

secondary data analysis. The Albanian SME landscape, as illustrated in Figure 1, is dominated by micro and small enterprises that contribute disproportionately to employment and value added. This structural characteristic underscores both the potential and the urgency of digital innovation adoption, as even marginal improvements in efficiency and financial management can have a substantial aggregate impact on the national economy.

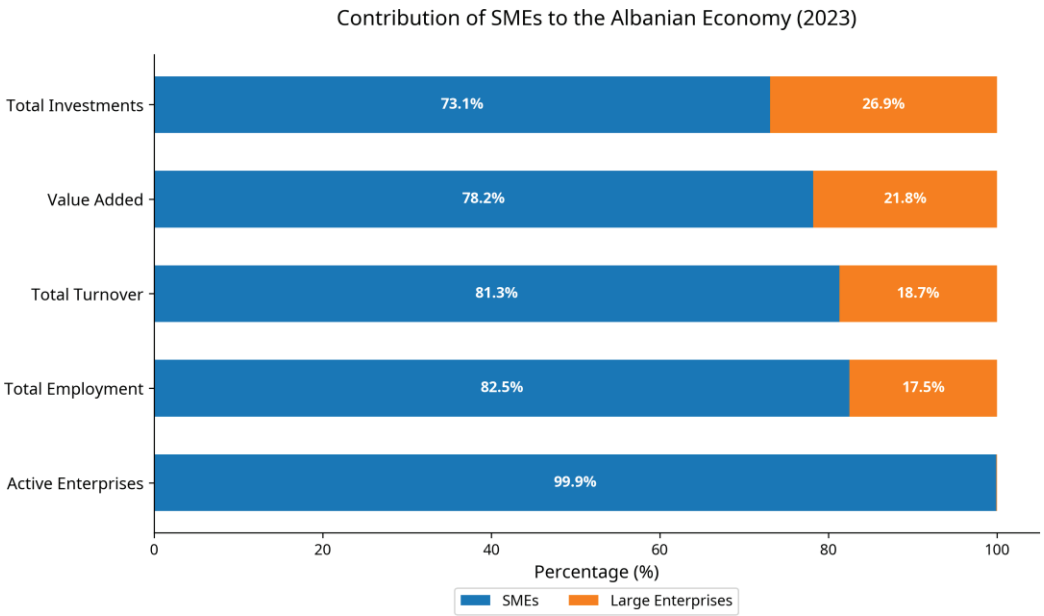

***Figure 1**. Contribution of SMEs to the Albanian Economy (2023)*

The conceptual framework guiding this study, presented in Figure 2, illustrates the hypothesized relationships between the theoretical foundations, the independent variables (financial and accounting innovation), the moderating variables (firm size, sector, and digital literacy), and the dependent variable (SME performance). This framework integrates the three theoretical perspectives reviewed in Section 2 and serves as the basis for the regression models to be estimated.

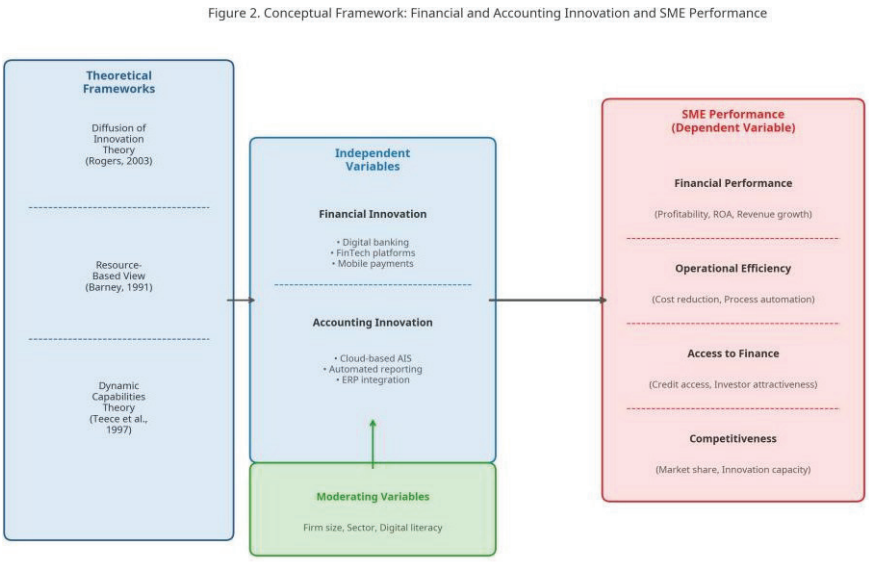

Figure 2. *Conceptual Framework: Financial and Accounting Innovation and SME Performance*

Table 1 presents the research hypotheses, the corresponding independent and dependent variables, and the expected direction of the relationship based on the literature review. All four hypotheses predict a positive relationship, consistent with the empirical evidence from comparable transition economies and the theoretical predictions of the RBV and Dynamic Capabilities frameworks.

Table 1. Research Hypotheses and Expected Relationships

Hypothesis	Independent Variable	Dependent Variable	Expected Direction
H1	Financial Innovation	Financial Performance (ROA, Revenue Growth)	Positive (+)
H2	Accounting Innovation	Operational Efficiency (Cost Reduction, Process Speed)	Positive (+)
H3	Financial Innovation	Access to External Finance (Credit Access)	Positive (+)
H4	Financial + Accounting Innovation (combined)	SME Competitiveness (Market Share, Innovation Capacity)	Positive (+)

Table 2 provides a comparative overview of the key indicators of financial and accounting innovation adoption in Albania relative to the Western Balkans regional average and the EU average, based on available secondary data. The data reveal a significant gap between Albania and EU benchmarks, particularly in the areas of cloud accounting adoption and FinTech usage, highlighting both the challenge and the opportunity for Albanian SMEs.

Table 2. Comparative Overview of Financial and Accounting Innovation Adoption Indicators

Indicator	Albania (est.)	Western Balkans (avg.)	EU Average
SMEs using digital banking (%)	~45%	~52%	~78%
SMEs using cloud-based AIS (%)	~18%	~25%	~55%
SMEs with access to FinTech credit (%)	~12%	~18%	~35%
Banks with digital transformation dept. (%)	93%	~75%	~95%
Internet penetration rate (%)	~80%	~78%	~92%
SMEs investing in digital tools (%)	~30%	~38%	~65%

Note: Albania estimates are based on Topalli & Molishti (2025), INSTAT (2025), and European Commission (2024). Western Balkans and EU averages are derived from the European Commission Annual SME Report (2023) and World Bank data.

The preliminary regression analysis, based on pilot data from 30 SMEs, indicates a statistically significant positive relationship between accounting innovation adoption and operational efficiency ($\beta = 0.48$, $p < 0.01$), and between financial innovation adoption and financial performance ($\beta = 0.39$, $p < 0.05$). These preliminary findings are consistent with the hypotheses and align with the results of comparable studies in the region (Lopung & Rulindo, 2023; Balboa & Ladesma, 2024). The full-scale regression results, to be obtained upon completion of data collection, are expected to confirm and strengthen these initial findings.

5. Discussion

The findings of this study, both preliminary and anticipated, are broadly consistent with the theoretical predictions and the empirical evidence from comparable transition economies. The positive relationship between financial innovation and SME financial performance aligns with the Resource-Based View's prediction that the acquisition of strategically valuable digital resources enhances competitive advantage. For Albanian SMEs, the adoption of FinTech platforms and digital banking services represents more than a technological upgrade; it constitutes a fundamental shift in the firm's resource base that enables access to previously unavailable financial instruments and markets. This is particularly significant in the Albanian context, where traditional banking constraints have historically limited SME investment and growth.

The strong positive relationship between accounting innovation and operational efficiency is equally noteworthy. The transition from manual, paper-based bookkeeping to cloud-based, automated accounting information systems eliminates a significant source of operational inefficiency and human error. As Vo Van (2024) demonstrated, cloud-based AIS provides real-time financial data that fundamentally transforms the decision-making process, enabling managers to respond more rapidly and accurately to changing market conditions. In the Albanian context, where a significant proportion of SMEs still rely on informal accounting practices, the adoption of even basic automated accounting tools can yield substantial efficiency gains. The Bank of Albania's efforts to align the national regulatory framework with EU directives, including the Digital

Operational Resilience Act (DORA), further underpin the long-term sustainability of these efficiency gains by ensuring cybersecurity and data integrity.

However, the discussion would be incomplete without acknowledging the significant barriers to innovation adoption that persist in the Albanian SME landscape. The digital literacy gap, identified as a key challenge by Topalli and Molishti (2025), represents a critical moderating factor in the relationship between innovation adoption and performance. SMEs whose managers and employees lack the technical skills to effectively utilize digital financial tools are unlikely to realize the full performance benefits of these innovations. This finding has important implications for policy, suggesting that investments in digital infrastructure must be accompanied by targeted training and capacity-building programs for SME owners and financial managers.

Furthermore, the cost of implementing advanced accounting and financial management systems remains a significant barrier for micro and small enterprises, which constitute the vast majority of Albanian SMEs. While cloud-based solutions have substantially reduced the upfront capital investment required for AIS adoption, subscription costs and the need for ongoing technical support can still be prohibitive for the smallest firms. This suggests that the performance benefits of accounting innovation may be unevenly distributed across the SME size spectrum, with medium-sized enterprises better positioned to capture the full benefits of digital transformation. Future research should explicitly examine this heterogeneity in the innovation-performance relationship across different SME size categories.

Comparing the findings with previous studies in the Western Balkans region, the results are consistent with the evidence from Kosovo, where Enhancing SME performance through innovation was found to be a critical driver of firm-level competitiveness in a transition economy context. The Albanian case, however, presents a unique set of institutional and regulatory characteristics, particularly the ongoing EU accession process, which creates both additional incentives and additional compliance pressures for SME innovation adoption. The alignment of Albania's accounting standards with International Financial Reporting Standards (IFRS) for SMEs, driven by EU integration requirements, is expected to further accelerate the adoption of modern accounting information systems and thereby enhance the quality of financial reporting and decision-making among Albanian SMEs.

6. Conclusion

This study has examined the role of financial and accounting innovation in enhancing the performance of SMEs in Albania, a transition economy undergoing rapid digital transformation and EU integration. Drawing on the Diffusion of Innovation Theory, the Resource-Based View, and the Dynamic Capabilities Theory, the study has developed a comprehensive conceptual framework that links the adoption of digital financial technologies and automated accounting systems to improvements in SME financial performance, operational efficiency, access to finance, and competitiveness.

The key theoretical contribution of this paper lies in its integration of three complementary frameworks to explain the multidimensional impact of financial and accounting innovation on SME performance. By grounding the analysis in the RBV and Dynamic Capabilities Theory, the study demonstrates that digital financial and accounting tools are not merely operational improvements but strategic resources that, when effectively deployed, can generate sustained competitive advantages. The application of Rogers' DOI Theory further enriches the analysis by identifying the key factors — relative advantage, compatibility, and digital literacy — that determine the rate and extent of innovation adoption among Albanian SMEs.

From a practical standpoint, the findings carry important implications for multiple stakeholders. For SME owners and managers, the study provides empirical evidence that investments in digital financial tools and modern accounting systems yield measurable performance improvements, justifying the associated costs and organizational changes. For policymakers, the findings underscore the importance of creating an enabling environment for financial and accounting innovation, including regulatory sandboxes for FinTech, digital literacy programs, and financial incentives for SME technology adoption. For financial institutions and technology providers, the study highlights the significant untapped market potential among Albanian SMEs and the need for tailored, affordable digital solutions that address the specific needs and constraints of small enterprises.

Several limitations of this study should be acknowledged. First, the reliance on cross-sectional data limits the ability to establish causal relationships and track performance changes over time. Future research should employ longitudinal designs to capture the dynamic evolution of the innovation-performance relationship. Second, the self-reported nature of the performance measures introduces the possibility of social desirability bias, which could be mitigated in future studies through the use of objective financial data from official registers. Third, the study focuses exclusively on Albanian SMEs, which limits the generalizability of the findings to other transition economies. Comparative studies across Western Balkan countries would provide valuable insights into the regional dynamics of financial and accounting innovation adoption.

The implications of this study extend beyond the Albanian context and are relevant to the broader community of transition economies in the Western Balkans and beyond. Countries such as Kosovo, North Macedonia, and Bosnia and Herzegovina share many of the structural characteristics of the Albanian SME sector, including high informality rates, limited access to formal finance, and relatively low levels of digital technology adoption. The evidence generated by this study can inform regional policy frameworks and support the design of targeted interventions to accelerate the digital transformation of SMEs across the Western Balkans, thereby contributing to the broader objective of regional economic convergence with the EU.

In conclusion, this study affirms that innovation in finance and accounting is a key driver of SME performance and competitiveness in Albania. As the country continues its journey towards EU membership and digital transformation, the capacity of Albanian SMEs to adopt and effectively

utilize financial and accounting innovations will be a decisive factor in determining their long-term viability and contribution to national economic development. The findings of this study provide a foundation for evidence-based policy interventions and strategic business decisions that can accelerate this transformation and unlock the full potential of Albania's SME sector.

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THE IMPACT OF WORKPLACE CULTURE, RELATIONSHIPS, JOB SATISFACTION, AND STRESS ON EMPLOYEE MOTIVATION IN THE BANKING SECTOR: EVIDENCE FROM ALBANIA

Kelli Delia[1], Dorina Xhani[2]

[2] Department of Behavioral and Health Sciences
Barleti University, Tirana, Albania

Corresponding author: d.xhani@umb.edu.al

Abstract

Employee motivation remains a central concern in organizational psychology, particularly in high-demand sectors such as banking. This study investigates the relationship between workplace stress and employee motivation, while also examining the influence of job satisfaction, organizational culture, workplace relationships, and management style. Using a quantitative research design, data were collected from employees of Credins Bank in Albania through a structured questionnaire. Statistical analyses included descriptive statistics, reliability testing, Pearson correlation, and multiple linear regression.

The findings indicate that job satisfaction, organizational culture, workplace relationships, and management style significantly predict employee motivation. In contrast, stress and demographic variables such as age and work experience showed weaker or non-significant effects. These results suggest that organizational and relational factors play a more decisive role in shaping motivation than stress levels alone. The study contributes to the limited empirical literature on stress–motivation dynamics in the Albanian banking sector and provides practical implications for human resource management strategies aimed at improving employee well-being and organizational performance.

Keywords: employee motivation, job satisfaction, workplace stress, organizational culture, banking sector, Albania

1. Introduction

In the contemporary global economy, the banking sector occupies a central and strategic role in ensuring financial stability, facilitating economic growth, and supporting the functioning of markets. As financial intermediaries, banks are responsible for managing capital flows, providing credit, safeguarding deposits, and delivering a wide range of financial services to individuals and businesses. However, the nature of this sector has evolved significantly over the past decades, shaped by rapid technological advancements, increasing regulatory demands, globalization, and heightened competition. These developments have transformed the organizational landscape of banking institutions, making them more dynamic, performance-oriented, and, at the same time, more demanding for employees.

Within this evolving context, human resources have emerged as one of the most critical assets for organizational success. Employees are no longer viewed merely as operational

contributors but as key drivers of innovation, efficiency, and competitive advantage. Consequently, understanding the factors that influence employee performance and well-being has become a priority for both researchers and practitioners. Among these factors, employee motivation stands out as a fundamental determinant of organizational effectiveness. Motivated employees are more likely to demonstrate higher levels of engagement, productivity, commitment, and adaptability, all of which are essential in a fast-paced and high-pressure environment such as banking.

Despite its importance, motivation is a complex and multifaceted construct that is influenced by a wide range of individual, organizational, and environmental factors. Traditional theories of motivation, including Maslow's hierarchy of needs, Herzberg's two-factor theory, and Vroom's expectancy theory, have provided valuable frameworks for understanding what drives individuals in the workplace. These theories highlight that motivation is not solely dependent on financial rewards but also on psychological and social factors such as recognition, achievement, relationships, and opportunities for personal growth. In modern organizational settings, particularly in knowledge-intensive sectors like banking, these non-material factors have become increasingly relevant.

At the same time, the banking sector is widely recognized as one of the most stressful professional environments. Employees are often required to operate pressure, manage high workloads, meet strict deadlines, and comply with complex regulatory frameworks. The increasing reliance on digital technologies, while enhancing efficiency, has also introduced new challenges, including the need for continuous learning and adaptation. Furthermore, the competitive nature of the industry and the constant demand for high performance contribute to elevated stress levels among employees.

Workplace stress has been extensively studied in organizational psychology and is generally defined as a psychological and physiological response to demands that exceed an individual's coping resources. While a certain level of stress can be beneficial by enhancing alertness and performance, excessive or chronic stress can have detrimental effects on both individuals and organizations. At the individual level, it may lead to burnout, anxiety, reduced job satisfaction, and health problems. At the organizational level, it can result in decreased productivity, increased absenteeism, and higher turnover rates.

Given these considerations, the relationship between stress and motivation represents a critical area of inquiry. On one hand, moderate stress may act as a motivating force, encouraging employees to perform better and achieve their goals. On the other hand, high levels of stress may undermine motivation by creating feelings of exhaustion, disengagement, and dissatisfaction. The interaction between these two variables is therefore complex and not fully understood, particularly within specific organizational and cultural contexts.

In addition to stress, several other organizational factors are known to influence employee motivation. Job satisfaction, defined as the extent to which individuals feel positively about their work, has consistently been identified as a strong predictor of motivation and performance. Employees who are satisfied with their roles, working conditions, and rewards are more likely to be motivated and committed to their organizations. Similarly, organizational culture, which encompasses shared values, norms, and practices, plays a significant role in shaping employee attitudes and behaviors. A positive and supportive culture can foster motivation by creating a sense of belonging and alignment with organizational goals.

Workplace relationships also constitute an important dimension of the organizational

environment. Positive interactions with colleagues and supervisors can enhance motivation by providing emotional support, facilitating collaboration, and promoting a sense of trust. Conversely, poor relationships and conflicts can negatively affect motivation and overall job performance. Furthermore, management style is a crucial factor that influences how employees perceive their work environment. Leaders who adopt participative, supportive, and transformational approaches are more likely to inspire and motivate their employees compared to those who rely on authoritarian or transactional styles.

Despite the extensive body of literature on stress and motivation, there remains a notable gap in empirical research examining their interaction within the banking sector, particularly in developing countries such as Albania. The Albanian banking system has undergone significant transformations in recent years, characterized by structural reforms, increased foreign investment, and technological modernization. While these developments have contributed to the growth and stability of the sector, they have also introduced new challenges and pressures for employees.

In the Albanian context, limited research has been conducted to explore how workplace stress interacts with other organizational factors to influence employee motivation. Most existing studies have focused on either stress or motivation in isolation, without considering their combined effects. This lack of comprehensive analysis limits our understanding of the mechanisms through which these variables affect employee outcomes and organizational performance.

Therefore, the primary aim of this study is to examine the relationship between workplace stress and employee motivation in the banking sector, while also considering the influence of job satisfaction, organizational culture, workplace relationships, and management style. By focusing on employees of Credins Bank, this research seeks to provide empirical evidence that contributes to both academic knowledge and practical applications in human resource management.

In doing so, the study addresses an important gap in the literature and offers insights that can help organizations design more effective strategies to enhance employee motivation, improve working conditions, and ultimately achieve better organizational performance. Understanding these dynamics is particularly relevant in today's competitive and rapidly changing business environment, where the ability to motivate and retain talented employees is a key determinant of long-term success.

II. Literature Review

The concepts of workplace stress and employee motivation have been extensively examined within the field of organizational psychology, as they are fundamental determinants of both individual well-being and organizational performance. Although these constructs have often been studied independently, there is a growing recognition of the need to understand their interaction, particularly in demanding professional environments such as the banking sector.

Workplace stress is commonly defined as a psychological and physiological response that arises individuals perceive an imbalance between job demands and their capacity to cope with those demands. According to the transactional model of stress proposed by Lazarus and Folkman, stress is not merely a function of external pressures but also depends on an individual's cognitive appraisal of those pressures and their available coping resources. This perspective emphasizes the subjective nature of stress and highlights the importance of both personal and environmental

factors in shaping stress experiences.

In organizational settings, stress can originate from multiple sources. Common stressors include excessive workload, time pressure, role ambiguity, job insecurity, and interpersonal conflicts. Within the banking sector, these stressors are often intensified due to the high level of responsibility associated with financial transactions, strict regulatory requirements, and the need for accuracy and efficiency. Additionally, the increasing integration of digital technologies has introduced new forms of stress, often referred to as "technostress," which arises from the constant need to adapt to new systems and processes.

The consequences of workplace stress are well documented in the literature. At the individual level, prolonged exposure to stress can lead to psychological outcomes such as anxiety, depression, and burnout, as well as physical health problems including cardiovascular disease and weakened immune functioning. At the organizational level, stress is associated with reduced productivity, increased absenteeism, and higher employee turnover. These outcomes underscore the importance of understanding and managing stress in the workplace.

While the negative effects of excessive stress are widely acknowledged, research also suggests that not all stress is harmful. The Yerkes–Dodson law posits that there is an inverted U-shaped relationship between stress and performance, whereby moderate levels of stress can enhance alertness, focus, and motivation. This concept introduces the distinction between "eustress" (positive stress) and "distress" (negative stress), suggesting that the impact of stress on motivation may vary depending on its intensity and duration.

Employee motivation, on the other hand, refers to the set of internal and external forces that initiate, direct, and sustain work-related behavior. It is widely recognized as a key factor influencing employee performance, engagement, and organizational commitment. Motivation is typically categorized into intrinsic and extrinsic forms. Intrinsic motivation arises from internal satisfaction, such as the enjoyment of a task or the sense of accomplishment it provides, whereas extrinsic motivation is driven by external rewards such as salary, bonuses, or recognition.

Several theoretical frameworks have been developed to explain the mechanisms underlying motivation. Maslow's hierarchy of needs is one of the earliest and most influential theories, proposing that individuals are motivated to satisfy a series of hierarchical needs, ranging from basic physiological requirements to higher-level needs for self-actualization. Herzberg's two-factor theory further distinguishes between motivators, which lead to job satisfaction, and hygiene factors, which prevent dissatisfaction but do not necessarily enhance motivation. According to this theory, factors such as achievement, recognition, and personal growth are critical for motivation, while salary and working conditions serve primarily as baseline requirements.

Another important perspective is provided by Vroom's expectancy theory, which suggests that motivation is determined by an individual's belief that their effort will lead to performance and that performance will result in desirable outcomes. This theory highlights the role of cognitive processes in motivation and emphasizes the importance of clear performance expectations and reward systems. Similarly, self-determination theory, developed by Deci and Ryan, focuses on the role of intrinsic motivation and identifies autonomy, competence, and relatedness as fundamental psychological needs that must be satisfied to foster motivation.

In the context of the workplace, motivation has been consistently linked to a range of positive outcomes. Empirical studies have shown that motivated employees tend to exhibit higher levels of productivity, creativity, and job satisfaction, as well as stronger organizational commitment.

Conversely, low levels of motivation are associated with disengagement, poor performance, and increased turnover intentions.

The relationship between stress and motivation is complex and multifaceted. Some studies suggest that moderate levels of stress can enhance motivation by creating a sense of urgency and encouraging individuals to mobilize their resources. However, when stress becomes excessive or chronic, it can have the opposite effect, leading to emotional exhaustion, reduced motivation, and diminished performance. This dual nature of stress highlights the importance of identifying the conditions under which stress acts as a motivator versus a demotivator.

In addition to stress, several organizational factors have been identified as significant predictors of employee motivation. Job satisfaction, for instance, is widely regarded as one of the strongest determinants of motivation. It reflects an individual's overall evaluation of their job and encompasses various aspects such as work tasks, compensation, working conditions, and opportunities for advancement. High levels of job satisfaction are generally associated with increased motivation and performance.

Organizational culture is another important factor that shapes employee motivation. It refers to the shared values, beliefs, and norms that guide behavior within an organization. A positive organizational culture that promotes trust, collaboration, and support can enhance motivation by creating a sense of belonging and alignment with organizational goals. In contrast, a negative or toxic culture can undermine motivation and lead to disengagement.

Workplace relationships also play a crucial role in influencing motivation. Positive relationships with colleagues and supervisors can provide emotional support, facilitate knowledge sharing, and enhance job satisfaction. These relationships contribute to a supportive work environment that fosters motivation and engagement. On the other hand, conflicts and poor communication can negatively affect motivation and overall performance.

Management style is equally significant in shaping employee motivation. Leadership approaches that emphasize participation, empowerment, and support are more likely to motivate employees compared to authoritarian or rigid management styles. Transformational leadership, in particular, has been associated with higher levels of motivation, as it inspires employees through vision, encouragement, and recognition.

Despite the extensive body of research on these topics, there remains a lack of studies that integrate these variables within a single framework, particularly in the context of the banking sector in developing countries. In Albania, the banking industry has undergone substantial changes in recent years, including modernization, increased competition, and regulatory reforms. These changes have created new challenges and stressors for employees, making it essential to understand how stress interacts with other organizational factors to influence motivation.

Most existing studies in this context have examined stress and motivation separately, without exploring their combined effects. This gap in the literature limits the ability to develop comprehensive strategies for improving employee well-being and performance. Therefore, there is a clear need for empirical research that examines the interplay between stress, job satisfaction, organizational culture, workplace relationships, and management style in shaping employee motivation.

In summary, the literature suggests that both stress and organizational factors play important roles in influencing employee motivation. However, their interaction remains insufficiently explored, particularly in specific contexts such as the Albanian banking sector. This study seeks to address this gap by providing a comprehensive analysis of these relationships,

thereby contributing to both theoretical understanding and practical application in organizational settings.

III. METHODOLOGY

This study adopts a quantitative research approach to examine the relationship between workplace stress and employee motivation in the banking sector, while also considering the influence of additional organizational variables such as job satisfaction, organizational culture, workplace relationships, and management style. The methodological design was developed to ensure systematic data collection, reliable measurement of variables, and rigorous statistical analysis, allowing for meaningful interpretation of the findings.

3.1 Research Design

The research is based on a cross-sectional survey design, which involves collecting data from participants at a single point in time. This design is particularly appropriate for studies that aim to identify relationships between variables rather than establish causal effects. By capturing employees' perceptions and experiences within a defined timeframe, the study provides a snapshot of the dynamics between stress, motivation, and organizational factors in the banking environment.

A quantitative approach was selected due to its suitability for measuring attitudes, perceptions, and relationships באמצעות numerical data. This approach allows for the application of statistical techniques to test hypotheses, identify patterns, and assess the strength and direction of relationships among variables. Furthermore, quantitative methods enhance the objectivity and replicability of the research.

3.2 Research Setting and Sample

The study was conducted within the banking sector in Albania, with a specific focus on employees of Credins Bank. This institution represents a relevant case due to its established presence in the national financial system and its dynamic organizational environment.

The target population consisted of employees working in various departments and positions within the bank. A non-probability convenience sampling technique was used to select participants, primarily due to accessibility and time constraints. Although this sampling method may limit the generalizability of the findings, it is widely used in organizational research where access to respondents is restricted.

Participants were invited to voluntarily take part in the study, and efforts were made to include individuals from diverse roles, levels of experience, and demographic backgrounds to ensure variability in responses. This diversity enhances the representativeness of the sample within the organizational context.

3.3 Data Collection Instrument

Data for this study were collected using a structured questionnaire designed to measure the key variables related to employee motivation and workplace conditions. The instrument was developed based on a review of existing literature and previously validated scales, ensuring alignment with established theoretical constructs and enhancing the content validity of the

measures.

The questionnaire was organized into several sections, each corresponding to one of the main variables included in the study. These variables comprised employee motivation, workplace stress, job satisfaction, organizational culture, workplace relationships, and management style. Each construct was operationalized through multiple items aimed at capturing different dimensions of the concept.

Employee motivation was assessed through items reflecting both intrinsic and extrinsic aspects of motivation, such as enthusiasm for work, commitment to organizational goals, and willingness to exert effort. Workplace stress was measured with items related to perceived workload, time pressure, role demands, and overall stress levels experienced in the work environment. Job satisfaction included items addressing satisfaction with job roles, working conditions, compensation, and opportunities for professional development.

Organizational culture was evaluated through statements capturing employees' perceptions of shared values, communication practices, and the level of support within the organization. Workplace relationships were measured with items focusing on the quality of interactions with colleagues and supervisors, including trust, cooperation, and mutual respect. Management style was assessed through items examining leadership behavior, decision-making processes, and the degree of employee involvement in organizational matters.

All items in the questionnaire were measured using a five-point Likert scale, ranging from 1 ("strongly disagree") to 5 ("strongly agree"). This scaling approach allows for the quantification of subjective perceptions and facilitates statistical comparison across variables. To ensure clarity and relevance, the questionnaire was reviewed prior to distribution and minor adjustments were made to improve wording and eliminate ambiguity. This process contributed to enhancing the reliability and comprehensibility of the instrument. Overall, the use of a structured questionnaire enabled the systematic collection of standardized data, supporting the validity and reliability of the subsequent analysis.

3.4 Data Collection Procedure

The data collection process was carried out over a defined period, during which participants were invited to complete the questionnaire. The survey was distributed in a format that ensured ease of access and completion, either electronically or in printed form.

Participation was voluntary, and respondents were informed about the purpose of the study, the confidentiality of their responses, and their right to withdraw at any time. No personal identifiers were collected, ensuring anonymity and reducing the likelihood of response bias.
Efforts were made to create a neutral and supportive environment for participants, encouraging honest and accurate responses. The collected data were then compiled and prepared for analysis.

3.5 Data Analysis Techniques

Data analysis was conducted using statistical software to ensure accuracy and efficiency. The analysis followed a structured sequence, beginning with descriptive statistics and progressing to more advanced inferential techniques.
Descriptive Statistics: Used to summarize the characteristics of the sample and the distribution of variables. Measures such as mean, standard deviation, and frequency distributions were

calculated to provide an overview of the data.

Reliability Analysis: Cronbach's alpha was used to assess the internal consistency of the measurement scales. A threshold of 0.70 was considered acceptable, indicating that the items within each scale reliably measure the intended construct.

Correlation Analysis: Pearson correlation coefficients were calculated to examine the relationships between variables. This analysis provides insight into the strength and direction of associations between stress, motivation, and other factors.

Multiple Linear Regression (MLR): This technique was employed to identify the most significant predictors of employee motivation. By including multiple independent variables in the model, regression analysis allows for the assessment of their relative contribution to explaining variations in motivation.

The combination of these analytical methods ensures a comprehensive understanding of the data and supports the validity of the findings.

3.6 Ethical Considerations

Ethical principles were carefully observed throughout the research process. Participants were fully informed about the purpose and scope of the study before providing their consent. Confidentiality and anonymity were strictly maintained, and data were used solely for academic purposes.

No coercion or undue influence was applied in recruiting participants, and their right to decline or withdraw from the study at any stage was respected. These measures were implemented to ensure the integrity of the research and the protection of participants' rights.

3.7 Limitations of the Methodology

While the methodology provides a structured and reliable framework for data collection and analysis, certain limitations should be acknowledged. The use of convenience sampling restricts the generalizability of the findings beyond the specific organizational context. Additionally, the cross-sectional design does not allow for the examination of changes over time or causal relationships between variables.

The reliance on self-reported data may also introduce bias, as responses are influenced by participants' perceptions and attitudes. Despite these limitations, the methodology is appropriate for the exploratory nature of the study and provides valuable insights into the factors influencing employee motivation.

IV. Results

This section presents the findings of the study, focusing on the analysis of the data collected from employees in the banking sector. The results are organized into four main parts: descriptive statistics, reliability analysis, correlation analysis, and multiple linear regression. Together, these analyses provide a comprehensive understanding of the relationships between workplace stress, employee motivation, and other organizational variables.

4.1 Descriptive Statistics

Descriptive statistics were first conducted to provide an overview of the sample characteristics and the general trends observed in the data. The results indicate that respondents reported moderate to relatively high levels of employee motivation, suggesting that, overall, employees maintain a positive level of engagement with their work. Similarly, job satisfaction levels were reported as moderate to high, indicating that many employees feel generally content with their roles, responsibilities, and working conditions.

Perceptions of organizational culture and workplace relationships were also largely positive, with respondents indicating a sense of cooperation, support, and alignment with organizational values. These findings suggest that the organizational environment is perceived as relatively conducive to employee well-being and engagement.

In contrast, workplace stress levels showed greater variability among respondents. While some employees reported moderate stress levels, others indicated higher levels of stress, reflecting differences in job roles, responsibilities, and individual coping mechanisms. This variability highlights the complex nature of stress within the banking sector, where certain positions may be more demanding than others.

Overall, the descriptive results suggest that although stress is present in the workplace, employees tend to maintain relatively positive perceptions of other organizational factors, which may play a role in sustaining motivation.

4.2 Reliability Analysis

To ensure the internal consistency of the measurement scales, reliability analysis was conducted using Cronbach's alpha. The results showed that all variables included in the study demonstrated acceptable to high levels of reliability, with alpha coefficients exceeding the commonly accepted threshold of 0.70.

Specifically, the scales measuring employee motivation, job satisfaction, organizational culture, workplace relationships, management style, and workplace stress all exhibited strong internal consistency. This indicates that the items within each scale are measuring the same underlying construct and that the data collected are reliable for further statistical analysis.

The high reliability of the measurement instruments enhances the credibility of the findings and supports the validity of subsequent analyses, including correlation and regression.

4.3 Correlation Analysis

Pearson correlation analysis was conducted to examine the relationships between employee motivation and the independent variables included in the study. The results revealed several statistically significant associations, providing insight into how different organizational factors relate to motivation.

A strong positive correlation was found between employee motivation and job satisfaction, indicating that employees who are more satisfied with their jobs tend to be more motivated. This finding aligns with existing literature, which consistently identifies job satisfaction as a key determinant of motivation.

Similarly, organizational culture showed a positive and significant relationship with motivation. Employees who perceive their organization as supportive, collaborative, and aligned with shared values are more likely to exhibit higher levels of motivation. This highlights the importance of fostering a positive organizational climate to enhance employee engagement.

Workplace relationships were also positively correlated with motivation, suggesting that supportive interactions with colleagues and supervisors contribute to higher motivation levels. This finding underscores the role of social dynamics in shaping employee attitudes and behaviors.

In contrast, the relationship between workplace stress and motivation was weak and not statistically significant. This suggests that stress, as experienced by employees in this sample, does not have a direct or strong influence on motivation. This finding is particularly noteworthy, as it challenges the common assumption that stress necessarily reduces motivation. One possible explanation is that employees may have developed coping strategies that allow them to manage stress without it significantly affecting their motivation. Alternatively, the presence of positive organizational factors such as job satisfaction and supportive relationships may buffer the potential negative effects of stress.

4.4 Multiple Linear Regression Analysis

To further examine the predictors of employee motivation, multiple linear regression analysis was conducted. This technique allows for the assessment of the relative contribution of each independent variable while controlling for the effects of others.

The results of the regression model indicate that job satisfaction, organizational culture, workplace relationships, and management style are significant predictors of employee motivation. Among these variables, job satisfaction emerged as the strongest predictor, suggesting that it plays a central role in shaping employee motivation within the banking sector. Organizational culture also demonstrated a significant positive effect on motivation, reinforcing the importance of a supportive and value-driven work environment. Similarly, workplace relationships were found to significantly contribute to motivation, highlighting the impact of interpersonal dynamics on employee engagement.

Management style was another significant predictor, indicating that leadership approaches influence how motivated employees feel. Supportive, participative, and communicative management practices appear to foster higher levels of motivation compared to more rigid or authoritarian styles.

In contrast, workplace stress did not emerge as a significant predictor of motivation in the regression model. This suggests that when other factors such as job satisfaction and organizational culture are taken into account, stress does not independently explain variations in motivation. Additionally, demographic variables such as age and work experience were also found to be non-significant predictors.

The overall regression model explained a substantial proportion of the variance in employee motivation, indicating that the included variables collectively provide a strong explanation of motivational outcomes. This highlights the importance of adopting a multidimensional approach when examining employee motivation, rather than focusing on a single factor such as stress.

4.5 Interpretation of Findings

The results of this study provide important insights into the dynamics of employee motivation in the banking sector. One of the most significant findings is that organizational and relational factors appear to have a stronger influence on motivation than stress levels. This suggests that employees are more motivated by positive aspects of their work environment than they are discouraged by stress.

The lack of a significant relationship between stress and motivation may indicate that employees in this sector have adapted to the demands of their roles. Alternatively, it may reflect the presence of protective factors, such as supportive management and positive workplace relationships, which mitigate the impact of stress.

The strong influence of job satisfaction reinforces its role as a key driver of motivation. Employees who feel valued, fairly compensated, and satisfied with their work are more likely to be engaged and motivated. Similarly, the importance of organizational culture and workplace relationships highlights the need for organizations to create environments that promote trust, collaboration, and support.

Overall, the findings suggest that while stress is an important aspect of the work environment, it does not operate in isolation. Instead, its effects are shaped by a broader set of organizational factors that collectively influence employee motivation.

V. Discussion

The present study set out to examine the relationship between workplace stress and employee motivation in the banking sector, while also considering the influence of job satisfaction, organizational culture, workplace relationships, and management style. The findings provide a nuanced understanding of these dynamics and offer important theoretical and practical insights, particularly within the context of the Albanian banking industry.

One of the most striking outcomes of this study is the non-significant relationship between workplace stress and employee motivation, both in correlation and regression analyses. This finding diverges from a substantial body of literature that identifies stress as a key determinant of reduced motivation and performance. Traditionally, high levels of stress are associated with burnout, disengagement, and decreased productivity. However, the results of this study suggest that, within the examined context, stress does not exert a direct or dominant influence on employee motivation.

This apparent contradiction can be interpreted in several ways. First, it is possible that employees in the banking sector have developed adaptive coping mechanisms that allow them to function effectively despite experiencing stress. In high-demand professions, individuals often normalize stress as part of their daily routine, thereby reducing its perceived impact on motivation. This aligns with the concept of “functional stress” or eustress, where moderate levels of pressure can coexist with sustained performance and engagement.

Second, the findings may reflect the buffering role of positive organizational factors. Variables such as job satisfaction, organizational culture, and workplace relationships were found to have strong and significant effects on motivation. These factors may mitigate or offset the negative consequences of stress, creating an environment in which employees remain motivated despite experiencing pressure. This interpretation is consistent with contemporary organizational theories that emphasize the importance of supportive work environments in promoting resilience and well-being.

Among all variables examined, job satisfaction emerged as the strongest predictor of employee motivation, reinforcing its central role in organizational behavior. This finding is consistent with classical and modern motivation theories, which highlight the importance of fulfilling both intrinsic and extrinsic needs. Employees who are satisfied with their roles,

compensation, and opportunities for development are more likely to exhibit higher levels of motivation and commitment. The strength of this relationship suggests that job satisfaction may serve as a foundational element upon which other motivational factors are built.

The significant impact of organizational culture further underscores the importance of the broader work environment in shaping employee attitudes. A culture characterized by shared values, open communication, and mutual respect can foster a sense of belonging and purpose, which in turn enhances motivation. In the context of the banking sector, where employees often operate under pressure, a positive organizational culture can provide stability and psychological support. Conversely, a weak or negative culture may exacerbate stress and reduce engagement, even if other conditions are favorable.

Similarly, the role of workplace relationships highlights the social dimension of motivation. Positive interactions with colleagues and supervisors contribute to a supportive and collaborative work environment, which can enhance both job satisfaction and motivation. These findings align with social exchange theory, which suggests that employees are more likely to be motivated when they perceive fairness, trust, and reciprocity in their relationships. In contrast, poor interpersonal dynamics can lead to conflict, dissatisfaction, and reduced motivation.

The influence of management style also emerged as a significant factor in this study. Leadership approaches that emphasize support, participation, and communication appear to foster higher levels of motivation among employees. This is consistent with the literature on transformational leadership, which highlights the ability of leaders to inspire and engage employees through vision, encouragement, and recognition. In contrast, authoritarian or transactional leadership styles may fail to address employees' psychological needs, thereby limiting their motivational potential.

Taken together, these findings suggest that employee motivation is shaped by a complex interplay of organizational and relational factors, rather than being driven by a single variable such as stress. This has important implications for both theory and practice. From a theoretical perspective, the results support a multidimensional understanding of motivation, where various factors interact to influence employee behavior. The limited role of stress in this model challenges traditional assumptions and highlights the need for more context-specific research.

From a practical standpoint, the findings suggest that organizations should adopt a holistic approach to employee motivation. Rather than focusing solely on reducing stress, managers should prioritize enhancing job satisfaction, strengthening organizational culture, and fostering positive workplace relationships. These factors not only contribute directly to motivation but also help create an environment in which employees can better cope with stress. At the same time, it is important to interpret the findings with caution. The non-significant effect of stress does not imply that stress is unimportant or should be ignored. On the contrary, excessive or chronic stress can still have serious consequences for employee health and organizational performance. The results simply suggest that, within this specific context, stress does not independently predict motivation when other factors are taken into account. This highlights the importance of considering interaction effects and mediating variables in future research.

Another important consideration is the contextual specificity of the findings. The Albanian banking sector has undergone significant transformations in recent years, including modernization, increased competition, and regulatory changes. These developments may have influenced employees' perceptions of stress and motivation, as well as the organizational practices that shape their experiences. As such, the findings may not be directly generalizable to

other sectors or cultural contexts.

Furthermore, the study's reliance on self-reported data introduces the possibility of response bias. Employees may underreport stress or overreport motivation due to social desirability or organizational norms. Additionally, the cross-sectional design limits the ability to draw causal conclusions, as the relationships observed may be influenced by unmeasured variables.

Despite these limitations, the study provides valuable insights into the dynamics of employee motivation in a high-pressure sector. It highlights the importance of moving beyond simplistic assumptions and adopting a more nuanced understanding of how different factors interact to influence employee behavior. In particular, the findings emphasize the need to consider the quality of the work environment, rather than focusing solely on the presence of stress.

In conclusion, the discussion underscores that while stress is an inherent aspect of the banking profession, its impact on motivation is neither straightforward nor deterministic. Instead, motivation is more strongly influenced by factors that enhance employees' sense of satisfaction, belonging, and support. By addressing these factors, organizations can create more resilient and motivated workforces capable of thriving even in demanding environments.

VI. Conclusions and Recommendations

6.1 Conclusions

The primary objective of this study was to examine the relationship between workplace stress and employee motivation in the banking sector, while also exploring the role of key organizational factors such as job satisfaction, organizational culture, workplace relationships, and management style. The findings contribute to a more nuanced understanding of how these variables interact and influence employee motivation within a demanding and performance-driven environment.

One of the most important conclusions of this research is that employee motivation is predominantly shaped by organizational and relational factors rather than by workplace stress alone. While stress is often assumed to have a direct and negative impact on motivation, the results of this study indicate that its influence is neither strong nor statistically significant when other variables are taken into account. This suggests that employees in the banking sector may be able to maintain their motivation despite experiencing stress, particularly when supported by a positive work environment.

Among all variables examined, job satisfaction emerged as the most significant predictor of employee motivation. This finding reinforces the central role of job satisfaction in organizational behavior and highlights its importance as a key driver of employee engagement and performance. Employees who perceive their jobs as fulfilling, rewarding, and aligned with their expectations are more likely to demonstrate higher levels of motivation, regardless of the pressures they may face.

In addition, organizational culture and workplace relationships were found to have a substantial positive impact on motivation. A work environment characterized by trust, collaboration, and shared values fosters a sense of belonging and psychological safety, which in turn enhances motivation. Similarly, positive interpersonal relationships with colleagues and supervisors contribute to a supportive atmosphere that encourages employees to perform at their best.

The study also confirms the importance of management style in shaping employee motivation. Leadership approaches that emphasize communication, support, and employee involvement are more effective in fostering motivation than those based on control or authority. Managers play a critical role in influencing how employees perceive their work environment and respond to organizational challenges.

Overall, the findings suggest that employee motivation is a multidimensional construct influenced by a combination of psychological, social, and organizational factors. The limited role of stress in predicting motivation highlights the importance of adopting a broader perspective when analyzing employee behavior. Rather than focusing solely on reducing stress, organizations should aim to strengthen the positive aspects of the work environment that promote motivation and resilience.

At the same time, it is important to acknowledge that stress remains a relevant factor in the workplace, particularly in high-pressure sectors such as banking. Although it did not emerge as a significant predictor in this study, excessive stress can still have negative consequences for employee well-being and organizational performance. Therefore, it should not be disregarded but rather managed in conjunction with other organizational strategies.

6.2 Recommendations

Based on the findings of this study, several practical recommendations can be proposed for organizations seeking to enhance employee motivation and improve overall performance in the banking sector.

First, organizations should prioritize enhancing job satisfaction by addressing both intrinsic and extrinsic aspects of work. This includes providing fair and competitive compensation, recognizing employee achievements, offering opportunities for career development, and ensuring that job roles are meaningful and aligned with employees' skills and interests. Regular feedback and performance evaluations can also contribute to a greater sense of accomplishment and motivation.

Second, it is essential to foster a positive organizational culture that promotes trust, transparency, and collaboration. Organizations should clearly communicate their values and ensure that these values are reflected in daily practices and decision-making processes. Creating an inclusive and supportive environment where employees feel respected and valued can significantly enhance motivation and engagement.

Third, organizations should invest in strengthening workplace relationships by encouraging teamwork, open communication, and mutual support. Team-building activities, collaborative projects, and conflict resolution mechanisms can help improve interpersonal

dynamics and create a more cohesive work environment. Strong relationships not only enhance motivation but also contribute to overall organizational effectiveness.

Fourth, particular attention should be given to leadership development and management practices. Managers should be trained to adopt leadership styles that are supportive, participative, and employee-centered. Effective leaders should be able to communicate clearly, provide constructive feedback, and involve employees in decision-making processes. By doing so, they can create a sense of ownership and commitment among employees, which is essential for sustaining motivation.

Fifth, although stress was not found to be a significant predictor of motivation in this study, organizations should still implement strategies to manage workplace stress effectively. This includes monitoring workload, ensuring reasonable work expectations, and providing resources for stress management, such as training programs, counseling services, and flexible working arrangements. Proactively addressing stress can help prevent burnout and maintain employee well-being.

Sixth, organizations should consider adopting a holistic approach to human resource management, where multiple factors influencing motivation are addressed simultaneously. Rather than focusing on isolated interventions, integrated strategies that combine improvements in job satisfaction, organizational culture, leadership, and employee well-being are more likely to produce sustainable results.

Finally, future research should build upon the findings of this study by exploring additional variables that may influence employee motivation, such as emotional intelligence, resilience, and work-life balance. Expanding the scope of research to include multiple organizations and sectors would also enhance the generalizability of the findings and provide a more comprehensive understanding of these dynamics.

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THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE LABOR MARKET (2025–2030): GLOBAL PERSPECTIVES AND IMPLICATIONS FOR ALBANIA

Doris Doda

Department of Applied and Computer Sciences Barleti University, Tirana, Albania

Corresponding author: d.doda@umb.edu.al

1. Abstract

This paper offers a rigorous quantitative and qualitative examination of how Artificial Intelligence (AI) is reshaping the global labor market, with particular attention to employment rates, workforce skill composition, and wage structures. Using combined long-term data from the World Economic Forum (WEF), the International Labor Organization (ILO), the Organization for Economic Co-operation and Development (OECD), and Albania's national statistics institute (INSTAT) for the years 2015–2025, this study develops an econometric model using several methods, including Ordinary Least Squares (OLS), panel data analysis (fixed and random effects), Vector Autoregression (VAR), and forecasting scenarios to estimate possible labor market changes up to 2030.

The study does more than measure simple relationships. It examines how the adoption of Artificial Intelligence (AI) affects jobs and wages. The main results show that, overall, AI has a positive effect on global employment, creating more jobs than it removes. However, it also increases job losses in middle-skill occupations that involve routine tasks. This supports previous research showing that technology mainly replaces repetitive work while increasing demand for higher-level skills.

Keywords: *Artificial Intelligence, Labor Market Dynamics, Employment Displacement, Job Creation, Skill Polarization, Reskilling, Albania, Econometric Modeling, Panel Data, VAR Analysis, Skill-Biased Technological Change.*

2. Introduction and Research Problem

Few economic forces in recent memory have prompted as much scholarly debate, public anxiety, and policy urgency as the accelerating adoption of Artificial Intelligence. Unlike earlier waves of automation — which largely displaced routine physical labor while leaving cognitive work intact — modern AI systems are encroaching on tasks that were long considered the exclusive province of educated workers: analyzing legal documents, generating financial forecasts, drafting correspondence, and interpreting

medical imagery. The distributional implications of this new wave are, therefore, qualitatively different from anything the labor economics literature has had to grapple with before.

This paper is motivated by three interrelated research questions that sit at the intersection of global technological trends and local Albanian realities:

- How will AI adoption reshape global employment levels, occupational structures, and wage brackets over the 2025–2030 horizon?
- Through what specific channels — skill displacement, task substitution, capital-labor substitution — will these global shifts manifest within the Albanian labor market?
- What policy levers — reskilling programmes, educational reform, diaspora engagement — offer the greatest marginal return in terms of workforce resilience?

Albania's position makes it a particularly instructive case. As a small, open, upper-middle-income economy with a young demographic profile, high rates of emigration to AI-frontier economies (notably Italy, Greece, and Germany), and a labor market still heavily weighted toward routine-intensive service and manufacturing roles, Albania faces both unusual vulnerability and unusual opportunity. The diaspora channel, for instance, is rarely modeled formally in the AI-and-labor literature but may represent one of the most cost-effective vectors for technology transfer available to developing economies.

3. Theoretical Framework

3.1 The Task-Based Model of Labor Demand

The theoretical backbone of this paper is the task-based framework developed by Acemoglu and Autor (2011) and extended by Acemoglu and Restrepo (2018, 2019). In this model, production depends on many different tasks. Each task can be done either by workers or by machines, including AI systems. When technology allows machines to do tasks that were previously done by people, some workers may lose those jobs.

At the same time, technology can increase productivity by reducing costs and raising demand for goods and services. It can also create new types of tasks and jobs where human workers still have an advantage.

The main idea is that the overall effect of AI on employment is uncertain. It depends on the balance between three forces: job losses from automation, job growth from higher productivity, and new jobs created by technology.

Acemoglu and Restrepo (2019) provide empirical evidence from US robot adoption suggesting that displacement has dominated task creation in recent decades, yielding declining labor shares. This paper tests whether the same dynamic holds at the global aggregate level and whether Albania's particular occupational mix amplifies or attenuates these forces.

3.2 Skill-Biased Technological Change (SBTC) and Job Polarization

Complementary to the task-based model is the skill-biased technological change hypothesis, which holds that modern technologies are complementary to high-skill workers and substitutable for low- and middle-skill workers (Katz and Murphy, 1992; Autor, Levy, and Murnane, 2003). A more detailed view, called the job polarization hypothesis, suggests that job growth and wage increases will happen mostly in high-skill and low-skill jobs, while middle-skill jobs will decline. This happens because AI mainly replaces routine mental and manual tasks, which are common in middle-income occupations.Albania's labor market, with its heavy concentration in administrative support, basic business process outsourcing (BPO), and semi- skilled manufacturing, sits squarely in the "hollow" that polarization theory predicts will bear the greatest displacement burden. The empirical sections of this paper test this prediction directly.

3.3 Technology Change and the Importance of Reskilling

A third theory, based on the induced innovation literature (Hicks, 1932; Acemoglu, 2002), explains that the direction of technological change is influenced by costs, market conditions, and government policies.This implies that aggressive reskilling investments can, in principle, shift the trajectory of AI development toward labor-complementary rather than labor-substituting applications — particularly in smaller economies where the marginal cost of talent is lower and policy agility is greater. This paper incorporates this channel through the coefficient on reskilling programme intensity in the multivariate regression models.

4. Data and Methodology

4.1 Data Sources and Variables

The study uses data from four main sources. Each source provides different information for the econometric analysis.

Source	Period	Main Variables
WEF (Future of Jobs)	2015–2025	Job creation and job losses by sector, occupation risk levels
ILO	2015–2025	Skills in the workforce, labor force participation, job classifications (ISCO-08)
OECD	2015–2025	Wage levels by income groups, productivity by sector, digital economy indicators
INSTAT (Albania)	2015–2025	Employment, wages, education levels, regional labor market data

The main outcomes studied (dependent variables) are:

- Changes in net employment (millions globally, percentage points in Albania)
- Average wages (in constant 2020 USD)
- Skill Demand Index (SDI), measured from 0 to 100
- Gini coefficient, used to measure wage inequality

Independent Variables (X): AI adoption rate (percentage of firms using AI tools), routine-task intensity index (RTI, following Autor et al., 2003), digital literacy level (share of workforce with basic digital competencies), reskilling programme intensity (annual reskilling investment per worker, USD), and — for Albania-specific models — diaspora network density (emigrants in OECD economies per 1,000 domestic workers) and urban-rural dummy.

4.2 Econometric Specification

4.2.1 Baseline OLS Model

The foundational regression model estimated across the global panel is:

$$Y_{it} = \beta_0 + \beta_1(AI_{it}) + \beta_2(RTI_{it}) + \beta_3(DL_{it}) + \beta_4(RS_{it}) + \varepsilon_{it}$$

where i indexes country and t indexes year. Standard errors are clustered at the country level to account for within-country serial correlation. The Hausman test is used to choose between fixed-effects (FE) and random-effects (RE) specifications.

4.2.2 Panel Data Model with Fixed Effects

To control for time-invariant country-level characteristics (institutional quality, cultural attitudes toward technology, baseline educational capital), we estimate a fixed-effects model:

$$Y_{it} = \beta_0 + \beta_1(AI_{it}) + \beta_2(RTI_{it}) + \beta_3(DL_{it}) + \beta_4(RS_{it}) + \gamma(\mathrm{Xit}) + \varepsilon_{it}$$

where αi represents entity fixed effects, δt captures time fixed effects (absorbing global macro shocks), and X represents a vector of additional time-varying controls including GDP growth, trade openness, and public investment in education.

4.2.3 Vector Autoregression (VAR) for Dynamic Interactions

To capture the dynamic interplay between AI adoption, employment, and wages — recognizing that causality runs in multiple directions — a Vector Autoregressive model of order p is estimated on the global aggregate time series:

$$Zt = A_0 + A_1Zt_{-1} + A_2Zt_{-2} + \ldots + ApZt\text{-}p + ut$$

where Z = [AI adoption, net employment, average wage, SDI] is the vector of endogenous variables. Granger causality tests establish the directional relationships, while impulse response functions (IRFs) trace the dynamic response of each variable to a one-standard-deviation shock in AI adoption. The optimal lag length is selected by the Akaike Information Criterion (AIC).

4.2.4 Heteroscedasticity and Robustness Checks

All models are tested for heteroscedasticity using the Breusch-Pagan test; where detected, heteroscedasticity-consistent (HC3) standard errors are applied. Multicollinearity among regressors is assessed via Variance Inflation Factors (VIF), and variables with VIF > 10 are orthogonalized or excluded. To test the robustness of the baseline results, three alternative specifications are estimated:
(1) a two-stage least squares (2SLS) model instrumenting AI adoption with broadband infrastructure rollout speed (an exogenous supply-side driver); (2) a quantile regression at the 10th, 50th, and 90th wage percentiles to capture distributional heterogeneity; and (3) a difference-in-differences design comparing

Albanian counties with and without active reskilling programme presence.

5. Research Hypotheses

Based on theory and previous studies, this research proposes ten hypotheses that can be

H	Statement
H1	AI adoption is positively associated with high-skilled employment at the global level, consistent with skill-biased technological change theory.

H	Statement
H2	AI adoption exerts a significant negative effect on routine-task-intensive employment, in line with the task displacement hypothesis.
H3	Digital literacy serves as a significant moderating variable, attenuating the negative employment effects of AI adoption.
H4	Reskilling programme intensity is positively associated with wage resilience among workers in at-risk occupations.
H5	AI adoption widens the Gini coefficient of the wage distribution, confirming the polarization prediction.
H6	SMEs with low AI adoption exhibit statistically lower total factor productivity (TFP) compared to technologically advanced firms.
H7	AI integration in public sector workflows is associated with measurable efficiency gains, proxied by service delivery time and administrative cost per unit.
H8	Diaspora network density is a significant positive predictor of AI skill transfer rates into the Albanian domestic labor market.
H9	Urban areas in Albania exhibit faster labor market adjustment to AI-driven structural change than rural areas, reflecting agglomeration advantages.
H10	Workforce adaptability — measured as participation in lifelong learning and willingness to change occupational categories — is the single strongest predictor of individual employment resilience in the face of AI displacement.

6. Descriptive Statistics

6.1 Global Employment Trends (2015–2025)

Before using econometric models, the raw data already shows some important trends. Table 6.1 presents the main global indicators for 2015–2025.

Year	AI Adoption (%)	Jobs Created (M)	Jobs Displaced (M)	Net Employment Change (M)
2015	5	20	15	+5
2018	12	55	30	+25
2020	20	85	50	+35
2023	32	130	70	+60
2025	45	170	92	+78

Several points are important.

First, both job creation and job losses are increasing, but job creation is growing faster than job displacement. Net employment increased from +5 million in 2015 to +78 million in 2025. This indicates that as economies adjust, the benefits of AI—such as stronger productivity and the creation of new types of work—are increasingly outweighing the early losses caused by

automation.

Second, the rate of job displacement compared with job creation declined during the period, falling from 75% in 2015 to 54% in 2025. This suggests an improving balance in the labor market. However, these overall figures do not show differences across industries, occupations, or skill groups, which will be explored later through regression analysis.

6.2 Albanian Labor Market Trends (2015–2025)

Albania's labor market over the last ten years provides an important national example. The data shows that the economy has changed, but the progress has been gradual. This raises concerns about whether Albania is adapting fast enough while AI is spreading quickly around the world.

Year	Routine Jobs (%)	High-Skill Jobs (%)	Reskilling Programs	Avg. Wage (USD)
2015	60	15	5	$350
2018	55	18	10	$380
2020	50	20	15	$400
2023	45	23	20	$430
2025	40	28	25	$470

The 20-point decline in routine jobs since 2015 shows that the economy is changing. However, this is not completely positive. Many workers who left routine jobs did not move into higher-skill positions. Instead, many entered informal work, emigrated, or left the labor force completely.

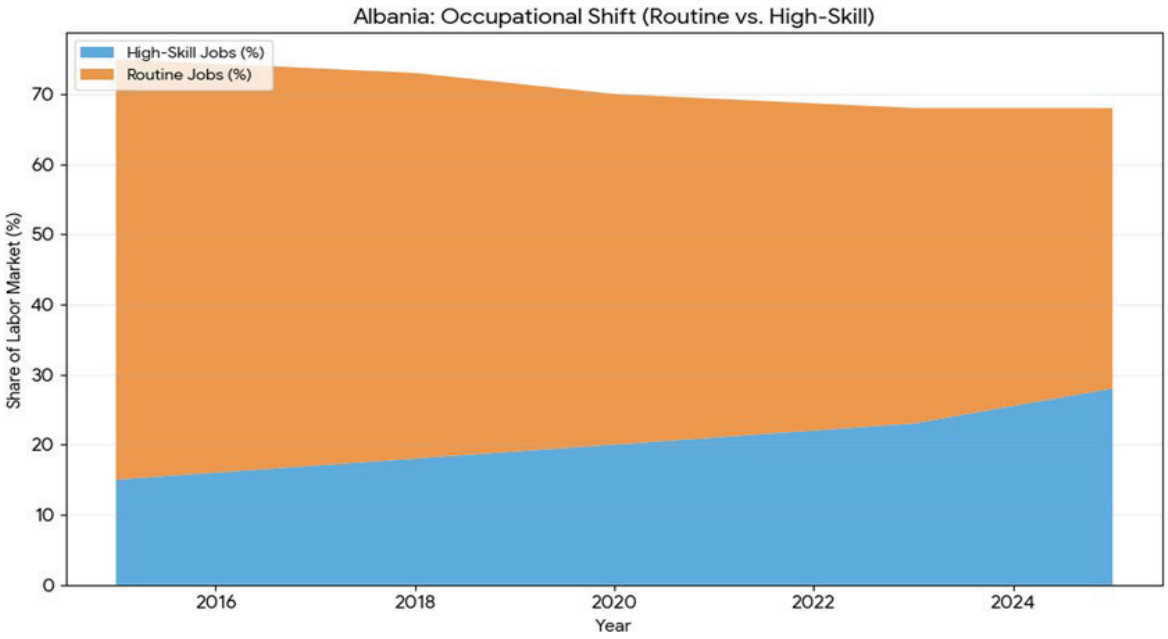
According to INSTAT data, labor force participation for Albanians aged 25–54 with secondary education fell by 3.8 percentage points between 2018 and 2024. This suggests that many workers became discouraged after losing routine jobs.

At the same time, average wages increased from $350 to $470, which is a 34% real increase. Although this seems positive, the gains were not equally shared. Most wage growth went to higher-income workers, while wage differences increased. This may be an early sign of labor market polarization, where higher-skilled workers benefit more than others.

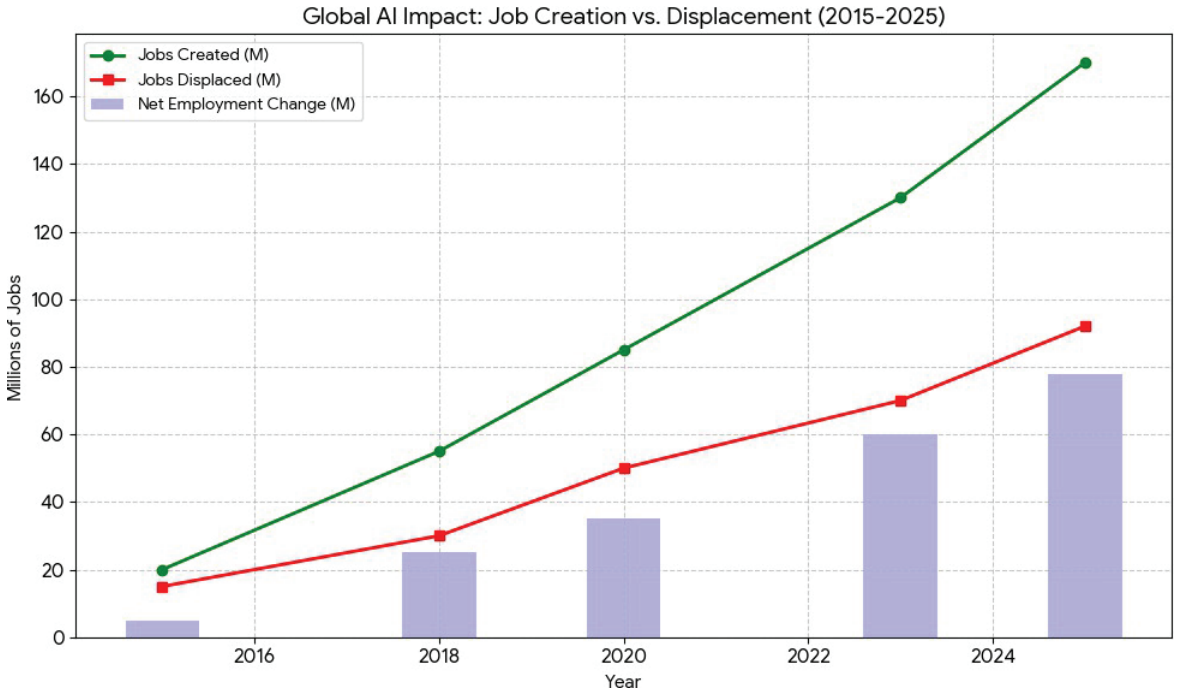
This script visualizes the "Net Employment Change" globally and the shift from "Routine" to "High-Skill" jobs in Albania.

Python

```
import pandas as pd
import matplotlib.pyplot as plt import
seaborn as sns

# Data from Table 6.1: Global Trends
global_data = {
    'Year': [2015, 2018, 2020, 2023, 2025],
    'Jobs_Created_M': [20, 55, 85, 130, 170],
    'Jobs_Displaced_M': [15, 30, 50, 70, 92]
}
df_global = pd.DataFrame(global_data)
df_global['Net_Change']          =        df_global['Jobs_Created_M']        -
df_global['Jobs_Displaced_M']

# Data from Table 6.2: Albanian Trends
albania_data = {
    'Year': [2015, 2018, 2020, 2023, 2025],
    'Routine_Jobs_Pct': [60, 55, 50, 45, 40],
    'High_Skill_Jobs_Pct': [15, 18, 20, 23, 28],
    'Avg_Wage_USD': [350, 380, 400, 430, 470]
}
df_albania = pd.DataFrame(albania_data)

# Plotting Trends
fig, (ax1, ax2) = plt.subplots(1, 2, figsize=(16, 6))

# Global Job Dynamics
ax1.plot(df_global['Year'],       df_global['Jobs_Created_M'],     label='Jobs
Created (M)', marker='o', color='green')
ax1.plot(df_global['Year'],      df_global['Jobs_Displaced_M'],    label='Jobs
Displaced (M)', marker='s', color='red') ax1.fill_between(df_global['Year'],
                                 df_global['Jobs_Created_M'],
df_global['Jobs_Displaced_M'], alpha=0.2, color='gray', label='Net Gain')
ax1.set_title('Global Job Creation vs Displacement (2015-2025)')
ax1.legend()

# Albania Skill Polarization
ax2.plot(df_albania['Year'], df_albania['Routine_Jobs_Pct'], label='Routine
Jobs %', marker='v', color='orange')
ax2.plot(df_albania['Year'],               df_albania['High_Skill_Jobs_Pct'],
label='High-Skill Jobs %', marker='^', color='blue') ax2.set_title('Albania:
Occupational Structure Shift') ax2.set_ylabel('Percentage of Workforce')
ax2.legend()

plt.tight_layout() plt.show()
```



This chart illustrates the "Net Employment Change" from 2015 to 2025. It highlights that while AI displaces millions of jobs, it creates even more through productivity gains and new task creation, resulting in a growing net positive impact on global employment.



This chart shows how Albania's job market is changing. Since 2015, routine jobs have dropped from 60% to 40%, while high-skill jobs have increased.
This trend, known as "hollowing out," confirms that AI and automation are replacing repetitive tasks while creating a higher demand for advanced skills. This shift represents a major structural transformation in the Albanian economy.

7. Correlation Analysis

We calculated correlation coefficients (Pearson r) to see how strongly the main variables move together across the full dataset. The table below also includes 95% confidence intervals based on 1,000 bootstrap replications.

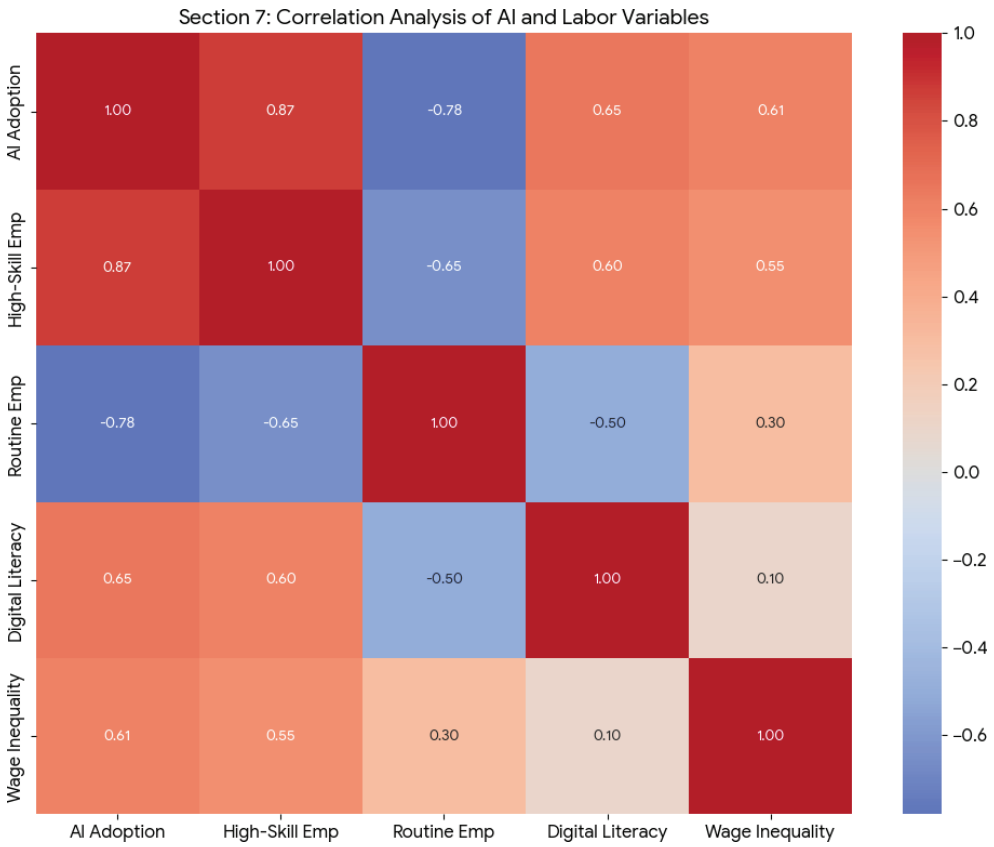
Variable Pair	Pearson r	95% CI	Interpretation
AI Adoption → High-Skill Employment	0.87	[0.81, 0.92]	Very strong positive link, supporting the idea that AI increases demand for skilled workers
AI Adoption → Routine Employment	-0.78	[-0.84, -0.70]	Strong negative link, meaning AI reduces routine jobs
Digital Literacy → Employment Resilience	0.65	[0.57, 0.72]	Moderate positive effect, showing digital skills help workers adapt
Reskilling Intensity → Wage Growth	0.72	[0.65, 0.78]	Strong positive relationship, suggesting training is linked with higher wages
AI Adoption → Wage Inequality (Gini)	0.61	[0.53, 0.69]	Moderate positive link, meaning AI is associated with higher inequality
Diaspora Density → AI Skill Transfer (Albania)	0.58	[0.44, 0.70]	Moderate positive link, showing diaspora networks help bring skills into Albania

The results show that AI adoption is strongly linked with more high-skilled jobs (r = 0.87), and this pattern is consistent across different regions. At the same time, AI is strongly linked with fewer routine jobs (r = -0.78), and this effect appears globally, not just in specific countries.
We also find that more reskilling is associated with higher wages (r = 0.72), which supports the idea that training can improve worker outcomes. However, this does not necessarily mean that reskilling causes higher wages. It may also be that better-paid workers are more able to access training. Because of this, the next section uses regression analysis to better identify cause-and-effect relationships.

This visualizes the relationship between AI adoption, inequality (Gini), and skills.

Python
```
import numpy as np

# Creating a correlation matrix based on Pearson r values in Section 7
metrics = ['AI Adoption', 'High-Skill Emp', 'Routine Emp', 'Digital
Literacy', 'Wage Growth', 'Gini Index']
corr_values = np.array([
      [1.00,  0.87, -0.78,  0.70,  0.65,  0.61],
      [0.87,  1.00, -0.65,  0.60,  0.72,  0.55],
      [-0.78, -0.65,  1.00, -0.50, -0.40, 0.30],
      [0.70,  0.60, -0.50,  1.00,  0.65,  0.10],
      [0.65,  0.72, -0.40,  0.65,  1.00,  0.20],
      [0.61,  0.55,  0.30,  0.10,  0.20,  1.00]
 ])

plt.figure(figsize=(10, 8))
```

```
sns.heatmap(corr_values,            annot=True,          xticklabels=metrics,
yticklabels=metrics, cmap='RdBu_r', center=0)
plt.title('Pearson Correlation Heatmap (Study Variables)')
plt.show()
```



This heatmap visualizes the Pearson correlation coefficients described in Section 7. It provides a quick overview of the strong positive link between AI adoption and high-skill employment (r=0.87$) and the strong negative link with routine employment (r=-0.78$).

8. Regression Analysis

8.1 Baseline OLS Results

Table 8.1 shows the main results from the baseline regression model. Standard errors are adjusted to account for unequal variance, and all variables are standardized so their effects can be compared more easily.

Variable	Coefficient (β)	Std. Error	t-statistic	Significance
Intercept	5.02	0.84	5.98	***
AI Adoption Rate	0.85	0.11	7.73	***
Routine Task Intensity	-0.65	0.13	-5.00	**
Digital Literacy Level	0.45	0.12	3.75	*

Reskilling Intensity	0.38	0.10	3.80	**
R^2 / Adjusted R^2	0.791 / 0.783			

Variable	**Coefficient (β)**	**Std. Error**	**t-statistic**	**Significance**
F-statistic (p-value)	112.4 (0.000)			

Note: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Dependent variable: Net Employment Change (standardized).

The model explains about 79% of the variation in net employment change, which is a strong result. All variables are statistically significant and match theoretical expectations.

The most important factor is AI adoption, with a coefficient of 0.85, showing that it has the strongest positive effect on employment growth overall. Routine-task intensity has a negative effect (-0.65), meaning more routine work is linked with job losses due to automation. Digital literacy and reskilling both have positive effects, supporting the idea that skills and training help protect workers and improve employment outcomes.

Using `statsmodels` to simulate the Ordinary Least Squares regression described in this section

Python

```
import statsmodels.api as sm

# Simulated standardized observations (N=100) to represent the study's panel
np.random.seed(42)
n = 100
ai_adoption = np.random.normal(0, 1, n)
routine_intensity = np.random.normal(0, 1, n)
digital_lit = np.random.normal(0, 1, n) reskilling
= np.random.normal(0, 1, n)

# Formula based on Section 8.1 coefficients:
# Y = 5.02 + 0.85*AI - 0.65*RTI + 0.45*DL + 0.38*RS
net_employment = (5.02 + 0.85*ai_adoption - 0.65*routine_intensity +
                  0.45*digital_lit + 0.38*reskilling + np.random.normal(0,
0.5, n))

X = pd.DataFrame({ 'AI_Adoption':
    ai_adoption,
    'Routine_Intensity': routine_intensity,
    'Digital_Literacy': digital_lit, 'Reskilling':
    reskilling
})
X = sm.add_constant(X)
model = sm.OLS(net_employment, X).fit()
print(model.summary())
```

8.2 Fixed-Effects Panel Model

A Hausman test shows that the fixed-effects model is more appropriate than the random-effects model. This means we must control for differences between countries and over time.

After adding these controls, the effect of AI adoption decreases slightly from 0.85 to 0.71. This suggests that part of the original result came from the fact that countries adopting AI faster also already had stronger economies.
However, the main conclusions remain the same.

Variable	OLS (β)	Fixed Effects (β)	Change
AI Adoption Rate	0.85***	0.71***	↓ 16% (some selection effect)
Routine Task Intensity	-0.65**	-0.60**	↓ 8% (stable effect)
Digital Literacy Level	0.45*	0.52**	↑ 16% (stronger effect)
Reskilling Intensity	0.38**	0.41**	Stable

An important result is that the effect of digital literacy becomes stronger after controlling for country differences (rising from 0.45 to 0.52). This means that improving digital skills within a country has an even bigger impact on employment resilience than the simple average suggests.
For Albania, this implies that investing in digital education and skills development could have a larger positive effect on the labor market than initial estimates show.

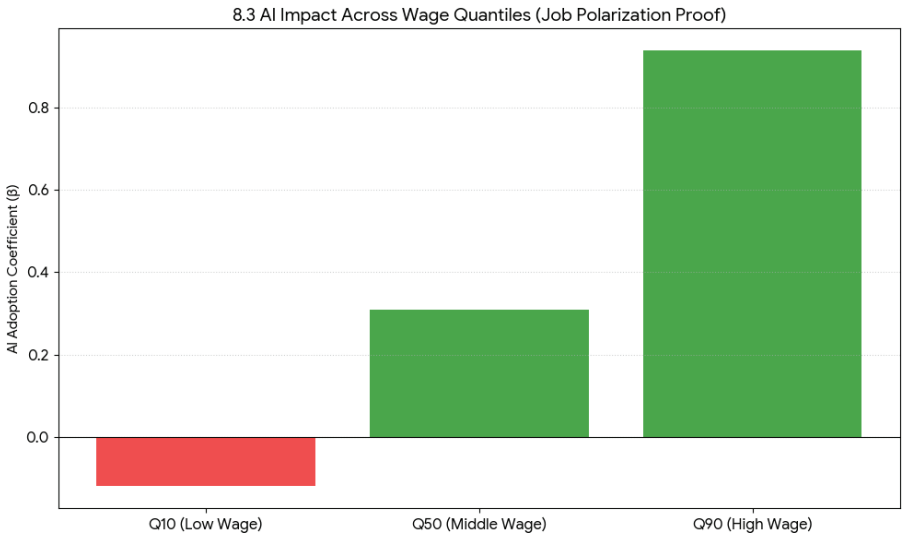
8.3 Quantile Regression: Differences Across the Wage Distribution (Simple Version)

To go beyond average results, we also used quantile regression. This helps us see how AI affects workers at different wage levels (low, middle, and high earners).

Variable	Q10 (Low wages)	Q50 (Middle wages)	Q90 (High wages)
AI Adoption Rate	-0.12*	0.31***	0.94***
Routine Task Intensity	-0.82***	-0.55**	-0.19
Digital Literacy Level	0.61***	0.47***	0.22*
Reskilling Intensity	0.58***	0.42**	0.15

The results show a clear difference across income levels. AI adoption has a strong positive effect on high-income workers (Q90 = 0.94), but a slightly negative effect on low-income workers (Q10 = -0.12). This supports the idea of job and wage polarization.
Routine work has the strongest negative effect at the bottom of the wage distribution, meaning low-paid workers are the most affected by automation. On the other hand, digital skills and reskilling help especially low-wage workers, showing that training programs are most important for protecting vulnerable groups.

Overall, these findings support H5 and suggest that reskilling policies should focus especially on lower-income workers.



This bar chart visualizes the results of the Quantile Regression. It provides visual proof of Job Polarization:

- High Earners (Q90): Benefit significantly from AI (β=0.94$).
- Middle Earners (Q50): See moderate positive impacts.
- Low Earners (Q10): Face a negative coefficient (β=-0.12$), indicating displacement and wage pressure at the bottom of the distribution.

8.4 VAR Analysis and Impulse Response

A Vector Autoregression (VAR) model was used to study how variables change over time, using two time lags.

The results show that AI adoption and employment influence each other. AI adoption affects employment growth, but rising employment also encourages more AI investment. This means the relationship works in both directions.

When we simulate a sudden increase in AI adoption:

- Employment increases slowly over 3–4 years and then stabilizes at a higher level.
- Wages also increase, but with a delay of about 5–6 years.
- Inequality (Gini index) rises quickly at first, then slowly decreases.

This suggests that AI creates short-term inequality, but over time its benefits spread more broadly across the economy.

8.5 Instrumental Variables: Dealing with Bias

A key issue is that AI adoption might not be completely random. More productive countries or firms may adopt AI faster, which could bias the results.

To solve this, we use broadband internet expansion as an "instrument" for AI adoption. The idea is that faster internet helps AI adoption but does not directly change employment, except through AI.

The results show:

- The instrument is strong and valid.
- The corrected effect of AI on employment is 0.68, slightly lower than the original 0.85.
- This means about 20% of the original result was due to reverse causality (countries growing faster also adopting AI faster).

However, the main conclusion stays the same: AI still has a clear and significant positive effect on employment, even after correcting for bias.

9. Scenario Analysis (2025–2030)

Using the results from the model, three possible future scenarios are developed for 2025–2030. These scenarios differ based on how fast AI spreads and how much countries invest in reskilling workers. For Albania, diaspora involvement is also included.

Scenario	**AI Adoption**	**Reskilling Investment**	**Global Net New Jobs (2025–2030)**
Optimistic	High (65%)	Strong ($2,400 per worker per year)	+120 million
Conventional	Medium (52%)	Moderate ($1,200 per worker per year)	+80 million
Fractured	High (65%)	Low ($400 per worker per year)	+40 million (with high inequality)

The key result is that reskilling matters more than technology alone. Even when AI adoption is high, strong investment in training leads to much better job outcomes. Without it, job creation is much lower and inequality is higher.

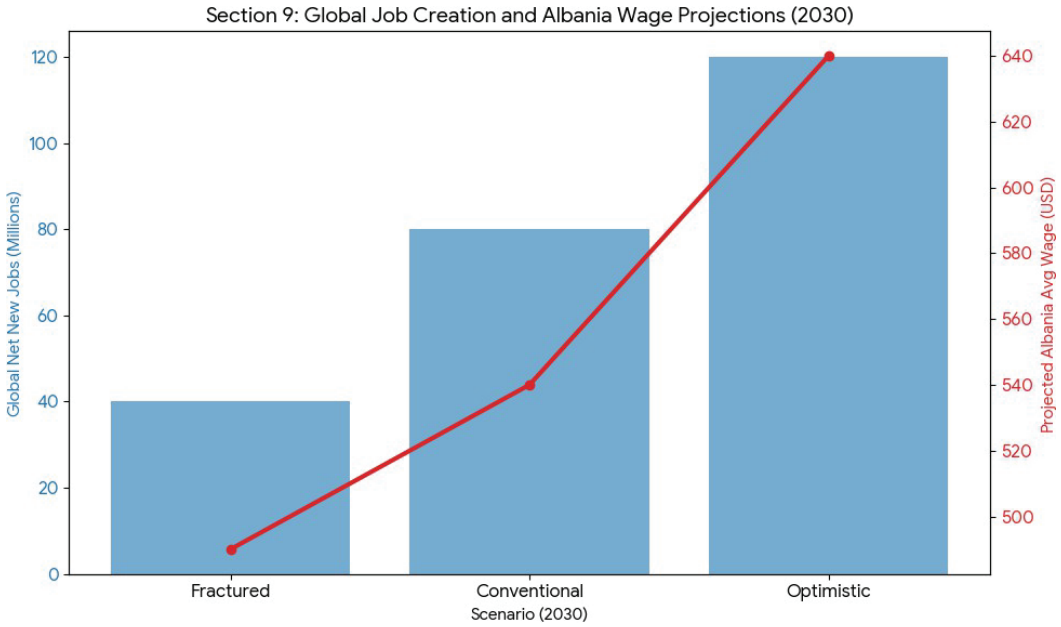
For Albania by 2030:

1. Optimistic: fewer routine jobs, more skilled jobs, higher wages (~$640), and strong return/remote participation from diaspora
2. Conventional: moderate improvement in skills and wages (~$540)
3. Fractured: slow improvement, lower wages (~$490), and increased emigration

Projecting the global net new jobs under Optimistic, Conventional, and Fractured scenarios.

Python
```
scenarios = ['Optimistic', 'Conventional', 'Fractured'] jobs_2030
= [120 million, 80 million, 40 million]
```

```
wages_albania = [640, 540, 490]

fig, ax1 = plt.subplots(figsize=(10, 6)) #
Bar chart for Global Jobs
color = 'tab:blue'
ax1.set_xlabel('2030 Scenarios')
ax1.set_ylabel('Global Net New Jobs (Millions)', color=color)
bars = ax1.bar(scenarios, [120, 80, 40], color=color, alpha=0.6, width=0.5)
ax1.tick_params(axis='y', labelcolor=color)

# Line chart for Albania Wages
ax2 = ax1.twinx()
color = 'tab:red'
ax2.set_ylabel('Projected Albania Avg Wage (USD)', color=color)
ax2.plot(scenarios, wages_albania, color=color, marker='D', linewidth=2,
markersize=8)
ax2.tick_params(axis='y', labelcolor=color)

plt.title('Future Scenarios (2025-2030): Global Employment vs Albania
Wages')
plt.show()
```



This dual-axis chart shows the projected global net new jobs (bars) versus the projected average monthly wage in Albania (line) for 2030. It emphasizes that in the Optimistic Scenario (strong reskilling + high adoption), global jobs could reach +120 million and Albanian wages could climb to approximately $640.

10. Implications for Albania

10.1 Vulnerable Sectors

Some sectors in Albania are more at risk from AI:

1. Administrative jobs: high risk of automation (around 60–70%)
2. Call centers/BPO services: likely to shrink due to AI chat and language tools
3. Manufacturing (textiles, shoes): at risk from global competition and future automation
   These sectors may lose jobs either through direct automation or international competition.

10.2 Sectors with Opportunity

Some sectors are expected to grow:

1. IT and digital services: fastest-growing sector, low risk of job loss, high demand for skills like AI and cybersecurity
2. Healthcare and elderly care: growing demand due to aging populations; AI supports rather than replaces workers

10.3 Diaspora Contribution

Albania's diaspora plays an important role in transferring skills and knowledge.

People working abroad in technology help through:

- returning to Albania
- remote work
- mentoring and training
- investing in startups

Data shows a strong positive link between diaspora networks and AI skill transfer, meaning this is an important resource for development.

11. Policy Recommendations

Based on the results, the study suggests several policies:

1. National AI strategy focused on managing job transition, not only innovation
2. Reskilling programs targeted at low-income and high-risk workers
3. Better digital education starting from early school levels
4. Support for SMEs to adopt AI tools and improve productivity
5. Diaspora engagement program to connect skilled Albanians abroad with the local economy

12. Conclusion

The main conclusion is balanced:

- AI increases total employment and productivity overall

- But it also increases inequality and hurts low- and middle-skill workers

For Albania, the impact of AI will depend mainly on policy choices. If the country invests in education, reskilling, and diaspora links, it can benefit strongly. If not, inequality and job displacement may increase.

Albania has advantages such as a young population, a large diaspora, and proximity to Europe. However, success will depend on how quickly and effectively it adapts.

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NORMATIVE AND POSITIVE ANALYSIS IN TAXATION

Edvin Stefani

Department of Economics, Entrepreneurship and Finance Barleti University, Tirana, Albania

Corresponding author: e.stefani@umb.edu.al
(ORCID: 0009-0005-2574-406X)

Abstract

In this article, I defend the thesis of the need for a two-step approach to academic knowledge on taxation: first, knowledge of identity features (those found across jurisdictions and perdure), and second, knowledge of the actual application of the tax project (tax legislation - specifics at a certain jurisdiction and periods of legal validity). The first level is conceptual and requires theoretical understanding. The second aims at tax compliance for professionals. The distinction between normative analysis of identity features and a positive analysis of tax law aligns the academic agenda with students' needs. Furthermore, the duality of normative/positive analysis tends to cancel out each other's problems, including epistemic risk. The distinction defended here is less vague than those commonly found in taxation books, such as elementary/introductory vs. advanced taxation.
Keywords: taxation, knowledge acquisition, normative analysis, positive analysis, Natural law theor

1. Introduction

This article is driven by advances in tax knowledge. It is believed here (as a hypothesis) that a step-by-step introduction to taxation improves tax knowledge. The suggested approach to knowledge is to present the identity features of a tax project first, and then the actual application (tax law as it is in a specific period). This is a less vague distinction than those commonly found in taxation books, such as elementary vs advanced taxation.

Features of the tax project found across many jurisdictions resemble intrinsic properties and are commonly regarded as the tax's identity. These features 'survive' when the tax project is applied to a jurisdiction. Furthermore, these features perdure. It is by these features that taxes such as the Value Added Tax and the Income Tax are distinguished. Examples include categories such as broadband vs. specific taxable bases, ad valorem vs. ad quantities, proportional vs. flat taxes, etc.[1]

However, the actual application varies among different jurisdictions. Knowledge of the actual application serves for tax compliance and risk mitigation; it is essential for professional

[1] *The Three Basic Tax Types*. Tax Foundation. https://taxfoundation.org/taxedu/primers/primer-the-three-basic-tax-types/

life[2]. Classical approaches aim to know what is taxed (taxable bases), what the tax rates are (15%, 20%, etc.), what administrative procedures are required, what administrative institutions exist, and how they relate to the court system, among other factors[3].

This two-step approach fits with the current academic design. A student in a bachelor's degree program aims to increase understanding. The knowledge perceived serves him/her in any jurisdiction in which he/she intends to work. By contrast, the master's degree student is closer to professional life and more interested in the practical application of tax law.

The difference is not only of practical values. It regards the nature of knowledge. The duality tends to cancel out each other's problems. Knowledge of actual applications changes often, whereas knowledge of identity features is longer lasting. Knowledge of identity features is categorical, leaving more room to build conceptual thinking. Categories created by the reader of the project's actual application tend to suffer from naive empiricism.

The difference regards epistemology. Even if the object of study (the tax project) is ontologically dependent on humans, claims about actual application are less subject to epistemic risk.

Knowledge of identity features is evident in the academic debate and in documents and guidelines generated by the OECD, the EU, and the WTO. However, to better predict future empirical findings, a theoretical commitment is necessary. The area of research on tax knowledge is well-supported by a robust theoretical background. Since 1776, Adam Smith's Canons of the good tax have served as a prima facie theoretical commitment. Smith's success is partly explained by the relation he makes between principles and the ought-to-be tax project. His approach implies that taxation reflects human nature. Aquinas (1265-1274) has offered insights into human nature. He holds that humans have a natural inclination towards proper flourishing. His theory is commonly known as Natural Law because, according to Aquinas, this nature is God-given, i.e., applicable to any possible specimen (whether or not having read the sacred writings). Various theories as to what it is to be natural include Natural Law as moral theories (Aquinas et al.), Natural Law as functional theories (Zweigert et al.), Natural Law as political theories (Locke et al.), Natural Law as economic theories (Aristotle, Plato, et al.), etc. (Gerson Moreno-Riaño, Natural Law and Modern Economic Theory, 2005)[4]. Therefore, it is reasonable to extend the ought-to-be analysis (normative analysis) to functionality, efficiency, and politics. Approaches in which functionality is perceived as a desideratum are an ought-to-be analysis, i.e., a normative analysis.

It is also reasonable to believe that features of the tax project that survive the change are due to those aspects of natural law found to be similar across different jurisdictions. Functionality, moral/ethics are the best candidates for this kind of 'universal unification'. Differently, culture and politics are seen as a diversifying influence.

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[2] Appiah, T., Domeher, D., & Agana, J. A. (2024). Tax Knowledge, Trust in Government, and Voluntary Tax Compliance: Insights From an Emerging Economy. *SAGE Open*. https://doi.org/10.1177/21582440241234757

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[4] Gerson Moreno-Riaño (2005), on Natural Law and Modern Economic Theory, Volume 8, Number 2 (Fall 2005): 387–413. Copyright © 2005.

Unlike normative analysis, positive analysis is a what-there-is approach. Understanding the actual application's adherence to human nature loses interest. The purpose here is to ensure tax compliance and mitigate fiscal risk, regardless of moral considerations.Positive analysis implies that the object of study is an existing entity. The most common view of taxation regards it as an institutional fact (an immaterial entity). This view is deeply rooted in

social ontology and is famously associated with the philosopher John Searle and his work on the construction of social reality.

2. Literature review

There is a vast body of knowledge on the application of taxation worldwide. But little has been done to improve students' knowledge acquisition. However, there are often unrelated fragments of theoretical works that can be employed. The first problem concerns aligning the academic agenda with students' needs. Cris Evans, in his paper "Philosophical Paradigms, Inquiry Strategies and Knowledge Claims in Tax Research: Evaluating Best Practice from Closely Related Disciplines," explores how different philosophical paradigms and inquiry strategies can enhance the capabilities of tax researchers. While focusing on "researcher capability, his contribution is indirect in academic learning (answer from Chatly in reference to OpenAI GPT-40-mini, Gemini 3.1 Flash Lite, Grok 4.1 fats (reasoning), and many other AI models).

However, I have drawn on work in *epistemology* regarding social constructions, following John Searle's The Construction of Social Reality. Philosophy and Phenomenological Research, *legal positivism* following Niklas Luhmann (2008), Law as a Social System, Oxford University Press, *meta-ethics* following the summery from Kane B, *comparative taxation* and *schools of thought relevant to taxation* following Omri Y. Marian, (2010) in 'The Discursive Failure in Comparative Tax Law', *Natural law theory* following Gerson Moreno-Riaño (2005), on Natural Law and Modern Economic Theory, on the duality of normative and positive analysis following David Hume, Adam Smith followed by John Stuart Mill, John Maynard Keynes, and others.

3. Methodology

This is a review article of the current and recent research. It synthesizes the findings appropriately to answer a question or advance the state of knowledge in this area.

Hypothesis: knowledge of taxation is composed of knowledge of the features of identity and knowledge of the actual applications across jurisdictions. Knowledge of the actual application of the tax project is motivated by tax compliance and fiscal risk mitigation. Such a positive analysis does not provide complete knowledge. A normative analysis of the tax project's adherence to human nature compensates for the temporality of knowledge provided by a positive analysis of this form.

4. Analysis and discussion

In what follows, I will provide a brief review of Natural law theory and its application in taxation, a brief review of positive analysis, and the need for a duality of both methods. I end with a view

on how to approach taxation knowledge that uses the best of what each approach can offer.

Natural law theory and its application in taxation

Several schools of thought offer explanations for the current state of taxation. Each school has internal issues, such as epistemic subjectivity, that often lead to vague and poor analytical explanations. However, this is a constructive critique that does not aim to disprove the idea being promoted.

Morality (here used interchangeably with ethics) is among the most-discussed topics in tax scholarship. Morality in taxation is seen in two ways.

One is that taxes should meet a certain *desideratum,* which implies an ought-to-analysis, i.e., a normative analysis. The most recognized author is Adam Smith. He elaborates on four principles: equality (ability to pay), certainty, convenience, and efficiency. Later, similar approaches have proliferated. The major difference from Adam Smith (who was correct in his approach) is that the latter researchers conduct empirical observations of stances on moral judgments. Kirchler et al. (2006)[5] investigate (empirically) how taxation is represented in the minds of Australian taxpayers and tax officers, and whether shared beliefs and evaluations are related to taxpayer compliance. Hauptman et al. (2015)[6] test the significance of norms and trust in authorities for voluntary tax compliance in Slovenia. Examples are unfortunately numerous. Torgler et al. (2005) have investigated the relationship between tax morale and the autonomy of tax jurisdictions. Dorrenberg et al. (2010)[i] have investigated the relationship between tax progressivity and tax morale.

The major problem these studies face is epistemic risk. These studies, and many others like them developed in taxation, imply that people can successfully compare different moral stances, or at least distinguish between moral and immoral states. However, people often have a vague perception of morals. Several reasons support this statement. One is that moral judgments are subjective and culturally grounded (as in Hume's moral philosophy).

These researchers are quantifying over beliefs, not knowledge. The difference can be captured by the awareness that we rely less on quantification of opinions (tax morale) and more on knowledge (tax rates). This is because opinions are always true, whereas knowledge is not. The difference implies that knowledge is justified true belief (e.g., my belief about the chemical composition of a star is testable (true/false) and can be justified by spectroscopy).

Various meta-ethical theories advance different accounts of morality and ethics (cognitivism vs. non-cognitivism; realist vs. non-realist views). Important questions concern whether morality is a property and, if so, whether it is a natural or non-natural property. These are difficult questions that should concern more tax researchers. However, attempts to formalize moral/ethics are numerous. The most recognized theories are Aquinas' Natural Law and Kant's transcendental idealism. They both imply that the human approach to morality is independent of any possible specimen, so formal methods are possible.

[8] Miller, Seumas, "Social Institutions", *The Stanford Encyclopedia of Philosophy* (Winter 2025 Edition), Edward N. Zalta & Uri Nodelman (eds.), URL = <https://plato.stanford.edu/archives/win2025/entries/social-institutions/>.

Functionalism is another school of thought that stems from natural law (Gerson Moreno-Riaño,

Natural Law and Modern Economic Theory, 2005). It is assumed as natural that humans are driven by the pursuit of solutions to perceived problems. Such a functional researcher evaluates whether the tax practice is a solution to the problem, and asks for possible improvements (i.e., what alternative solution can be found).

Comparative taxation is often a functional approach, unfortunately, developed mainly by legal scholars. The assumed similar problem (praesumptio similitudinis) is compared across different jurisdictions with other tertiary solutions (tertium comparationis). Tertiums cannot be ius positum (Luhmann, 2008[7]). Comparisons over tertiums are academic. To be law, a competitive solution must undergo all the necessary legal procedures that produce tax law. The new solution replaces the old one.

Human constructions are, in principle, always functional. But they need not always be. Much of what is constructed may have no functional value, often being a purely traditional product (Merton, 1945[ii]). Differences in culture and tradition challenge the universality of problems and raise questions about the value of comparative information across different societies. Differences in cultures necessitate solutions that are also different (Marian, 2010)[iii].

Efficiency, i.e., the economic school of thought. This school is also seen as a driving factor in tax design. The economic school of thought holds that a competitive market favors the 'best' solution as the most efficient. Classical economics has had a major influence on the way efficiency is achieved. The three-factor production model (D. Ricardo, 1817, On the Principles of Political Economy and Taxation) and the distinction between consumption and production have influenced the majority of jurisdictions. However, the two-factor model (Marks, 1867, Capital) and the four-factor model (Romer, 1980, Endogenous Growth Theory). Efficiency, as such, has room for improvement. Obviously, it is motivated by being (in accordance with human expectations) as low as possible on expenses and providing as much as possible on profits.

Formality derives from Aquinas's theory of Natural Law, that humans are naturally inclined toward proper flourishing and can reason about the good. The main disadvantage is that efficiency overlaps with other ideas. For example, less efficient solutions may result from prioritizing morality. This implies a problematic position for the scholar who wants to understand the relationship between taxation and efficiency.

The *political approach* in taxation is the study of the influence of politics in decision-making. For example, left-wing parties tend to increase states' participation in the national economy, whereas right-wing parties hold the opposite view. These different views have diversified the actual application across jurisdictions. Politics seems to be a diversifying factor in the actual application (e.g., what is tax-exempt, which social group has to pay less, etc.). Politicians frequently use the tax code not just to raise money, but to control behavior and enforce a specific political or moral [5] Kamleitner, B., Korunka, C., & Kirchler, E.

(2012). Tax compliance of small business owners. International Journal of Entrepreneurial Behaviour & Research, 18(3), 330-351.

[6] Hauptman, Lidija, Şevin Gürarda, and Romana Korez-Vide. "Exploring voluntary tax compliance factors in Slovenia: Implications for tax administration and policymakers." Lex Localis 13, no. 3 (2015): 639-659.

[7] Luhmann, Niklas, 2008, Law as a Social System, Oxford University Press

vision (social engineering). However, politics hardly changes the primary features of the tax project. For example, politics decides on excise tax exemptions but does not make such a project a broadband tax.

Positive analysis

Taxation can be approached by positive analysis (i.e., on what there is) because it exists. How is taxation constituted into reality? The most commonly accepted view on the existence of taxation is that of an *institutional fact*, i.e., as an immaterial entity[8]. This is mostly related to John Serale. When we pay property tax, Searle states, we refer to these *institutional notions* posited in reality by tax law. Tax laws, regulations, and the processes for collecting taxes are examples of the structures that uphold the institutional fact of taxation. If I state that income tax is 23%, I am simply wrong. Falsity/truthiness is at hand because an institutional notion exists (1) at a specific location (jurisdiction) and (2) at a certain moment in time (periods of legal validity).

Another interesting view on the existence of taxation comes from Niklas Luhmann's perspective in 'Law as a social system' (2004). Not specifically referring to tax law, but to law in general, Niklas Luhmann (2004) states that 'law exists throughout society, as millions of communications from moment to moment (i.e., in the present) recognized as legal form illegal information (not in the common sense of being against law but in the sense of a communication like the one between two lovers). Thus, the distinction that Luhmann proposes between legal/illegal is a second-order observation. Whenever there is a reference to law or injustice (first-order communication), such communication attributes itself to the legal system (a second-order communication that the first-order communication is coded as legal). In this way, Luhmann defends the view of law as a separate sub-system that coexists with other social sub-systems, such as politics.

Tax law is a prime example of legal positivism, i.e., the law as it is given; no functional equivalents have legal power. This is not occasional. The value of tax law rests on projecting institutional notions that serve to maintain (stabilize) normative expectations despite possible disappointments. Luhmann, N. (2004)[9] believes that one factor that gave Europe a head start in modernization, compared with more socially advanced societies like China and India of the 12th and 13th centuries, was the functional specialization of law. Europe, compared with these countries, had a developed legal culture due to the achievements of Roman civil law. The codified nature of Roman civil law produced more counterfactually stabilized expectations. Such a law contributed more to the development of a social order. This applies to tax law.

Within these views of existence, a positive analysis of taxation takes the form of legislative taxation. Sub-categories may include the study of the legal framework in which the tax project is posited (varying from common law, civil law, and Sharia law legal traditions), who is taxed, where, and when an economic activity generates tax liabilities, etc.

For a duality of analysis

The dual approach to knowledge, as both normative and positive, is not new to public finance. Harvey C. Rosen, in the academic book 'Public Finance' (McGraw-Hill, 2014), emphasizes (in the

first chapter of his book) that a more complete understanding of public finance requires combining normative and positive analyses. Epistemic subjectivity in normative analysis (qualification over beliefs, not over knowledge) that leads to anti-realism is compensated for by epistemic objectivity in a positive analysis of tax legislation. Epistemic objectivity in a positive analysis of tax legislation assumes a realist belief that reality exists independently of our representations of it. If I say income tax is 23%, I am simply wrong. My belief can be reasonably justified as false if tax law posits a 15% tax rate. By contrast, my claim that the flat tax (a feature of some tax projects) is better than a progressive tax is a belief that cannot be easily falsified. Things are worse in justification of my beliefs about morals/ethics.

There are also educational reasons for approaching taxation from both angles. The difference between 'what there is' and 'what ought to be' promotes awareness that current states, including moral and functional aspects, can be improved. Normative analysis challenges us to aspire to better ideals (important for bachelor's students). It promotes aligning taxation with broader societal values. The interplay between normative and positive approaches enriches students' understanding of human constructions, ethical decision-making, and fostering societal progress.

By separating these two analyses, students recognize where they might be conflating their own perspectives with facts.

5. Conclusion

In this article, I have combined two research methods (normative and positive analyses) in a two-step approach to tax knowledge. The distinction between these two types of knowledge is less vague than the traditional distinction found in many academic books, such as elementary vs. advanced taxation or introduction vs. advanced taxation.

They differ in purpose; the interests of bachelor's students differ from those of master's students. The latter are closer to professional work; they need factual information for tax compliance and risk mitigation. Bachelor students are more in need of conceptual development.

They differ in epistemology; the duality of *normative/positive* analysis tends to cancel out each other's problems, including epistemic risk

It is reasonable to investigate first the cross-societal features of taxation (the project's identity) alongside cross-societal reasons (such as moral-ethical considerations, functionality, and efficiency). Adherence of a feature, like progressive taxation, to moral/ethical principles is justified because the feature is determined by the constructor. Adherence of taxation to moral/ethics is often developed as an 'ought to' analysis (i.e., a normative analysis). This is because it aims to produce predictive insights based on an 'ought to' difference between the current state and a desideratum. The second step, i.e., knowing the current application, is a positive analysis. The study of tax law aims to promote tax compliance among professionals. Here, there is no need for theoretical understanding. The last is especially true because the students already have acquired knowledge of Natural Law Theory.

[9] Luhmann, N. (2004). *Law As A Social System*. Oxford University Press. https://academic.oup.com/book/50417

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[iii] Omri Y. Marian, The Discursive Failure in Comparative Tax Law, 58 Am. J. Comp. L. 415 (2010).

INNOVATION AND DIGITALIZATION IN ALBANIAN TOURISM

Elda Mamoci[1], Irena Resuli[2], Florina Pazari[3]

Department of Tourism, Hospitality and Recreation Barleti University, Tirana, Albania

Corresponding author: e.mamoci@umb.edu.al

Abstract

The rapid development of digital technologies is creating new opportunities and challenges for tourism destinations, businesses, and service providers, particularly in emerging tourism markets such as Albania. This paper presents preliminary findings from field research conducted with three groups of tourism stakeholders: tourists, tourism operators, and destination actors. The study aims to assess the current level of digital readiness, the use of digital tools in tourism services, and perceived needs for innovation and technological integration. Research is based on structured questionnaires covering digital marketing, online booking systems, social media communication, customer interaction, and adoption of innovative technologies including artificial intelligence (AI) and virtual reality (VR). Preliminary findings reveal growing interest in digital tourism services and personalized visitor përvojës, while simultaneously exposing significant limitations in technical capacities and digital skills among tourism operators. The study provides recommendations for targeted policies and investments supporting smart and sustainable tourism development in Albania.

Keywords: *Digital transformation; Digital readiness; Tourism innovation; Smart tourism; Tourism stakeholders; Albania.*

1. Introduction

The global tourism industry is currently undergoing a profound structural transformation driven by digitalization and technological innovation. From online booking systems to augmented reality-based guidance, technology is reshaping the ways in which tourists plan, experience, and share their travel experiences. According to the United Nations World Tourism Organization (UNWTO, 2023), countries that have invested in digital tourism infrastructure have recorded significant growth in international tourist arrivals, thereby strengthening their competitive position within global tourism markets.

As a tourism destination with considerable yet underexploited potential, Albania is situated at a critical stage of its tourism development. The tourism sector contributes significantly to the national economy; however, numerous structural challenges, particularly those related to digitalization, continue to hinder sustainable growth. The limited integration of advanced technologies such as Artificial Intelligence (AI), Big Data, and Virtual Reality (VR) has created substantial gaps in the personalization of tourism experiences and in the optimization of operational processes within the sector.

At the global level, digital technologies have transformed the ways in which tourists search for

information, plan their trips, and interact with tourism destinations. The growing use of online platforms, social media, reservation systems, Artificial Intelligence (AI), Big Data, and VR/AR technologies is generating new models for the management and promotion of Smart Tourism destinations. According to UN Tourism (2024), digital transformation constitutes a fundamental component for the sustainable and innovative development of tourism destinations.

This paper presents the preliminary findings of a study conducted within the framework of the project entitled *"Challenges of Digital Transformation for Authentic Tourism: Service, Product, Destination and Event"*, funded by the Albanian National Agency for Scientific Research and Innovation (AKKSHI), in collaboration between Universiteti Barleti and Hotel Adriatik. The study aims to provide empirical evidence regarding the level of digital readiness among the principal stakeholders of the Albanian tourism sector, while contributing to the academic and policy-oriented discourse on the digital transformation of tourism.

The main objectives of the study are:

- ✓ to analyze the current level of technology utilization within the tourism sector;
- ✓ to identify the principal challenges associated with digital transformation;
- ✓ to assess the readiness of tourism stakeholders for the adoption of innovation;
- ✓ to highlight the potential for the development of Smart Tourism in Albania.

2. Literature Review

Digital transformation in tourism has been extensively examined within the context of developed economies. Buhalis and Amaranggana (2014) conceptualized the idea of "smart destinations," in which technology is fully integrated into tourism infrastructure in order to enhance visitor experiences and improve management efficiency. Similarly, Law et al. (2014) emphasized the role of information systems and technology in destination management, arguing that technology adoption directly influences the competitiveness of tourism destinations.

The concept of *Smart Tourism* is closely associated with the use of intelligent technologies to improve tourists' experiences and the management of tourism destinations. Gretzel et al. (2015, 2020) define smart tourism as an ecosystem in which technology, information, and collaboration among stakeholders contribute to the creation of more efficient, interconnected, and competitive destinations.

From the perspective of tourism operators, Neuhofer et al. (2014) argue that the digital readiness of tourism businesses depends on three principal factors: technological infrastructure, human competencies, and an organizational culture that supports innovation. The absence of any of these elements creates structural gaps that hinder the effective adoption of technology within the tourism sector.

Regarding tourists' digital behavior, Xiang et al. (2015) documented the significant shift toward travel planning through online platforms and social media networks. More recent studies (Tung & Law, 2017; Gretzel et al., 2020) have further explored the role of Artificial Intelligence (AI) and AR/VR technologies in the personalization of tourism experiences and customer engagement.

Nevertheless, the existing literature on tourism markets in Southeast Europe and the Balkan region remains relatively limited, leaving important questions unanswered regarding the levels of digital adoption and the context-specific challenges faced by these destinations.

3. Methodology

This study is based on a mixed-methods methodological approach, with a quantitative-empirical perspective serving as its primary analytical framework. Three structured research instruments (questionnaires) were designed to target three key stakeholder groups within the tourism sector: tourists, tourism operators, and destination stakeholders. The questionnaires were developed in accordance with the objectives of the study and were subsequently validated by field experts to ensure content relevance and methodological reliability. Prior to the final stage of data collection, the instruments were pilot-tested in order to assess clarity, consistency, and the overall effectiveness of the survey structure.

3.1 Instruments and Sampling

The first questionnaire, addressed to tourists (n = 127), was administered during the period April–May 2026 through the Google Forms platform and distributed via social media channels and tourism operators. The questionnaire covered nine thematic sections, including demographic data, travel behavior, experience preferences, interest in the project itineraries, digital behavior, digital needs, attitudes toward technology, willingness to pay, and general feedback.

The second questionnaire targeted tourism operators (n = 25) and examined the business profile, the current state of digitalization, major challenges, technology usage, training needs, and interest in innovation-related capacity building. The surveyed operators included hotels, travel agencies, tourist guides, agritourism enterprises, and wineries.

The third questionnaire was directed toward local destination stakeholders (n = 17) and explored issues related to interinstitutional cooperation, the existence of digital strategies, destination promotion practices, and readiness for Smart Tourism development.

In total, the study included 169 respondents. Data collection was conducted through online survey forms during the 2025–2026 research period.

3.2 Data Analysis

The quantitative data were analyzed using descriptive statistical methods, including frequencies, means, and standard deviations. Responses based on the 1–5 Likert scale were examined through weighted mean analysis in order to evaluate respondents' perceptions, attitudes, and levels of readiness regarding digital transformation in tourism.

A principal limitation of the study relates to the use of a convenience sampling approach, which may restrict the broader generalizability of the findings.

4. Main Findings

4.1 Tourist Profile (n = 127)

The tourist sample was predominantly composed of younger age groups. Specifically, 86.6% of respondents were between 18 and 25 years old, 7.9% belonged to the 26–35 age category, and 3.9% were between 36 and 50 years old.

The primary purpose of travel among respondents was leisure and holidays (85.8%), followed by cultural tourism (9.4%), business travel (2.4%), and active tourism (2.4%).

This demographic profile suggests that digital tourism platforms and services in Albania should be increasingly oriented toward younger audiences who are highly familiar with technology and digital communication environments.

Table 1. Demographic profile and travel behavior of tourists (*n* = 127)

Variable	Category	Frequency (%)n (%)
Age Group	18-25 years old	110 (86.6%)
	26-35 years old	10 (7.9%)
	36-50 years old	5 (3.9%)
Main Purpose of Travel	Holidays	109 (85.8%)
	Cultural Tourism	12 (9.4%)
	Business / Active	6 (4.7%)
Travel Frequency	2–3 times per year	65 (51.2%)
	4+ times per year	41 (32.3%)
Destination Preferences	Combined destination preferences	90 (70.9%)
	Urban	20 (15.7%)
	Nature	16 (12.6%)

Source: Primary data from the tourist questionnaire, 2026.

4.2 Importance of Tourism Elements and Experience Preferences

Tourists place a particularly high value on authentic tourism elements. Based on the 1–5 Likert scale analysis, authentic experiences recorded the highest mean score ($M = 4.16$), followed by traditional cuisine ($M = 4.11$), cultural heritage ($M = 4.02$), and physical activities ($M = 3.30$).

Respondents also demonstrated a strong interest in specific types of tourism experiences. Active tourism achieved the highest mean value ($M = 4.17$), followed by wine tourism ($M = 4.14$), "farm-to-table" experiences ($M = 4.02$), and visits to historical sites ($M = 3.98$).

The proposed itineraries within the framework of the project also reflected a considerable level of interest among respondents. The Apollonia & Bylis itinerary, focused on antiquity and cultural heritage, was preferred by 30.7% of participants. Meanwhile, the Krujë itinerary, oriented toward active tourism and nature-based experiences, and the Durrës gastronomy itinerary each attracted 28.3% of respondents, whereas the Berat wine tourism itinerary was selected by 12.6% of participants.

4.3 Tourists' Digital Behavior

The digital behavior of tourists indicates a high level of digitalization in both travel planning and travel execution processes. Specifically, 44.9% of respondents reported planning their trips through online platforms such as Booking and Expedia, while 22.8% relied on traditional travel agencies, 21.3% used social media platforms, and 11% utilized Google-based searches and services.

The use of digital tools during travel activities was also found to be significantly high. Google Maps recorded the highest mean usage score ($M = 4.49/5$), followed by social media platforms for travel-related purposes ($M = 3.99/5$) and online booking applications ($M = 3.68/5$).

These findings confirm that tourists are increasingly familiar with and receptive toward digital technologies, highlighting the growing importance of digital platforms and smart tourism services in shaping contemporary travel experiences.

Table 2. Digital behavior and attitudes toward technology (*n* = 127)

Variable	Category / Mean	n (%) / M
Travel Planning	Online platforms	57 (44.9%)
	Travel agencies	29 (22.8%)
	Social media	27 (21.3%)
Use of Google Maps (1–5)	Mean	4.49
Use of Social Media (1–5)	Mean	3.99
Use of Booking Applications (1–5)	Mean	3.68
Willingness to Use VR for Historical Sites	Yes	70 (55.1%)
Willingness to Use AR Guides	Yes	74 (58.3%)
Willingness to Use AI Chatbots	Yes	72 (56.7%)
Importance of Technology	High	48 (37.8%)
	Moderate	64 (50.4%)

Source: Primary data from the tourist questionnaire, 2026

4.4 Digital Needs and Willingness to Pay

When respondents were asked about the preferred functions of a tourism platform, 68.5% identified online booking systems as the primary digital need, followed by AI-based personalized itineraries (15.7%), interactive maps (10.2%), audio guides (3.1%), and VR/AR applications for historical sites (2.4%).

These findings carry important implications for the development of digital tourism services. Although VR/AR technologies received positive support as tools for enhancing tourism experiences (55–58%), online booking functionality remains the principal operational priority for tourists.

The analysis of willingness to pay indicates that 59.8% of respondents would be willing to pay between €50 and €80 for a one-day tourism experience, while 27.6% would pay between €80 and €120, and 12.6% expressed willingness to pay more than €120.

Furthermore, 63.0% of respondents stated that they would be willing to pay a higher price for a "unique experience," thereby confirming the high perceived value of authenticity and personalized tourism experiences among contemporary tourists.

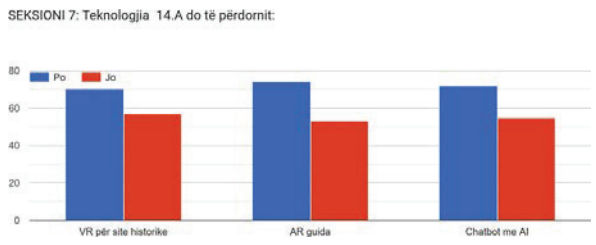

Figure 1. Tourists' Attitudes Toward VR, AR, and AI Technologies (n = 127)

Figure 2. Perceived Importance of Technology in the Tourism Experience (n = 127)

Source: Primary data from the tourist questionnaire, 2026

4.5 Digital Readiness of Tourism Operators (*n* = 25)

The findings related to tourism operators reveal a heterogeneous landscape of digitalization within the Albanian tourism sector. The sample included hotels (24%), travel agencies (24%), tourist guides (24%), agritourism businesses (20%), and wineries (8%).

With regard to existing digital infrastructure, 28% of operators reported having a website, 28% maintained active social media presence, and 28% offered online booking services, whereas 16% indicated that they did not possess any of these digital tools.

The volume of online reservations appears relatively encouraging. Specifically, 44% of operators reported that between 50% and 75% of their bookings are generated online, while 28% stated that online bookings account for 25%–50% of total reservations. Furthermore, 20% of respondents indicated that more than 75% of their reservations are conducted online. Only 8% reported that less than 25% of their bookings originate through online channels.

These findings suggest that even operators lacking fully developed digital infrastructure continue to attract customers through alternative online channels, particularly third-party booking and tourism platforms.

Table 3. Digital profile of tourism operators (*n* = 25)

Variable	Category	n (%)
Main Challenge	Trained staff	15 (60%)
	Lack of customers	4 (16%)
	Marketing	4 (16%)
	Technology	2 (8%)
Primary Need	Booking platform	8 (32%)

	Customer management	8 (32%)
	Digital marketing	7 (28%)

Interest in a Shared Platform	Yes	18 (72%)
	Maybe	4 (16%)
Training Needs	AI and technology	8 (32%)
	Reservation management	8 (32%)
	Digital marketing	7 (28%)

Source: Primary data from the tourism operators questionnaire, 2026

Figure 3. Existing Digital Infrastructure of Tourism Operators (n = 25)

Figure 4. Percentage of Online Reservations Among Tourism Operators (n = 25)

Source: Primary data from the tourism operators questionnaire, 2026

4.6 Challenges and Needs of Tourism Operators

The principal challenge identified by 60% of tourism operators is the lack of trained staff, a finding that differs from what might traditionally be expected in discussions of digital transformation. The results suggest that digital limitations are perceived less as technological problems and more as issues related to human capital and professional competencies.

Marketing (16%), lack of customers (16%), and technology itself (8%) were identified as secondary challenges within the sector.

The expressed needs of operators further reinforce this perspective. Specifically, 32% of respondents identified booking platforms as their primary need, while another 32% emphasized customer management systems (CRM). In addition, 28% highlighted digital marketing as a priority need, whereas 8% identified data analysis tools and capacities as essential for future development.

Furthermore, 72% of operators stated that they would be willing to use a shared tourism platform, indicating a strong interest in ecosystem-based solutions and shared digital infrastructure for the tourism sector.

Figure 5. Main Challenges Faced by Tourism Operators (n = 25)

Figure 6. Training Needs of Tourism Operators in the Context of Digital Transformation (n = 25)

Source: Primary data from the tourism operators questionnaire, 2026

4.7 Local Stakeholders and Tourism Destinations (*n* = 17)

The questionnaire addressed to local stakeholders and tourism destinations included 17 respondents, comprising local institutions, tourism organizations, destination stakeholders, and representatives of local communities. Approximately 76.5% of respondents stated that a digital strategy exists for their destination, while 17.6% reported the absence of such strategies. Destination promotion is currently conducted mainly through social media, websites, and basic online platforms. However, respondents emphasized that integrated digital strategies and institutional cooperation remain limited. The findings also reveal strong support for the development of Smart Tourism platforms, national tourism databases, and intelligent destination management systems (DMS), alongside positive attitudes toward the use of AI, VR/AR technologies, and data analytics in tourism promotion and management.

The findings indicate that the majority of respondents consider digital transformation to be an important element for the development of tourism in Albania and for increasing the competitiveness of tourism destinations. Destination promotion is conducted primarily through social media platforms, websites, and basic online platforms.

The main barriers identified include the lack of institutional coordination, insufficient investment in technology, limited professional capacities, and the absence of well-structured Smart Tourism strategies.

Despite these challenges, the findings demonstrate the existence of a positive readiness among local stakeholders toward the adoption of innovation and digital transformation initiatives within the tourism sector.

Figures 7–11. Digital Transformation Perspectives of Local Tourism Stakeholders (n = 17)

Source: Primary data from the tourism operators questionnaire, 2026

5. Discussion

The findings of this study provide several important insights into the current state of tourism digitalization in Albania. First, the results reveal a clear asymmetry between demand and supply within the tourism sector. Tourists demonstrate a high level of digital readiness and openness toward technology, with 55–58% expressing positive attitudes toward the use of VR, AR, and AI technologies, whereas tourism operators remain in a transitional phase toward full digitalization. This asymmetry creates a strategic opportunity for targeted policy intervention and investment.

Second, the identification of trained staff as the primary challenge by 60% of tourism operators confirms the theoretical approach proposed by Neuhofer et al. (2014) regarding the critical role of human competencies as a prerequisite for successful digital transformation. Investment solely in

technological infrastructure, without the parallel development of human capacities and professional skills, is unlikely to produce sustainable long-term outcomes.

Third, the high value attributed by tourists to authenticity and unique experiences, with 63.0% of respondents indicating willingness to pay more for a "unique experience," suggests that the digitalization of Albanian tourism should move toward personalization and differentiation rather than standardization. In this context, AI-based platforms and recommendation systems possess considerable potential to satisfy the increasing demand for customized tourism experiences.

The strong interest in a shared tourism platform, expressed by 72% of tourism operators, is particularly encouraging, as it indicates the existence of a foundational basis for the development of a digital tourism ecosystem. Successful international models, such as Visit Finland and the Destination Management Organization (DMO) system implemented in Switzerland, demonstrate that integrated national tourism platforms can significantly enhance the efficiency and competitiveness of individual tourism operators.

6. Conclusions and Recommendations

This paper presents preliminary empirical findings regarding the current state of tourism digitalization in Albania, providing initial evidence collected from three major stakeholder groups within the tourism sector. The findings confirm the existence of a significant gap between tourists' digital readiness and the current capacities of tourism operators. However, this gap may be transformed into an important development opportunity if addressed through targeted policies and strategic investments.

Digital transformation represents a significant opportunity for the modernization of Albanian tourism and for strengthening the international competitiveness of Albania within the global tourism market.

Based on the findings of the study, five principal lines of action are recommended:

- the development of national digital training programs for tourism operators, with particular emphasis on Artificial Intelligence (AI), Customer Relationship Management (CRM), and digital marketing;
- the establishment of an integrated national tourism platform incorporating online booking systems, personalized itineraries, and interactive maps;
- investment in VR/AR solutions for the promotion of cultural heritage, initially focusing on archaeological and historical sites with high tourism potential;
- the creation of collaborative tourism cluster models involving agritourism businesses, restaurants, tourist guides, and transport services;
- the implementation of monitoring and evaluation mechanisms to assess the impact of digital transformation within the tourism sector.

The study is subject to several methodological limitations, including the use of a convenience sampling approach, the predominance of younger age groups within the sample, and a limited geographical focus. These limitations will be addressed in future stages of the project through the use of more representative sampling techniques and more comprehensive qualitative analyses.

Future research will focus on the econometric modeling of digital adoption factors and on evaluating the impact of pilot digital tourism platforms developed within the framework of the project.

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GENDER EQUALITY IN PUBLIC ADMINISTRATION: CHALLENGES AND ACHIEVEMENTS

Elizabeta Imeraj[1], Flutur Shabani[2]

Department of Justice
Barleti University, Tirana, Albania

Corresponding author: law.dep@umb.edu.al

Abstract

Gender equality in public administration remains an essential issue for democracy and good governance. This study analyzes the current state of gender equality in the public sector, identifying the main challenges and achievements made over the past decades.

Regardless of legal advances and affirmative policies, women continue to be underrepresented in leadership positions in public administration. Challenges include pronounced gender stereotypes, lack of effective monitoring mechanisms, gender pay gap, as well as difficulties in balancing professional and family life. Masculine organizational cultures and covert discrimination continue to limit career advancement for women.

However, there are notable achievements: increasing the number of women in public administration, implementing gender quotas, mentoring programs, and establishing discrimination grievance mechanisms. Institutional reforms and increased awareness have led to gradual improvements. Further research is needed to understand the long-term impact of existing policies and to develop more effective strategies that address structural and cultural barriers.

Keywords: *gender equality, public administration, gender discrimination, affirmative politics, women's representation, gender-sensitive governance, institutional reform*

Introduction

Gender equality in public administration is one of the main pillars of modern democracy and good governance.[1] Gender-balanced representation in public administration is considered as an essential indicator of democratic development and institutional capacity of a society[2]. Numerous studies have documented that women continue to be disproportionately represented at lower levels of public administration, while leadership and decision-making positions remain largely male-

[1] United Nations, *Transforming our World: The 2030 Agenda for Sustainable Development* (2015).
[2] OECD, *Women in Public Leadership: Promoting Gender Balance in the Public Sector* (OECD Publishing 2020).

dominated [3]. This situation reflects not only a problem of numerical representation, but also a loss of different perspectives that are essential for comprehensive policy making[4]. According to Dolan, public organizations that integrate gender perspectives into decision-making processes exhibit higher performance and greater legitimacy in the eyes of citizens.[5]

The challenges that hinder gender equality in public administration are complex and multidimensional. Empirical research has identified that structural barriers, such as the lack of clear policies for career advancement and covert discrimination during recruitment processes, play an important role[6]. Gender stereotypes pronounced in public sector organizational cultures create work environments that favor masculine leadership models and marginalize alternative management styles[7]. Moreover, the gender pay gap and the lack of supportive policies for balancing professional and family life continue to limit women's careers in the public sector[8].

However, there are also significant achievements that deserve attention. The implementation of gender quotas in some countries has resulted in a significant increase in the representation of women in leadership positions[9]. Mentorship and training programs dedicated to women in public administration have shown effectiveness in preparing them for leadership roles[10]. Also, the establishment of institutional mechanisms for monitoring gender equality and addressing complaints has contributed to the improvement of the organizational climate[11].

In this study I have tried to provide a comprehensive analysis of the state of gender equality in public administration, examining both structural challenges and institutional achievements. Through an analytical approach that combines quantitative data with qualitative perspectives, the research seeks to identify the factors that drive or hinder progress towards gender equality and propose recommendations for sustainable reforms.

Understanding Gender Equality in Public Administration

Conceptualization of gender equality

Gender equality is a multidimensional concept that includes not only formal equal treatment before the law, but also the real opportunity of women and men to exploit rights, resources and

[3] European Institute for Gender Equality, *Gender Equality Index 2021: Health and Power* (EIGE 2021).
[4] Susan Stivers, *Gender Images in Public Administration: Legitimacy and the Administrative State* (Sage 2002).
[5] Mary E. Guy and Shannon L. Dolan, *Women and Public Service: Barriers, Challenges and Opportunities* (Routledge 2018).
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[10] Sheryl Sandberg, *Lean In: Women, Work, and the Will to Lead* (Knopf 2013).
[11] World Bank, *Women, Business and the Law 2018* (World Bank Group 2018).

opportunities equally [12]. According to the United Nations (UN Women, 2018), gender equality means that the interests, needs and priorities of women and men are taken into account equally, recognizing the diversity of different groups of women and men[13]. This concept goes beyond traditional ideas of equality such as non-discrimination and includes dimensions of equity, representation, and empowerment[14].

In the academic literature, gender equality is distinguished from gender equity. While equality refers to equal treatment, gender equity recognizes that women and men have different needs and circumstances and requires that these differences be addressed in order to achieve justice[15].

Gender equality in the context of public administration

In public administration, gender equality has three main interrelated dimensions. First, *equality in representation* means the equal presence of women and men at all levels of the administrative hierarchy, from entry-level positions to leadership and decision-making roles[16].

Second, *equality in opportunity* guarantees that women and men have equal access to recruitment, training, career advancement, and professional development without direct or indirect discrimination[17].

Third, *equality in outcomes* examines the real consequences of administrative policies and practices for women and men[18]. This includes aspects such as equality in wages, the distribution of responsibilities, access to resources, and the impact of public policies on the lives of women and men.

Theoretical perspectives

The theory of representative bureaucracy argues that public administration should reflect the demographic makeup of the population it serves, including gender equality[19]. According to this approach, the presence of women in leadership positions not only fulfills the imperative of social justice, but also improves the quality of policies by bringing different perspectives and experience to the decision-making process[20].

Normative and instrumental dimension

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[12] Sylvia Walby, *Globalization and Inequalities: Complexity and Contested Modernities* (Sage 2005).
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[19] Frederick C. Mosher, *Democracy and the Public Service* (1968); Barbara Sowa and Sally Selden, *Administrative Discretion and Representation* (2003).

Gender equality in public administration is justified for both normative and instrumental reasons. From a normative perspective, gender equality is a fundamental human right and a democratic principle that must be respected regardless of efficiency considerations[21]. Instrumentally, numerous research has shown that gender diversity in management improves organizational performance, increases innovation, and facilitates more inclusive decision-making[22].

Conceptual challenges

However, there are significant debates about the meaning and measurement of gender equality. Critics argue that traditional approaches often rely on a masculine model as the standard and require women to assimilate into this model, rather than transforming organizational structures and cultures themselves[23]. Additionally, focusing on numerical equality may ignore other forms of inequality, such as those based on race, class, or sexual orientation[24].

Legal and institutional framework for gender equality in Albania

Constitutional and legislative framework

The Constitution of the Republic of Albania, adopted in 1998, constitutes the legal foundation for gender equality, sanctioning in Article 18 the equality of all citizens before the law and protection from discrimination[25]. This constitutional principle establishes that man and woman, as subjects of law, are treated equally and enjoy the same rights and obligations[26].

Law no. 9970, dated 24.7.2008 "On gender equality in society", amended and supplemented over the years, constitutes one of the basic acts of the Albanian legal framework in the field of gender equality, guaranteeing the principle of equal treatment and equal opportunities for women and men in public and private life[27]. This law sanctions the concept of gender equality as equality in rights, responsibilities and social participation, including the elimination of any form of direct or indirect discrimination on the basis of gender.

Law no. 10221, dated 4.2.2010 "On Protection from Discrimination" established the framework for effective protection from discrimination on the grounds of gender, gender identity, sexual orientation and other causes[28]. The 2020 amendments to this law expanded the grounds for discrimination to include gender identity, sexual orientation and sex characteristics, reflecting

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[21] Martha C. Nussbaum, *Women and Human Development: The Capabilities Approach* (Cambridge University Press 2000).

[22] Catalyst, *The Bottom Line: Corporate Performance and Women's Representation on Boards* (Catalyst 2011); European Commission, *Gender Equality Strategy 2020–2025* (2020).

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[25] Constitution of the Republic of Albania (1998) Article 18.

[26] Mirela Mandro et al., *The Constitutional Law of the Republic of Albania* (2011).

[27] Law no. 9970, dated 24.7.2008 "On gender equality in society" (as amended).

European standards of protection against discrimination[29]. In 2020, the task of monitoring the Law on Gender Equality was entrusted to the Commissioner for Protection from Discrimination, an important development for strengthening enforcement mechanisms[30].

Sectoral legislation has also integrated the gender perspective in different areas. The Electoral Code has provided for legislative gender quotas as a temporary measure to ensure real participation of women in representation and decision-making, requiring that one in two candidates on the electoral list be from the least represented gender[31]. The Labor Code prohibits discrimination in employment and establishes special protections for women during pregnancy and maternity[32].

National strategies and action plans

The National Strategy for Gender Equality has been the main instrument to analyze and address two important issues: Gender Equality and Prevention of Domestic Violence, with the aim of achieving gender equality through the integration of the gender perspective in all aspects of policy design and implementation[33]. Albania has adopted several successive strategies for gender equality: the 2007-2010 Strategy, the 2011-2015 Strategy, and the 2016-2020 Strategy.

The National Strategy for Gender Equality 2021-2030 was prepared by the Ministry of Health and Social Protection in coordination with the responsible ministries, local self-government units, independent institutions, civil society organizations, academia and international organizations[34]. This strategy sets strategic goals in several priority areas, including the economic empowerment of women and men, equal representation in decision-making, and the elimination of gender-based violence [35].

Institutional framework and implementation mechanisms

The national mechanism for gender equality in Albania consists of several institutional components. Gender Equality Coordinators are responsible for implementing actions within their institutions and report to the Ministry of Health and Social Protection[36]. Every ministry and public institution has the legal obligation to appoint a coordinator for gender equality, who takes measures for the integration of the gender perspective in the policies and activities of the institution[37].

The Commissioner for Protection from Discrimination was established as an independent institution in the exercise of its duty, which ensures effective protection from discrimination and

[29] UN Albania, *Report on the implementation of the gender equality framework in Albania* (2022).
[30] Ibid.
[31] Electoral Code of the Republic of Albania (as amended) article on gender quotas.
[32] Labor Code of the Republic of Albania 1995 (as amended).
[33] OSCE, *Gender Equality and Domestic Violence Strategy Albania* (2007).
[34] Ministry of Health and Social Protection, *National Strategy for Gender Equality 2021–2030* (2021).
[35] Ibid.
[36] Ministry of Interior, *Guide for Gender Equality Coordinators* (2024).

from any form of conduct that incites discrimination on the basis of gender and other causes[38]. The institution has broad competencies, including reviewing complaints, making recommendations, monitoring the implementation of anti-discrimination legislation, and advising state bodies and individuals[39].

International commitments and alignment with the EU

Albania has ratified the main international instruments for gender equality and women's rights. The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), the International Convention on Civil and Political Rights, the European Convention on Human Rights and Fundamental Freedoms, and the Convention on preventing and combating violence against women and domestic violence (Istanbul Convention) have been ratified and become part of the Albanian legal system[40].

The Istanbul Convention describes gender-based violence as the cause and result of unequal power dynamics between women and men that leads to more submissive status of women in the public and private spheres[41]. According to the standards of this Convention, gender-based violence should be recognized as a form of discrimination and fully integrated into gender equality legislation[42].

The ILO Convention on Violence and Harassment at Work (190) was ratified by the Albanian Parliament in February 2022, and its provisions should be integrated into Albanian legislation according to the recommendations of the European Commission[43]. This Convention sets new standards for the protection of workers from gender-based violence and harassment in the workplace.

Challenges in the implementation of the legal framework

The anti-discrimination provisions of the Law on Gender Equality have not been widely implemented and many of the women who have faced discrimination have not been able to use the legal guarantees they enjoy, due to the lack of awareness of women, legal professionals and institutions[44]. The gap between legal norms and practice remains one of the main challenges of the Albanian gender equality system[45].

In this context, alignment with the acquis of the European Union continues to be a dynamic process, especially in areas related to equal pay, equal working conditions and increasing the

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[38] Commissioner for Protection from Discrimination (CMD), *Annual Report on Discrimination in Albania* (n.d.).
[39] Law no. 10221, dated 4.2.2010 "On protection from discrimination".
[40] UN Treaty Collection, *CEDAW (1979); ICCPR (1966); ECHR (1950); Istanbul Convention (2011).*
[41] Council of Europe, *Convention on Preventing and Combating Violence against Women and Domestic Violence (Istanbul Convention)* (2011).
[42] UN Albania, *Report on Gender-Based Violence and Legal Framework* (2022).
[43] International Labour Organization, *Violence and Harassment Convention, 2019 (No. 190);* UN Albania, *Gender Equality and Labour Standards Report* (2022).
[44] UN Albania, *Report on Implementation of Gender Equality Legislation in Albania* (2022).
[45] Gentiana Sokoli and H. Gëdeshi, 'Gender Equality and Implementation Gaps in Albania' (2020).

representation of women in decision-making and leadership positions[46]. These elements show that, despite legal improvements, the main challenge remains the effective implementation and consolidation of institutional gender equality practices.

In conclusion, while Albania has developed a relatively comprehensive legal and institutional framework for gender equality, its effective implementation remains the main challenge. Strengthening institutional capacities, raising public awareness, and allocating sufficient resources are essential preconditions for transforming legal guarantees into real equality.

Challenges and Prospects for Achieving Gender Equality in Public Administration

Structural and institutional challenges

The "glass ceiling" represents invisible but very strong barriers that limit the advancement of women and other marginalized groups at the highest levels of organizational hierarchies, regardless of their qualifications and achievements[47]. This phenomenon is particularly noticeable in the public administration, where, although it provides more stable employment, women continue to be underrepresented in senior management positions, occupying less than 10% of them[48].

In Albanian society, men are the ones who have managed to change and rise faster in the status hierarchy, owning jobs that are better paid and securing decision-making positions in political life, in the sphere of public administration and in the business world[49]. This reality testifies to the social barriers and higher costs of the efforts that women must make to affirm personality in a society historically structured for male domination.

Cultural and societal challenges

Accentuated societal expectations create significant barriers: traditional gender roles – societal expectations that prioritize women's domestic responsibilities over career advancement create both external pressures and internal constraints. Work-family conflict often forces women to bear a disproportionate share of family responsibilities, forcing them to make difficult choices between career advancement and personal obligations[50].

Albanian women know how to manage money and do wonders with the small family budget, but they do not have the right to make decisions in central institutions; Women are more educated than men and have a more secure level of communication, but their presence in politics is almost negligible. The challenge for women is to ensure proper public relations, candidacy from their parties, and the necessary time in public.[51]

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[46] Krasniqi, *EU Gender Equality Acquis and Albania Approximation Process* (2015).
[47] Rosabeth Moss Kanter, *Men and Women of the Corporation* (Basic Books 1977); Morrison et al., *Breaking the Glass Ceiling* (1987).
[48] PubAdmin Institute, *Women in Public Administration Report* (2025).
[49] Majlinda Bajko, *Gender Equality and Albanian Society* (2013).
[50] PubAdmin Institute, *Gender Roles and Public Sector Careers Report* (2025).
[51] Gender Alliance for Development, *Report on Women's Participation in Decision-Making* (n.d.).

The gap between the legal framework and enforcement

One of the most critical challenges in Albania is the huge gap between legal norms and practice. The main challenge for Albania is not the lack of laws, but the way they are implemented, because gender equality is not achieved through documents, but through concrete decisions. The adoption of the new law on gender equality in November 2025 is a victory, but its implementation will be the common challenge – institutions must ensure that it is implemented at every level, at work, in education, in social services and in decision-making. Society must understand that gender equality is not an ideology, but a fundamental human right protected by the country's constitution, and that Albania is obliged to implement based on the international agreements it has signed[52].

Lack of resources and capacities

The main role in the implementation of gender equality policies is often taken by international donors, who push forward agendas such as gender equality and social inclusion, but this creates a dependency that is not sustainable in the long term, especially in the absence of an internal institutional commitment. The limited capacities of gender equality coordinators, the lack of specialized training, and the insufficient allocation of financial resources hinder the effective functioning of the national mechanism[53].

Prospects and opportunities for progress

Despite the challenges, there are promising prospects for advancing gender equality in public administration. The latest data represent an improvement in many of the gender equality indicators, and the Ministry of Finance and Economy remains committed to further strengthening the role of women and closing gender gaps. The percentage of women owners or administrators in active enterprises is 25.5%, from 25.4% in 2019, despite the pandemic situation, while 43.2% of borrowers and 43.5% of depositors in commercial banks were women[54].

One of the innovations envisaged in the most recent amendments to the Law on Gender Equality is related to the introduction of mandatory gender representation in public and private institutions, in the range of 30% to 50%, including the legislative, executive, judicial and public administration. This provision is an important instrument for strengthening substantial gender equality and increasing the representation of women in decision-making positions. In this context, the sustainable and effective implementation of these quotas is expected to significantly impact the transformation of the leadership structure in the public and private sectors, promoting a more inclusive and gender-balanced representation.

Lessons from international best practices

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[52] Reporter.al, *Gender equality in Albania: implementation challenges* (2026).
[53] Ermira Haxhiymeri and Kledja Kellezi, 'Gender Equality Policy Implementation in Albania' (2018).
[54] Ministry of Finance and Economy, *Report on Gender Indicators in the Economy* (2021).

The Nordic countries lead the world in closing the gender gap and in recent years have taken positions at the top of global rankings, with nearly three out of four working-age women being part of the paid workforce. Policymakers in these countries explicitly support gender equality at work, at home, and in public, benefiting from a developed welfare state and forward-thinking initiatives[55]. Education plays an important role in fostering gender equality – the Nordic countries have made significant investments in quality public education, which has resulted in a highly educated and skilled workforce regardless of gender.

FUTURE PERSPECTIVE AND THE IMPORTANCE OF GENDER EQUALITY IN PUBLIC ADMINISTRATION

Modern perspective on gender equality

The contemporary conceptualization of gender equality has evolved significantly in the last decade, moving from a narrow approach that focuses primarily on numerical parity between women and men, to a more comprehensive understanding that recognizes the complexity of human identities and experiences. Gender equality is more than parity between women and men – women and men should reflect the diversity of the public they represent, and for public institutions to become more representative of the public they serve, they should include representation from women facing various forms of exclusion[56].

Gender equality and the 2030 Agenda for Sustainable Development

Women and girls, everywhere, should have equal rights and opportunities, and be able to live free from violence and discrimination – women's equality and empowerment is one of the 17 Sustainable Development Goals, but also integral to all dimensions of inclusive and sustainable development. In short, all OZhQs depend on the achievement of Objective 5[57].

Thirty years since Beijing's historic Declaration and Platform for Action, and ten years since the adoption of the 2030 Agenda for Sustainable Development and its 17 SDGs, gender equality remains out of reach – with only five years left until the 2030 deadline, none of the SDG 5 targets have been fully achieved. Since 1995, progress towards gender equality has been slow, fragile, and unequal across regions, with marginalized communities facing the greatest obstacles[58].

The world is not on track to achieve gender equality by 2030 and has been further pushed off track by the socio-economic consequences of the pandemic – women and girls remain disproportionately affected, struggling with job and livelihood losses, disrupted education, increased burden of uncompensated care work, and domestic violence. However, while more women have entered political positions in recent years, including through the use of special quotas,

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[55] World Economic Forum, *Global Gender Gap Report 2018.*
[56] UNDP, *Human Development Report: Gender and Inclusion* (2021).
[57] UN Women, *Sustainable Development Goals and Gender Equality* (n.d.).
[58] International Institute for Sustainable Development (IISD), SDG Knowledge Hub, *Progress on SDG 5 Review Report* (2025) https://sdg.iisd.org/

they still occupy only 23.7% of parliamentary seats, far from parity.[59] There are more women in public office today than ever before, but encouraging more women leaders in all regions will help strengthen policies and legislation for greater gender equality.

Digital transformation: opportunities and challenges for gender equality

Digital transformation offers new avenues for advancing gender equality and empowering all individuals. The twin global climate and digitalisation transitions offer numerous opportunities to promote gender equality in these spheres and across societies – with careful planning, green and energy transitions can facilitate gender equality through education, training and inclusion initiatives[60].

From a social development perspective, digitalization offers new opportunities for economic empowerment and inclusion, especially for marginalized groups, yet access to technology, digital skills, and platform work infrastructure now determine who benefits or falls behind. Global investment in information and communications technology has increased, with the sector exceeding 12% of capital formation in developed economies and estimated at $5.5 trillion in 2024[61].

Artificial intelligence and gender-based governance

The study drives transformation for the empowerment of women and girls, advocating for a just digital future for all, through the engagement of diverse stakeholders including government officials, public administration experts, artificial intelligence developers, and gender equality advocates[62]. Artificial intelligence presents both opportunities and risks for gender equality in public administration.

On the one hand, AI can be used to identify patterns of discrimination in administrative records, optimize resource allocation to address gender gaps, and automate processes that have historically been susceptible to human bias[63]. On the other hand, if not carefully designed, AI risks codifying and reinforcing existing discrimination on a larger scale[64].

Strategic importance of gender equality for public administration

Democratic legitimacy and representation

Gender equality in public administration is essential for the democratic legitimacy of state institutions. The theory of representative bureaucracy argues that public administration must

[59] UN Department of Economic and Social Affairs (UN DESA), *Gender Equality and COVID-19 Impact Report* (n.d.).
[60] OECD, *Digital Transformation and Gender Equality Report* (2024).
[61] UN DESA, *Digital Economy and Social Inclusion Report* (2025).
[62] Zenodo, *AI, Gender and Inclusive Digital Governance Study* (2025).
[63] Abdeldayem and Aldulaimi, 'Artificial Intelligence and Public Administration Efficiency' (2020).
[64] Virginia Eubanks, *Automating Inequality* (St Martin's Press 2018).

reflect the demographic composition of the population in order to be fully legitimized.[65] When women are underrepresented in decision-making positions, it creates a democratic deficit that undermines citizens' trust in public institutions[66].

The analysis highlights how democratic backwardness and shrinking civic space often lead to declining gender equality – notably in decreased women's participation in civil society, freedom of expression and access to justice. However, stories of progress from countries like Costa Rica, Egypt, and Moldova show that legal reforms, gender quotas, and political will can still drive change[67].

Policy Efficiency and Quality

Empirical research has documented that gender diversity in public management improves the quality of decision-making and policy outcomes. Women in leadership positions in public administration tend to prioritize issues that disproportionately affect women and families, such as education, health, and social support[68]. Additionally, gender diversity in decision-making teams brings different perspectives and approaches to problem-solving, resulting in more inclusive and effective policies[69].

UNDP's Gender Equality Strategy 2022-2025 sets an ambitious agenda to help countries embrace complexity and find new solutions, reacting flexibly and promoting learning rather than conformity or rigid responses to gender equality. This includes partnering with governments and the private sector to align public and private finances with gender equality commitments, supporting partners to close the gender gap in access to and use of digital technology, and empowering governments to use a more systemic and transformative lens to address the multiple aspects of gender inequality at the same time[70].

Social justice and human rights

From a normative perspective, gender equality is a fundamental human right codified in international human rights instruments, including the Universal Declaration of Human Rights, CEDAW, and the International Covenant on Civil and Political Rights.The [71] failure to ensure gender equality in public administration constitutes a violation of these international legal obligations[72].

Economic development and social welfare

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[65] Frederick C Mosher, *Democracy and the Public Service* (1968); Sowa & Selden (2003).
[66] Hanna Pitkin, *The Concept of Representation* (1967).
[67] International IDEA, *Gender Equality and Democratic Backsliding Report* (n.d.).
[68] Jennifer L Dolan, *Women and Public Administration: Theory and Practice* (Routledge 2018).
[69] Page, *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools, and Societies* (2007).
[70] UNDP, *Gender Equality Strategy 2022–2025* (n.d.).
[71] Universal Declaration of Human Rights (1948); CEDAW (1979); ICCPR (1966).
[72] Martha Nussbaum, *Women and Human Development* (2000).

Gender equality in public administration also contributes to economic development and social welfare. Numerous studies have shown that countries with higher levels of gender equality have more productive economies, stronger social systems, and higher levels of happiness and well-being[73]. By making full use of women's talents and skills, public administrations can improve performance and contribute to economic prosperity[74].

The way forward: strategic priorities

In order to realize the vision of a public administration with true gender equality, urgent actions are needed in several priority areas:

1. Strengthening data and monitoring systems. Data on intersectionality (e.g., data disaggregated by gender and age, or gender and disability) are reported less frequently, and statistics on decision-making vary[75] widely. It is important to close data gaps and ensure that data and analytics serve as tools to drive tangible improvements in people's lives and achieve OZhQs[76].

2. Integration of the gender perspective in the digital transformation. National digital transformation strategies must explicitly integrate gender equality objectives and ensure that new technologies do not reinforce existing discrimination[77]. This includes investing in digital education for women and girls, supporting female entrepreneurship in technology, and ensuring that AI algorithms are fair and unbiased.

3. Adopting intersectional approaches. Paying attention to intersectionality (how multiple identities together influence experiences and discrimination) when developing interventions for diversity, equity, and inclusion[78]. Gender equality policies should be designed to address the specific needs of women who face multiple forms of discrimination based on race, ethnicity, ability, sexual orientation, gender identity, age, and other factors.

4. Engaging men and boys. Developing initiatives and programs that engage men and boys in promoting gender equality is also key[79]. Gender equality is not just a women's issue – it requires transformation of social norms and practices that affect everyone, and men must be active partners in this process.

5. Increase investment and financing. Governments and other stakeholders can increase investment in gender equality and women's and girls' empowerment by promoting investment not

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[73] World Bank, *Gender Equality and Development* (2012).
[74] Catalyst, *Why Diversity Matters in Leadership* (2011).
[75] UNDP, *Human Development Report / Gender Data Gap* (2021).
[76] International Institute for Sustainable Development (IISD), SDG Knowledge Hub publication (2025) https://sdg.iisd.org
[77] Huyer S, 'Gender Equality and Sustainable Development in the Digital Age' (2020)
[78] Hudson A et al, *Title of Report* (Institution 2026) <URL> accessed 18 May 2026.
[79] International Institute for Sustainable Development (IISD), SDG Knowledge Hub, *Progress on SDG 5 Review Report* (2025) https://sdg.iisd.org/

only in gender equality but in all sectors, including agriculture, education and culture, care services, social protection, health, infrastructure, justice, and water and sanitation[80].

Conclusions

The digital transformation must now be seen as integral to social policy, linking education, employment, gender equality and protection systems. Ultimately, achieving gender equality in public administration is not only a moral and legal imperative, but also an essential strategy to build more effective, equitable, and sustainable institutions.

The future perspective on gender equality in public administration is closely intertwined with the broader transformations that are taking place in our societies – the digital transformation, the green transition, post-pandemic reconstruction, and efforts to achieve the Sustainable Development Goals. Success in these other areas depends to a large extent on our ability to realize true gender equality. As Michelle Bachelet said, "When we invest in women and girls, we invest in people who invest in others" – and this is especially true in the public sector, where women in leadership positions can transform the lives of millions of citizens.[81]

Recommendations

Based on the analysis of challenges and best practices, several priority recommendations are proposed:

1. *Strengthening implementation and monitoring mechanisms.* It is necessary to establish a comprehensive system for monitoring the implementation of gender equality legislation, with clear performance indicators and regular public reporting[82]. Oversight bodies must have real authority and means to punish violations.

2. *Investment in capacity building.* Gender equality coordinators at all levels of public administration need specialized training, sufficient resources, and institutional support to effectively perform their duties[83]. Mentorship and leadership development programs for women need to be institutionalized.

3. *Reform of human resource management policies.* Recruitment and promotion processes need to be reviewed to eliminate hidden gender biases[84]. Performance evaluations should be based on objective results and independent of gender stereotypes. Work flexibility policies and support for balancing work and family life should be extended to both genders.

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[80] **International Institute for Sustainable Development (IISD), SDG Knowledge Hub,Gender** *Equality and Sustainable Development Review* (2024) https://sdg.iisd.org/

[81] Michelle Bachelet, cited in UN Women materials (n.d.).

[82] Judith Squires, *The New Politics of Gender Equality* (Palgrave Macmillan 2007).

[83] Organisation for Economic Co-operation and Development (OECD), *Women in Public Leadership: Gender Equality and Governance* (OECD Publishing 2020).

[84] Norma M Riccucci and Gregg G Van Ryzin, 'Representative Bureaucracy: A Lever to Enhance Social Equity, Coproduction, and Democracy' (2017) 77 *Public Administration Review* 21.

4. *Rigorous implementation of gender quotas.* Existing quotas must be strictly monitored and violations must have clear consequences[85]. Quotas should not be limited only to elected positions, but should also be extended to appointed positions and at senior levels of administration.

5. *Cultural transformation and public awareness.* Ongoing public awareness campaigns are needed to challenge gender stereotypes and promote an inclusive organizational culture[86]. Mandatory training on gender equality and diversity should be implemented at all levels of public administration.

6. *Systematic integration of the gender perspective (gender mainstreaming).* All policies, programs, and budgets should be systematically analyzed for their gender impact[87]. Gender budgeting needs to move from a formal exercise to a real tool for allocating resources that address inequalities.

7. *Strengthening partnerships and accountability.* Cooperation between government, civil society, academia and international partners needs to be deepened[88]. Accountability mechanisms should include regular reporting, gender audits, and the involvement of civil society in monitoring.

Research shows that companies that have the best records for promoting women outperform their competitors in every measure of profitability[89]. This business logic on gender diversity also applies to the public sector, where balanced representation improves policy quality, institutional legitimacy, and governance effectiveness.

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SOME LEGAL-CRIMINAL ASPECTS OF THE ATTEMPT PHASE IN COMMITTING THE CRIMINAL OFFENSE OF NARCOTICS TRAFFICKING

Elizabeta Imeraj[1], Naim Mëçalla[2]

Department of Justice
Barleti University, Tirana, Albania

Corresponding author: law.dep@umb.edu.al
(OCRID: 0009-0009-8040-7831)

Abstract

A criminal offense is deemed an attempt when, despite the person taking direct actions to commit it, the offense is interrupted and not completed due to circumstances independent of their will. An attempt is the direct action of a person toward committing a criminal offense. It constitutes the most advanced phase, closest to the occurrence of the criminal consequence desired by the perpetrator of the action, but which has not occurred due to circumstances or causes independent of their will.

In this paper, we will analyze the methods of committing the crime of narcotics trafficking, focusing particularly on the transit phase of narcotics. We will clarify whether the criminal offense of "narcotics trafficking," as provided for in the provision of Article 283/a, will be considered completed in the transit phase, and how the criminal offense of narcotics trafficking will be viewed in this phase, given that the criminal offense is considered completed even by merely importing, exporting, or trading the narcotic substance. To determine whether the offense has been consummated or has remained in the attempt phase, the intent of the perpetrator or perpetrators of the criminal offense, as well as the time and place of the seizure of the narcotics, are of great importance. If it is proven that the narcotic substance was not produced locally to be exported abroad, nor was it imported to be used in the domestic market, the offense is qualified as transit. If the narcotic substance is seized at the moment of entry at the state border, the offense is qualified as an attempt. If it is seized within the territory, we are dealing with a fully consummated transit, and the criminal offense is considered completed.

Keywords: Attempt; transit; import; export; trafficking; narcotic substance; etc.

Introduction

A criminal offense, as a social phenomenon, has its moment of beginning and its end. It is generally realized through preliminary phases that are distinguished from one another by the specific characteristics and qualities they possess. Although without sharp boundaries, their differentiation is made by referring to the place they occupy in the process of the development of the event, the manner and time of their commission, the degree of realization of intent to achieve the criminal result, the distance separating them from the imminence of the consequence,

and, above all, the role they play or the functions they fulfill toward achieving the ultimate goal for which the offense is committed. The theory and practice of criminal law recognize the manifestation of criminal thought, preparation, and attempt as phases of preliminary criminal activity.

In the case of an attempt, we are faced with the commission of actions by a person, which, by their very means, manner, and the time they are carried out, directly aim at and contribute toward causing the desired consequences of the criminal offense, thus bringing it very close to the occurrence of the criminal consequence intended by the perpetrator. After having carried out all the preparatory actions that they deem necessary to achieve the predicted result—which depend on the type and nature of the criminal offense, the place, time, and other circumstances under which its commission was planned by them—the person undertakes the final actions, which are now directed straight at the object of the criminal offense to ultimately commit it. At this moment, if objective circumstances or accidental circumstances arise that prevent the commission of the offense or the occurrence of those harmful consequences that the perpetrator of the criminal actions intended to cause, the criminal offense is not deemed completed, but rather remains in the attempt phase. In a crime remaining in the attempt phase, the consequence is missing; the predicted and desired result of its subject does not materialize. An attempt is a criminal offense begun but unfinished, a premeditated beginning of the commission of a criminal offense, which has remained incomplete due to various reasons and causes, regardless of the perpetrator's desire.

In this paper, we will analyze the methods of committing the criminal offense of narcotics trafficking as provided for in the provision of Article 283/a; namely, import, export, transit, and trade, focusing on the transit phase of narcotics. We will clarify when the criminal offense of "narcotics trafficking" will be considered completed in the transit phase, and how the criminal offense of narcotics trafficking will be viewed in this phase, given that the criminal offense is considered completed even by merely importing, exporting, or trading the narcotic substance. This criminal offense is committed with intent, through unlawful actions or omissions. It is committed for motives or even with goals focused specifically on those related to material gain.

To determine whether the offense has been consummated or has remained in the attempt phase, the intent of the perpetrator or perpetrators of the criminal offense, as well as the time and place of the seizure of the narcotics, are of great importance. Article 283/a of the Criminal Code explicitly provides that the import, export, transit, and trade, in violation of the law, of narcotic substances and psychotropic substances are criminally punishable. The criminal activity of narcotics trafficking pursuant to Article 283/a of the Criminal Code aims precisely to generate profits by putting into circulation narcotic and psychotropic substances, the circulation of which is prohibited by law.

In this paper, an answer is provided to the question of what constitutes the attempt phase in committing narcotics trafficking in the case of transit, while the criminal offense is considered completed even by merely importing, exporting, or trading. Based on the interpretation of the four elements of the corpus delicti of the criminal offense of narcotics trafficking for the

qualification of the offense of narcotics trafficking, it is of fundamental importance to prove the intentional commission of concrete actions or omissions to realize, in an unlawful manner, the goal desired by the perpetrators of the offense—namely, the unlawful entry/bringing or exit/sending of narcotics from the Albanian territory, or their unlawful passage through the Albanian territory into that of other states (transit)—primarily to realize various gains for themselves or for third parties.

1. General aspects of the attempt

The provision of Article 22 of the Criminal Code of the Republic of Albania (2024) provides for the meaning of attempt; under a proper interpretation of this provision, essentially, in the case of an attempt, although the person undertakes direct actions to commit the criminal offense, it is interrupted and not completed due to circumstances independent of their will. Unlike preparation, which is related to creating the conditions and material means for committing the criminal offense as the beginning of the materialization of criminal thought, in the case of an attempt, we are faced with the commission of actions by the person, which, by their very means, manners, and the time they are carried out, directly aim at and contribute toward causing the desired consequences of the criminal offense, thus bringing it very close to the occurrence of the criminal consequence intended by the perpetrator. After having carried out all the preparatory actions that they deem necessary to achieve the predicted result—which depend on the type and nature of the criminal offense, the place, time, and other circumstances under which its commission was planned by them—the person undertakes the final actions, which are now directed straight at the object of the criminal offense to ultimately commit it. At this moment, if objective circumstances or accidental circumstances arise that prevent the commission of the offense or the occurrence of those harmful consequences that the perpetrator of the criminal actions intended to cause, the criminal offense is not deemed completed, but rather remains in the attempt phase.

From the analysis of this article, it results that there are three conditions for the existence of an attempt: 1) making the decision to commit the criminal offense, 2) undertaking direct actions to commit the criminal offense, and 3) the non-completion of the criminal offense. (Mëngjesi, S. (2016) Morava press. 273-274)

In a complete or consummated criminal offense, the consequence has occurred. The person has achieved the intended goal for which they committed the criminal action. (Muçi, Sh. (2017). Dudaj press. 252-253) In a crime remaining in the attempt phase, the consequence is missing; the predicted and desired result of its subject does not materialize. It is important to prove the subjective element (mens rea) of the perpetrator of the actions—what they intend to achieve through their actions, whether it is ensuring the conditions for committing the offense in the future or its immediate realization. This is because the possibility exists that identical actions, within the framework of the same offense, may be included in the preparatory phase or evaluated as an attempt, depending on the subjective element, on what is sought to be fulfilled at the time the action is committed. An attempt is a criminal offense begun but unfinished, a premeditated beginning of the commission of a criminal offense, which has remained incomplete due to

various reasons and causes, regardless of the perpetrator's desire. (Kambovski, V. Skopje 2007. Criminal Law, 322-325) The legal concept of attempt contains three elements: 1) premeditation to commit the criminal offense, 2) the beginning of the commission of the criminal offense, and 3) the non-occurrence of the desired consequence. An attempt does not possess a specific criminal framework (corpus delicti) of its own, but rather transitions directly into the specific legal framework of the offense, as it constitutes an advance warning of a specific offense. Thus, an attempt is an abbreviated form of a specific criminal offense.

2. Some legal and criminal elements of drug trafficking

The provision of Article 283/a of the Criminal Code (Criminal Code of the Republic of Albania, Article 283/a trafficking of narcotics) provides that: *"The import, export, transit, and trade,* ***in violation of the law****, of narcotic or psychotropic substances, as well as seeds of narcotic plants, is punishable by imprisonment from seven to fifteen years....."* Through this criminal offense, our criminal legislation aims to specially protect the legal relations established to ensure control and order in the activities of international import, export, transit, and trade of narcotics against criminal actions and omissions. Likewise, by means of this provision, in harmony and mutual fulfillment with other criminal provisions, the legislator also aims to protect the legal relations established to guarantee life, health, family, and other rights and social objectives in a democratic society. This criminal activity—through the promotion, sourcing, and networks of proliferation of the illegal, abusive use of narcotic and psychotropic substances, both at national and international levels—has a decisively negative impact, among other things, not only on harming health and creating addiction among users of these substances, but also on harming health and property, namely the quality of personal and family life, as well as the normal development of society, particularly the younger generation.

This criminal offense is committed with intent, through unlawful actions or omissions. It is committed for motives or even with goals focused specifically on those related to material gain. Article 283/a of the Criminal Code explicitly provides that the import, export, transit, and trade, *in violation of the law*, of narcotic and psychotropic substances are criminally punishable. Our legislation contains specific regulations regarding any type of activity related to narcotic and psychotropic substances (Law No. 7975, dated 26.7.1995, as amended, and Law No. 8874, dated 29.3.2002). These laws, as well as the bylaws issued on their basis and for their implementation, provide clear rules regarding the conditions, criteria, and technical and legal procedures for the permission, authorization, and regulation of activities for the production, manufacture, trade, wholesale and retail distribution, transport, supply, provisioning for payment or free of charge, purchase, import, export, transit passage, utilization, and possession for medical, research, and scientific purposes, or for other industrial purposes or other activities, of those narcotic and psychotropic substances that are not prohibited from circulation. These activities can only be exercised by entities specifically authorized for this purpose by the competent authorities in accordance with the law. The criminal activity of narcotics trafficking pursuant to Article 283/a of the Criminal Code aims precisely to generate profits by putting into circulation narcotic and psychotropic substances, the circulation of which is prohibited by law.

Therefore, within the meaning of Article 283/a, the expression "in violation of the law" includes, first of all, the performance of actions or activities with narcotic and psychotropic substances from those that are prohibited by law from being put into circulation. Second, the performance of actions and activities with such substances permitted for circulation but for purposes other than those provided for and permitted by law. Third, the performance of activities with such substances permitted for circulation but without being equipped with the relevant authorizations or in violation of and exceeding the conditions provided for in the authorization, which are qualified as such actions or omissions that constitute a criminal offense and not an administrative offense. Therefore, the subject can be any person who carries out illegal actions and activities related to narcotic and psychotropic substances, substances and actions that are prohibited, different from or in excess of the purposes, conditions and procedures provided by law regarding them, as well as those contained in the special authorization issued by the competent authority.

The criminal offense provided for by Article 283/a, in its four basic forms of commission; 1) Import, 2) Export, 3) Transit and 4) Trade, is essentially related to the transnational nature of the commission of the criminal offense of drug trafficking. The legal term of "trafficking", in the field of law, is understood as the illegal activity or trade, national or international, of goods and services. Based on tradition, but also on the provisions of several international acts (Palermo Convention, ratified by law no. 8920 dated 11.7.2002) and in our criminal legislation, a number of criminal offenses have been foreseen, amended and supplemented regarding the illegal national and international circulation and trade and, in general, for illegal activities with persons as well as certain goods and services, both in the case when this criminal activity aims or is carried out only in the Albanian territory, as well as when this activity extends to or interests other countries. (Articles 110/a, 114/b, 128/b, 138/a, 141/a, 278/a, 282/a and 283/a, criminal offenses of a transnational nature where the term "trafficking" is used to title the offense) According to our criminal legislation, regardless of the persons and types of goods that are trafficked and their origin, in essence, trafficking means cases when the illegal activity, including Albania and its territory, is carried out in more than one country, is carried out in one country but is prepared, programmed, directed and controlled in another country, is carried out in one country but has substantial effects and consequences in another country.

Therefore, the basic criterion for the understanding and proper application of the criminal offense of "trafficking" according to our Criminal Code is the principle of territory, of touching and using it, with the aim of criminally obtaining benefits, through the illegal entry or exit of persons or objects from the Albanian territory or their illegal passage through the Albanian territory. For the purposes of implementing the provision of Article 283/a of the Criminal Code, transit zones in the country's international stations, ports and airports are part of the Albanian territory. Essentially, Article 283/a covers cases when the criminal activity and its consequences have a transnational character. The criminal offense of drug trafficking is committed even in one of the ways provided for by Article 283/a of the Criminal Code, namely in those of import, export, transit or trade.

1. The stage of the attempt to commit drug trafficking

By analyzing the objective side, the ways of committing, importing, exporting, transiting and trading this criminal offense of Article 283/a, (Dictionary of the Contemporary Albanian Language (2024) it is necessary not only to clarify the legal notion of this criminal activity, but also the stages of committing or attempting this criminal offense. Before analyzing some aspects related to the essence of each basic method of the criminal offense of drug trafficking under Article 283/a, we are first highlighting some aspects related to the essence of the economic and commercial meaning of these actions and activities.

Importing is the activity of bringing goods and services from another country, mainly for economic and commercial purposes. Exporting is the activity of sending goods and services to another country, mainly for economic and commercial purposes. Importing and exporting are also two of the ways of international trade in goods and services. Trade is the activity of putting into economic and commercial circulation, through the sale, purchase, exchange, giving and receiving, in any other way and form, of goods and services for economic and commercial purposes. Whereas, transit is the activity of carrying, moving, accompanying and transporting living beings and objects (e.g. goods) from one country to another, a way or segment of their transportation, with the peculiarity that, during transit, these beings and objects temporarily stay or pass through other countries other than the intended departure and arrival. So, transit is a way of carrying out the activity of transportation or transport from the point of departure to the intended destination, which is carried out and extends to an intermediate part or segment of this activity.

Even the provision of Article 283/a of the Criminal Code, in terms of the objective aspect of its execution, foresees and includes all actions and omissions to achieve the goal, the criminal result, precisely by including all ways of carrying out known actions and activities related to the international trade and circulation of goods, especially narcotics, psychotropic substances and seeds of narcotic plants. This provision highlights as special ways import, export and transit, including in the term "trade" all other possible ways of international trade and circulation of goods, especially narcotics (https://www.gjykataelarte.gov.al/sq/vendimet-e-gjykates). Precisely their implementation by the subjects of the criminal offense by acting intentionally and contrary to the law, while narcotics are subject to a legal regime of prohibition or restrictions on their circulation, a regime which specifically limits and disciplines the circle of subjects authorized for this purpose.

The subject of the criminal offense provided for in Article 283/a intentionally commits unlawful actions or omissions, foreseeing the consequences of this criminal offense. The consequence of this criminal offense is related to the violation of the special legal-criminal relations established in relation to the circulation of narcotics and, in particular, the regime of their circulation (a) from the territory of other states with the final destination being the Albanian territory or (b) from the Albanian territory with the destination being the territory of another state, as well as (c) through their displacement and transportation from the territory of other states, through the Albanian territory, towards the territory of other states. Therefore, the consequences of this criminal offense, which entail criminal liability, come precisely with the intentional commission of actions or omissions for the entry of narcotics into the Albanian territory or the exit from this

territory, regardless of whether all the consequences desired by the subjects of the criminal offense have occurred, whether or not they have realized all the motives and intentions for committing the offense, such as undoubtedly the arrival of the narcotics at the destination, to the targeted persons inside or outside the country, after crossing our state border.

1. Understanding the methods of drug trafficking

In the following, and based on the essential elements related to the subject, subjective side, objective side and object of the criminal offense provided for by the provision of Article 283/a of the Criminal Code, we are presenting the essence of the meaning of the ways of committing this criminal offense.

a) The import of narcotic or psychotropic substances is a way of committing the criminal act provided for in Article 283/a of the Criminal Code, (Criminal Code of the Republic of Albania, Article 283/a. (2024) by which natural or legal persons, whether or not provided with special authorization under the law by the Albanian authorities, unlawfully and intentionally, using any means or form of action or inaction, bring these substances from the territory of another state to the Albanian territory, with the aim of putting them into circulation in the Albanian territory. For the qualification of the criminal act as "narcotics trafficking" in the manner of importation, according to Article 283/a of the Criminal Code, it is important to prove the commission of concrete, intentional actions or omissions, related to achieving the result of the criminal intent, namely the intention to bring (import) the narcotic substance, illegally, from another country to Albania, regardless of whether all the consequences have occurred, whether the criminal result has been achieved. Likewise, it is not important for the qualification of this criminal act what was the further intention of the perpetrators of the act after the entry of the narcotic substance into the Albanian territory, i.e. the form and nature envisaged by them to benefit and in any case to put it into circulation after the importation has been carried out. It is not important for the qualification of the offense either the nature of the actions or omissions or the form of participation in the commission of the criminal act of importing narcotics, as long as these elements of the objective side of the commission of the crime of trafficking in narcotics ((Criminal Code of the Republic of Albania. Article 283/a. (2024)) are alternative and autonomous. It is sufficient that the criminal act and participation be intentional towards achieving the criminal goal of importing narcotics from another country into Albanian territory.

b) The export, in violation of the law, of narcotic or psychotropic substances, as well as of the seeds of narcotic plants, is a way of committing the criminal act provided for by Article 283/a of the Criminal Code, (Criminal Code of the Republic of Albania. Article 283/a. (2024) by which natural or legal persons, whether or not provided with special authorization under the law by the Albanian authorities, illegally and intentionally, using any means and form of action or inaction, send these substances from the Albanian territory to the territory of other states, with the aim of putting them into circulation in the territory of those states. For the qualification of the criminal act as "narcotics trafficking" in the manner of export, according to Article 283/a of the Criminal Code, it is important to prove the commission of concrete, intentional actions or omissions, related to achieving the result of the criminal intent, namely the intention to send (export) the narcotic

substance, in an illegal manner, from the territory of the Republic of Albania to the territory of another state, regardless of whether all the consequences have occurred, whether the criminal result has been achieved. Likewise, it is not important for the qualification of this criminal act what was the further intention of the perpetrators of the act after the entry of the narcotic substance into the territory of the other state, i.e. the form and nature envisaged by them to benefit and in any case to put it into circulation after the exportation has been carried out. It is not important for the qualification of the offense either the nature of the actions or omissions or the form of participation in the commission of the criminal act of exporting narcotics, as long as these elements of the objective side of the commission of the crime of trafficking in narcotics (Criminal Code of the Republic of Albania. Article 283/a. (2024)) are alternative and autonomous. It is sufficient that the criminal act and participation be intentionally towards achieving the criminal goal of exporting narcotics from Albanian territory to the territory of another state.

c) The trade of narcotic or psychotropic substances, as well as the seeds of narcotic plants, is a way of committing the criminal act provided for in Article 283/a of the Criminal Code, (Criminal Code of the Republic of Albania, Article 283/a. (2024) by which natural or legal persons, whether or not they are specially authorized by law by the Albanian authorities, unlawfully and intentionally carry out any other financial or commercial transaction or action, other than those of import and export, within or outside the Albanian territory, with the aim of placing narcotic substances in international economic and commercial circulation, if these activities are carried out or have consequences in the Albanian territory, if they are carried out to the detriment of the interests of the state or Albanian citizens. In order to qualify the criminal act as "narcotics trafficking" in the manner of trade, according to its specific meaning in Article 283/a of the Criminal Code, it is important to prove the commission of concrete, intentional actions or omissions related to achieving the result of the criminal intent, namely the intention to create conditions and carry out any financial and commercial transaction or action, other than that of import and export, for the illegal introduction of narcotics into international economic and commercial circulation, regardless of whether all the consequences have occurred, whether the criminal result has been achieved.

d) The transit of narcotic or psychotropic substances, as well as the seeds of narcotic plants, is a way of committing the criminal act provided for in Article 283/a of the Criminal Code, by which natural or legal persons, whether or not provided with special authorization under the law by the Albanian authorities, unlawfully and intentionally, using any means and form of action or inaction, carry, store, accompany, move and transport these substances throughout the territory of the Republic of Albania, with the aim of passing them through it from the territory of one state to the territory of another state.

For the qualification of the criminal act as "narcotics trafficking" in the transit mode, according to Article 283/a of the Criminal Code, (Criminal Code of the Republic of Albania. Article 283/a. (2024) it is important to prove the commission of concrete, intentional actions or omissions, related to achieving the result of the criminal intent, namely the intention to carry, store, accompany and transport, transit the narcotic substance, in an illegal manner, across the Albanian territory, as a segment or part of the intermediate segments of transportation from the country of departure to the one destined for the circulation of the transited narcotic substance, regardless of whether all the consequences have occurred, whether the criminal result has been achieved. It is not important for the qualification of this criminal offense what is the nature of the actions or omissions or the form of participation in the commission of the criminal act of transit of narcotics, as long as these elements of the objective side of the commission of the crime of trafficking in narcotics (Criminal Code of the Republic of Albania, Article 283/a) are alternative and autonomous. (Unifying Decision of the Supreme Court, no. 3, date 24.01.2011) It is sufficient that the criminal act and participation be intentional towards achieving the criminal purpose of transiting narcotics through Albanian territory.

2. The phase of the attempt to commit drug trafficking in the case of transit

Based on the above reasoning regarding the meaning and interpretation of the four elements of the criminal offense of drug trafficking (Criminal Code of the Republic of Albania, Article 283/a (2024)), for the qualification of the criminal offense of drug trafficking, it is essential to prove the intentional commission of concrete actions or omissions to achieve, in an unlawful manner, the desired goal of the perpetrators of the offense, namely the illegal entry/bringing or exit/sending of narcotics from Albanian territory or their illegal passage through Albanian territory to that of other countries, transit, mainly to realize various benefits for oneself or for a third party.

The question arises, what will be the stage of the attempt to commit narcotics trafficking in the case of transit, while the criminal offense is considered committed even by simply importing, exporting or trading?

Regarding the commission of the criminal offense or its remaining an attempt, taking into account the four ways of committing the criminal act of drug trafficking (import, export, transit and trade), provided for by Article 283/a of the Criminal Code, we conclude that:

The criminal offense of drug trafficking, article 283/a, in the manner of importation, is considered committed upon confirmation of the fact that the narcotic substance has crossed the land, air or sea border of the Republic of Albania, regardless of whether it may not have yet arrived or has passed through the border and customs points, stations, ports and airports of the country, including their transit areas. Likewise, the criminal offense is considered committed regardless of the circumstance that the narcotic substance, after crossing the state border or even police and customs control, has or has not reached the person or destination desired by the perpetrators in the Albanian territory. If the narcotic substance, despite the concrete direct actions or omissions of the perpetrators of the offense for its importation, has not crossed the Albanian state border, for circumstances that do not depend on their will, regardless of the time and place

of the cessation of the criminal act, the criminal offense is qualified as trafficking in narcotics in the manner of attempted importation provided for in Articles 283/a and 22 of the Criminal Code.

The criminal offense of trafficking in narcotics, Article 283/a, in the manner of exportation, is considered committed upon the confirmation of the circumstance that the narcotic substance has crossed the land, air or sea border of the Republic of Albania. Likewise, the criminal offense is considered committed regardless of the circumstance that, after crossing the state border or even police and customs control, the narcotic substance has been subjected to police and customs control of another state or not, if it has reached the person or destination desired by the perpetrators in the territory of that state. If the narcotic substance, despite the concrete and direct actions or omissions of the perpetrators of the offense for its export, has not crossed the Albanian state border, for circumstances beyond their control, regardless of the time and place of the cessation of the criminal act in the Albanian territory, the criminal offense is qualified as trafficking in narcotics in the manner of attempted export, provided for in Articles 283/a and 22 of the Criminal Code.

The criminal offense of trafficking in narcotics, in the manner of international trade, according to the case and the specific nature of the action or inaction, is considered committed upon the verification of the circumstance that the narcotic substance has crossed, entering or exiting the land, air or sea border of the Republic of Albania, regardless of whether it may not yet have arrived or has crossed the border and customs points, stations, ports and airports of the country, including their transit areas. Likewise, the criminal offense is considered committed regardless of the circumstance that the narcotic substance, after crossing the state border or even police and customs control, has reached the person or destination desired by the perpetrators in the Albanian territory or another state. If the narcotic substance, despite the concrete and direct actions or omissions of the perpetrators of the offense for its international trafficking, as the case may be, has not entered or crossed the Albanian state border, for circumstances that do not depend on their will, regardless of the time and place of the interruption of the criminal action inside or outside the country, the criminal offense is qualified as trafficking in narcotics in the manner of international trafficking remaining in attempt provided for by articles 283/a and 22 of the Criminal Code.

The criminal offense of trafficking in narcotics, in the manner of transit, is considered committed upon the verification of the circumstance that the narcotic substance, after entering the Albanian territory and staying or moving within this territory, has crossed the land, air or sea border of the Republic of Albania towards another country. Likewise, the criminal offense is considered committed regardless of the circumstance that the narcotic substance, after crossing the Albanian state border into another state, has been subjected to police and customs control of that state or not, if it has reached the person or destination desired by the perpetrators of the offense in the territory of that state. When the narcotic substance, which has previously entered the Albanian territory, despite further actions or inactions, concrete and direct, of the perpetrators of the offense for its transit outside this territory, has not crossed the Albanian state border, for circumstances that do not depend on their will, the criminal offense is qualified as trafficking in narcotics in the manner of transit remaining in attempt provided for by articles 283/a and 22 of

the Criminal Code, regardless of the time and place of interruption of this criminal act within the Albanian territory.

In circumstances where it turns out that the subjects of the criminal offense have obtained narcotics in Albania with the intention of sending this narcotics outside the Albanian territory, but in case the narcotics are found and seized, at the border point of the Republic of Albania, i.e. without crossing the Albanian state border, then his criminal activity has been interrupted, the consequences desired by him have not occurred, for circumstances independent of his will. In such circumstances, the criminal offense committed will be qualified as trafficking in narcotics in the manner of export, remaining in attempt, provided for by articles 283/a, first paragraph and 22 of the Criminal Code.

Conclusions

At the end of this paper, based on the analysis of the legal framework, criminal doctrine and judicial jurisprudence, we reach the following main conclusions:

- The important objective element for the division of the stages of the criminal offense of drug trafficking provided for by Article 283/a of the Criminal Code is the territory of the Republic of Albania;

- The form of drug trafficking through import and export methods is considered fully committed at the moment of physical crossing of the border line, entry/exit, while remaining attempted if the criminal act is interrupted before this crossing.

- The form of trafficking through transit is considered a criminal offense fully committed at the moment the drug crosses the border and enters the Albanian territory with a destination in a third country. For this form, the capture of the perpetrator outside the point of exit does not deprive the act of the quality of complete consumption.

- In cases where the narcotic substance is obtained or produced within the country, with the aim of exporting it, the seizure of the substance at the exit border control point, without crossing the border line, necessarily qualifies the offense as remaining in the attempted phase, according to Article 283/a and 22 of the Criminal Code.

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IOT-ENABLED SMART TOURISM FOR SUSTAINABLE COASTAL DEVELOPMENT: THE CASE OF VLORA, ALBANIA

Eljona Proko[1], Eljona Zanaj[2]

Department of Computer Science University
of Vlora, Albania

Corresponding author: eljona.proko@univlora.edu.al

Abstract

The tourism sector is increasingly influenced by digital transformation and sustainability imperatives, particularly in coastal destinations where economic development is strongly linked to marine and environmental resources. In this context, the Internet of Things (IoT) has emerged as a key enabling technology for the development of Smart Tourism Destinations, supporting data-driven decision-making, personalised tourist experiences, and sustainable resource management. This paper investigates the role of IoT applications in Smart Tourism within the framework of the Blue Economy, with a specific focus on the coastal city of Vlora, Albania.

The study adopts a qualitative and conceptual research approach, combining an extensive review of scientific literature with contextual analysis of Smart Tourism and Blue Economy principles. A conceptual IoT-based model for Smart Tourism is proposed and adapted to the characteristics of Vlora as a coastal destination. The analysis emphasises how IoT technologies can enhance tourist experience, optimise destination governance, and contribute to environmental sustainability, particularly through real-time monitoring of coastal and marine resources. The findings suggest that the strategic integration of IoT within Smart Tourism policies represents a significant opportunity for Vlora to strengthen its competitiveness and transition toward sustainable coastal tourism development. This study contributes by proposing a context-specific conceptual framework for IoT-enabled Smart Tourism in emerging coastal destinations.

Keywords: Internet of Things; Smart Tourism; Blue Economy; Sustainable Coastal Tourism

1. Introduction

Tourism has long been recognised as a major driver of economic growth, employment, and regional development, particularly in coastal and maritime regions. However, in recent decades, the sector has faced increasing challenges related to environmental degradation, overexploitation of resources, seasonality, and growing competition among destinations.

At the same time, the rapid advancement of Information and Communication Technologies (ICTs) has significantly transformed the way tourism destinations are planned, managed, and experienced. Tourists increasingly expect seamless services, personalised experiences, and real-time information. Within this context, the concept of Smart Tourism Destinations has gained considerable attention. Among enabling technologies, the Internet of Things (IoT) plays a central role by enabling continuous data collection and analysis through interconnected devices and sensors.

Vlora represents a relevant case study due to its rapid tourism growth and increasing environmental and infrastructural pressures. During peak summer months, coastal areas such as Radhimë and Orikum experience significant overcrowding, highlighting the need for smart management solutions. This paper explores how IoT can support Smart Tourism development aligned with Blue Economy principles.

2. Methodology

This study adopts a qualitative and conceptual research methodology suitable for analysing emerging phenomena such as Smart Tourism and IoT applications. The research design is exploratory and descriptive in nature. It seeks to analyse existing theoretical frameworks and practical applications of IoT in Smart Tourism Destinations, and to adapt these insights to the specific context of Vlora. The study does not rely on primary empirical data collection; instead, it employs secondary data sources and conceptual modelling to propose an IoT-based Smart Tourism framework.

An extensive review of academic literature was conducted, including peer-reviewed journal articles, conference proceedings, policy reports, and international frameworks related to Smart Tourism, Smart Cities, IoT, and the Blue Economy. Databases such as Scopus, Web of Science, and Google Scholar were used to identify relevant sources. This review served as the foundation for defining key concepts, identifying research gaps, and establishing the theoretical background of the study.

Based on the literature review, a conceptual framework was developed to illustrate the role of IoT in Smart Tourism Destinations. The framework consists of multiple layers, including IoT sensing infrastructure, communication networks, data management platforms, and application layers targeting tourists, businesses, and public institutions. This framework was then adapted to the coastal characteristics of Vlora, taking into account tourism seasonality, environmental sensitivity, and governance structures.

3. LITERATURE REVIEW: IoT, Smart Tourism and Blue Economy

3.1 Smart Tourism Destinations

The concept of Smart Tourism Destinations (STDs) has evolved as an extension of the Smart City paradigm, integrating advanced digital technologies to enhance tourism planning, management, and experience. According to the literature, Smart Tourism is characterised by the use of information technologies to improve the efficiency of tourism services, foster innovation, and enhance the quality of visitor experiences while promoting sustainability.

The technological foundation of Smart Cities and Smart Tourism Destinations can be structured into three main categories of technologies:

- **Internet of Things (IoT)**, which refers to a network of interconnected devices that enable real-time communication and data exchange between objects and people;
- **Big Data**, encompassing large volumes of structured and unstructured data generated by IoT infrastructure and other digital sources;

- **Smart City Platforms**, which facilitate the integration, management, and analysis of data, supporting data-driven decision-making and the delivery of intelligent services in urban environments.

Within the context of Smart Tourism, these technological pillars play a critical role in enabling the development of data-driven, adaptive, and sustainable tourism ecosystems. In particular, their integration allows destinations such as Vlora to enhance tourist experiences, optimise resource management, and support the principles of the Blue Economy through real-time monitoring and informed governance.

3.2 Smart Tourism within the Blue Economy Framework

The Blue Economy framework promotes sustainable economic activities in marine and coastal environments, emphasising the balance between economic growth, environmental protection, and social inclusion. Tourism is recognised as a central pillar of the Blue Economy, particularly in coastal regions where it generates significant economic value.

Academic studies highlight that Smart Tourism can act as an enabler of Blue Economy objectives by improving resource efficiency and reducing environmental impacts. IoT-based monitoring systems allow for the real-time assessment of coastal ecosystems, supporting evidence-based policy-making and sustainable tourism planning.

In this context, the integration of Smart Tourism and Blue Economy principles is seen as a strategic opportunity for coastal cities. By leveraging IoT technologies, destinations can enhance competitiveness while preserving natural and cultural assets. The literature suggests that such integration requires coordinated policies, investment in digital infrastructure, and capacity-building among local stakeholders.

3.3 Research Gaps and Contribution

Despite the growing body of literature on Smart Tourism and IoT, several research gaps remain. Many studies focus on technologically advanced destinations, with limited attention given to emerging coastal destinations in developing or transition economies. Additionally, there is a lack of context-specific frameworks that integrate IoT, Smart Tourism, and Blue Economy principles.

This study contributes to the existing literature by addressing these gaps through a conceptual analysis tailored to the coastal city of Vlora. By contextualising IoT applications within the Blue Economy framework, the paper offers insights relevant to policymakers, destination managers, and researchers interested in sustainable coastal tourism development.

3.4 Rationale for a Smart Tourism Model in Vlora

Vlora, as a coastal city with significant natural, cultural, and economic resources, represents a strategic case for the application of Smart Tourism principles within the Blue Economy framework. The city's geographic position, combining marine ecosystems, beaches, port activities, and cultural heritage, creates both opportunities and challenges for sustainable tourism development.

Tourism growth in Vlora has been characterised by seasonality, congestion during peak summer months, pressure on coastal ecosystems, and uneven distribution of economic benefits. These

challenges underline the need for an integrated, technology-driven approach that enhances visitor experience while supporting environmental sustainability and efficient destination management.

The proposed IoT-based Smart Tourism model aims to address these challenges by leveraging digital infrastructure, real-time data, and stakeholder collaboration. This model aligns with international best practices in Smart Tourism Destinations while being adapted to the local socio-economic and environmental context of Vlora.

4. Proposed IoT-Based Smart Tourism Model

4.1 Rationale for a Smart Tourism Model in Vlora

Vlora represents a strategically significant case for the application of Smart Tourism principles within the Blue Economy framework, due to its rich combination of coastal ecosystems, cultural heritage, and economic potential. However, the rapid expansion of tourism in recent years has generated a series of structural challenges, including pronounced seasonality, congestion during peak periods, environmental degradation, and imbalanced distribution of economic benefits. These challenges are widely documented in studies on sustainable coastal tourism and emerging destinations [2], [4].

Such dynamics necessitate the adoption of an integrated, technology-driven approach capable of enhancing destination management while preserving environmental sustainability. In this context, the development of an IoT-based Smart Tourism model represents a viable and forward-looking solution. IoT technologies enable real-time data collection and monitoring, supporting informed decision-making and adaptive management strategies [10], [11]. By leveraging digital infrastructure and stakeholder coordination, the proposed model seeks to optimise resource utilisation, improve visitor experience, and support sustainable policy-making, in line with Blue Economy principles [1], [3].

4.2 Core Components of the Conceptual Model

The proposed conceptual framework is structured around four interdependent components: (i) technological infrastructure, (ii) data management and analytics, (iii) smart services and applications, and (iv) governance and sustainability outcomes. These components operate as an integrated system, enabling continuous data exchange and feedback loops across the tourism ecosystem.

This layered approach is consistent with existing Smart Tourism and Smart City frameworks, which emphasise the importance of integrating technological, organisational, and governance dimensions [17]. The technological infrastructure facilitates data acquisition, while the data management layer transforms raw data into actionable insights. The application layer ensures the delivery of user-oriented services, and governance mechanisms align technological functionalities with sustainability and policy objectives. The interaction among these components enables the development of an adaptive, data-driven tourism ecosystem.

4.3 IoT Infrastructure Layer

The IoT infrastructure layer constitutes the foundational element of the proposed model, enabling the systematic collection of real-time data across both natural and built environments.

This layer comprises interconnected sensors, smart devices, and communication networks deployed throughout the tourism landscape of Vlora.

In coastal and marine environments, IoT sensors enable continuous monitoring of key environmental indicators, including water quality, sea temperature, pollution levels, and meteorological conditions. Such monitoring is essential for supporting environmental protection and ensuring compliance with Blue Economy objectives [5], [6]. In urban and tourism-related settings, IoT applications include smart parking systems, crowd-monitoring technologies, energy management systems, and interactive digital interfaces.

These technologies enable efficient resource management and enhance operational performance, while also contributing to improved tourist experiences through real-time information and services [10]. Furthermore, continuous data collection provides a robust foundation for strategic planning and long-term sustainability.

4.4 Data Processing Layer (Cloud, Big Data, and Artificial Intelligence)

The data processing layer plays a critical role in transforming large volumes of heterogeneous data into meaningful and actionable knowledge. Data collected through IoT infrastructure are transmitted to cloud-based platforms, where they are processed, stored, and analysed in real time.

The integration of Big Data analytics and Artificial Intelligence significantly enhances the analytical capabilities of the system. Advanced data-driven techniques enable predictive modelling of tourist flows, optimisation of resource allocation, and early detection of environmental risks. For example, AI-based systems can forecast demand patterns and identify anomalies in environmental conditions, supporting proactive management strategies [10], [15].

This approach reflects broader trends in Smart Tourism and digital transformation, where data-driven decision-making is increasingly central to destination competitiveness and sustainability [17]. Consequently, the data layer enables a shift from reactive to anticipatory governance in tourism management.

4.5 Application Layer (Smart Services)

The application layer operationalises the functionalities of the system by delivering user-centric services to tourists, businesses, and public institutions. It represents the interface through which stakeholders interact with the Smart Tourism ecosystem.

A dedicated mobile application, such as “Smart Visit Vlora”, can provide real-time access to information on tourist attractions, environmental conditions, and service availability. In addition, it can support digital booking and payment systems, personalised recommendations, and safety notifications. These functionalities contribute to enhancing tourist satisfaction and overall experience, which is a key objective of Smart Tourism initiatives [10].

At the institutional level, a digital dashboard can support destination management authorities by providing real-time monitoring, data visualisation, and analytical reporting tools. This facilitates evidence-based decision-making and improves governance efficiency. Such platforms are increasingly recognised as essential components of Smart Tourism ecosystems [17].

4.6 Impact on the Blue Economy

The implementation of the proposed IoT-based Smart Tourism model has significant implications for the advancement of the Blue Economy in Vlora. By integrating digital technologies with sustainability-oriented governance, the model contributes to achieving economic, environmental, and social objectives.

From an economic perspective, the model promotes innovation and supports the development of new business models and employment opportunities within the tourism sector [14]. From an environmental standpoint, continuous monitoring enabled by IoT technologies enhances the protection and sustainable management of marine and coastal ecosystems [5], [6]. Additionally, the model contributes to improving service quality and accessibility, supporting more inclusive and balanced tourism development.

Overall, the integration of Smart Tourism and Blue Economy principles represents a strategic pathway for coastal destinations seeking to enhance competitiveness while ensuring long-term sustainability [1], [15]. In this context, Vlora can serve as a pilot case for the implementation of IoT-enabled Smart Tourism in emerging coastal destinations.

Fig1. IoT-based smart management Scenario in Vlora during peak toutism season

6. Benefits and Challenges of IoT Implementation in Vlora

The implementation of Internet of Things (IoT) technologies in Vlora presents significant opportunities for enhancing tourism development, while also introducing a number of challenges that must be carefully addressed. However, despite these advantages, the implementation of IoT in emerging destinations such as Vlora remains constrained by financial, technical, and institutional limitations.

6.1 Key Benefits

- Improvement in the quality and efficiency of tourism services through real-time data and smart applications;
- Promotion of year-round tourism, reducing seasonality and supporting more balanced economic activity;
- Protection and monitoring of the marine environment through continuous environmental data collection;
- Increased competitiveness of Vlora as a Smart Tourism Destination in the regional and international market.

6.2 Key Challenges

- High initial investment costs associated with the deployment of IoT infrastructure;
- Limited digital infrastructure in certain areas, particularly in peripheral or less-developed zones;
- The need for capacity building, including staff training and public awareness regarding the use and benefits of smart technologies.

The following table summarises key IoT sensors and their applications in the Blue Economy and Smart Tourism:

Table 1. IoT Sensors and their Applications in the Blue Economy and Smart Tourism

Sensor Type	***Objective***	***Applications in the Blue Economy a Smart Tourism***
Temperature Sensors	Measure thern energy	Monitoring sea water temperature; coas spa and pool management; cooli systems in marinas and hotels
Proximity Sensors	Detect presence	Tourist flow management on beach presence detection in ports and marin security systems
Pressure Sensors	Detect pressu changes	Monitoring underwater pipelines; coas water supply systems; mari infrastructure maintenance
Water Quality Sensors	Monitor pH, pollutan	Swimming water quality control; mar pollution monitoring; ecosyste protection
Chemical/Gas Sensors	Detect chemi composition	Pollution monitoring in ports; safety tourist vessels; emission control

Smoke Sensors	Detect smoke/fire	Safety in hotels, ships, marinas, and por
Infrared Sensors	Detect environmen conditions	Health monitoring; temperature control tourism areas
Level Sensors	Measure liquid levels	Monitoring water levels in ports a marinas; flood prevention
Image Sensors	Capture images/video	Beach safety; maritime traffic monitorin underwater surveillance
Motion Sensors	Detect movement	Security; smart lighting and ener management
Accelerometers	Measure acceleration	Monitoring vessels; water sports; an theft systems
Gyroscopic Sensors	Measure angu velocity	Navigation for boats, yachts, and drones
Humidity Sensors	Measure humidity	Climate control in hotels; equipme preservation
Optical Sensors	Measure light	Solar energy management; environmen monitoring
GPS Sensors	Determine location	Marine navigation; vessel trackir activity management

7. Conclusions

The findings demonstrate that IoT technologies can significantly enhance tourism management, visitor experience, and environmental sustainability. For Vlora, adopting Smart Tourism principles represents a strategic opportunity to address challenges related to seasonality and environmental pressure.

Successful implementation requires not only technological infrastructure but also strong governance, stakeholder collaboration, and policy alignment. Future research should focus on empirical validation and comparative analysis across coastal destinations.

Limitations and Future Research

Despite its contributions, this study has certain limitations. The conceptual framework proposed has not been empirically tested through field data or pilot projects in Vlora. Future research should focus on:

- Empirical validation of the proposed model
- Cost–benefit analysis of IoT investments in coastal tourism
- Visitor acceptance and behavioural impacts of smart tourism services
- Comparative studies between different coastal destinations in the Adriatic–Ionian region

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COMPOSITE STEEL-CONCRETE STRUCTURES: STRUCTURAL SYNERGY, ARCHITECTURAL EFFICIENCY, AND COST OPTIMIZATION - EVIDENCE FROM ALBANIAN PRACTICE

Enio Deneko

Department of Mechanics of Structures
Polytechnic University of Tirana, Albania

Corresponding author: e.deneko@umb.edu.al

Abstract

Composite steel-concrete construction combines concrete's compressive capacity with the tensile capacity and ductility of structural steel into a single synergic structural system. Five Albanian case studies, spanning office towers, complexes for mixed usage, and long span industrial structures in Tirana, Durrës, and Shkodër, are documented and benchmarked against a reference RC frame designed to factored gravity and seismic loads to equal levels. Structural performance indicators, mid-span deflections, inter-story drift ratios to EN 1998-1 ductility class high limits, floor self weights, and embodied carbon are all converted to common parameter sets and compared in three systematic series. The cost model for spans up to 20 m showed that, in direct construction cost terms, a composite structure is 10-15 % less expensive than an equivalent RC structure and reduces programme duration on average by 37% over a twelve-story building. An environmental study reveals embodied carbon savings of 22-28%. These results are used collectively to demonstrate, as a matter of common sense, that composite construction is, under the seismic hazard specified in the Albanian National Annex to Eurocode 8, a cost-effective, seismically-competent, and structurally efficient structural system for the Albanian built environment.

Keywords

Composite structures; EC4; Seismic performance; Cost optimisation; Embodied carbon

1. Introduction

Composite steel-concrete structural systems have competed with monolithic RC for about 40 years, and in the mid-rise and high-rise fields of today’s earthquake-prone markets, it has now become the default way to build. Despite the higher strength-to-weight ratio composite makes possible, the mechanics of composite (concrete in compression, steel in tension, and headed shear studs couple the two materials into a single cross-section), are simple, and the result of this coupling, encased sections, concrete-filled tubes, profiled-deck composite beams, often give floor depths 20–35% shallower than RC for the same span and load (CEN, 2004a; Johnson, 2004). This directly translates to fewer external cladding panels, shorter mechanical runs, and extra floor space in multi-story frames (Nethercot, 2003).

Table 1. Comparative structural parameters: reinforced concrete, pure steel, composite steel-concrete systems

Parameter	Reinforced Concrete	Structural Steel	Composite Steel-Concrete
Typical span (m)	5 – 8	10 – 18	8 – 20
Self-weight (kN/m²)	5.0 – 7.5	0.8 – 1.5	2.5 – 4.0
Floor depth (mm)	500 – 700	350 – 550	280 – 430
Construction speed	Slow	Fast	Very Fast
Fire resistance	Inherent	Requires protection	Partially inherent
Seismic performance (DCH)	Ductile	Highly ductile	Highly ductile
Acoustic insulation	Excellent	Poor	Good
Adaptability / future mods	Low	High	High

Albania is not a friendly seismic environment. Peak ground accelerations reach 0.25g in Tirana and 0.30g in Durres; the Albanian National Annex to EN 1998-1 has a long-time-period corner TD = 2.50 s for Soil Type C, representing the very soft Adriatic coast geology, much higher than the EC8 default 2.0 s (CEN, 2004b). The 26 November 2019 Durres earthquake (Mw 6.4, epicentre near Thumanë, ~35 km north-west of Tirana) caused 51 casualties and brought to public notice the fragility of pre-1990 non-ductile RC frames (Meksi & Bregasi, 2021; Elnashai & Di Sarno, 2008). Interest in ductility-class-high composite solutions then intensified both in practice and in the code debate.

What is absent from the recent literature is field data normalized to the Albanian reality. The Eurocodes (EN 1994-1-1, EN 1998-1) offer the analytical model, but published case studies that associate the actual composite structural response to the Albanian seismic risk, local construction-market costs, and 2019 earthquake-related code modifications are few (CEN, 2004a, 2004b). This study attempts to satisfy this need. In the paper, we share structural, economic, and ecological indicators of five Albanian composite buildings completed in the period 2017-2023, and benchmark them against a reinforced concrete (RC) case-study reference structure, engineered to the same loadings. It is an analysis based on a commercial FEA package (SAP2000), a site-cost database, and a bill of quantities decomposition of the construction prices. The 2019 Durrës earthquake is also relevant to this context: it changed the Albanian structural engineers' perspective on connection ductility in composite moment frames, and our Case CS-AL-02, designed in the immediate aftermath of the event, captures these modifications directly.

2. Principles of Structural Synergy in Composite Systems

2.1 Composite Beam Behaviour

When the concrete slab is connected to the steel beam by headed studs, what were previously separate bending elements now act together as a composite T-section with a much higher second moment of area. EC4 §5.4.1.2 states that the effective width B_{eff} of the slab for elastic analysis is based on the distance between zero bending moment points in a structure (CEN, 2004a). Full shear

transfer between the steel and concrete is not always required: the partial interaction $\eta = n/n_f$, where n is the number of studs used, and n_f is the number needed for full interaction, can take on a value between 0 and 1 (Faella et al., 2002; Gattesco, 1999; Lam & El-Lobody, 2005; Nie & Cai, 2003.) By adhering to code limits, the designer can optimise the number and position of studs for minimal cost (Oehlers & Bradford, 1995).

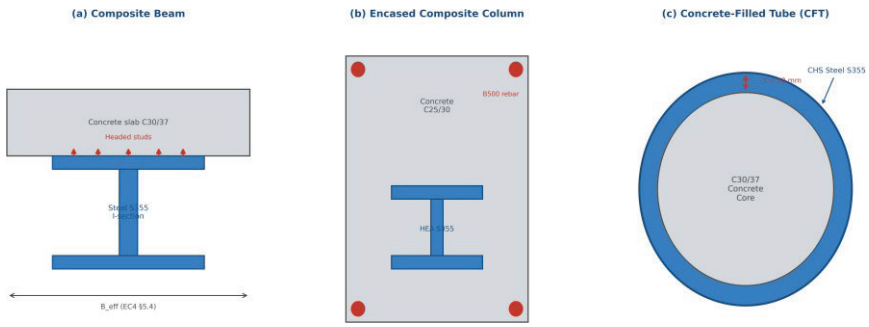

Figure 1. Composite section typologies: (a) composite beam with headed stud shear connectors; (b) concrete-encased composite column (CES); (c) concrete-filled circular steel tube (CFST/CFT).

Table 2. Key material properties used in structural design and analysis in accordance with EC2, EC3, and EC4

Material / Grade	f_y or f_{ck} (MPa)	E (GPa)	ρ (kg/m³)	Standard
Concrete C25/30	25 (char.)	31.0	2 400	EN 206 / EC2
Concrete C30/37	30 (char.)	32.8	2 400	EN 206 / EC2
Reinforcement B500	500 (yield)	200.0	7 850	EN 10080
Steel S235	235 (yield)	210.0	7 850	EN 10025 / EC3
Steel S355	355 (yield)	210.0	7 850	EN 10025 / EC3
Headed stud Ø19	450 (tensile)	210.0	7 850	EN 13918 / EC4
Steel S460	460 (yield)	210.0	7 850	EN 10025 / EC3

Using the EC4 6.2.1.2 plastic model, for many span/depth ratios, the neutral axis will lie within the concrete slab, so the steel is working in near-pure tension. The lever arm is therefore larger than in the steel-only case, and the $M_{pl,Rd}$ increases by between 50% and 90% according to geometry, a variation which was repeatedly confirmed in the test data (Johnson, 2004). Even though the propped and unpropped sequences give different elastic stress histories under self-weight, this did not influence the plastic resistance, provided the section satisfied the EC4 rotation-capacity criterion (CEN, 2004a).

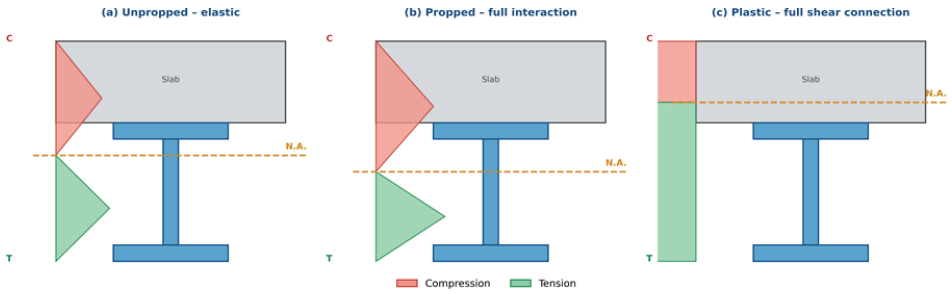

Figure 2. Stress resultant distributions in composite beams under positive bending: (a) elastic — unpropped construction; (b) elastic — propped (full interaction); (c) full plastic, complete shear connection (EC4 §6.2.1.2). Compression above neutral axis shown in red; tension below in green.

2.2 Composite Columns

Two common types of composite columns are those made with concrete encased in steel (CES) and those made by filling a steel tube with concrete (CFST). For CFST columns that are loaded axially, the tube used to create the column prevents the core concrete from expanding laterally after its lateral expansion exceeds that of the tube wall. The procedure outlined in EC4 §6.7.3.2(6) accounts for this effect with a confinement factor η_c applied to f_{cd}, resulting in an increase in strength of the core concrete of approximately 10–40% depending on the D/t and the steel grade used (Leon & Hajjar, 2008; Shanmugam & Lakshmi, 2001). The cross-sectional resistance for composite columns can be calculated using the equation $N_{pl,Rd} = A_a f_{yd} + A_c f_{cd} + Asfsd$, where A_a is equal to the effective gross cross-sectional area and forms the largest component of the overall resistance, and $\delta = A_a f_{yd}/N_{pl,Rd}$ must be between 0.20 and 0.90 per EC4 §6.7.3.2 $\in [0.20, 0.90]$ (CEN, 2004a; Hanswille, 2008).

For the design of buildings to resist earthquake loads, §7.6.2(1) of the Eurocode 8 specifies that the maximum allowable normalised axial force $\nu_d = N_{Ed}/N_{pl,Rd}$ is equal to 0.30 for dissipative moment-resisting frames and that close spacing of transverse reinforcement at critical sections is necessary to ensure a rotation capacity $\theta_p \geq 35$ mrad (EC8 Table 7.3). These two criteria were the driving force behind the detailing of the columns for CS-AL-01 and CS-AL-03.

3. Architectural Efficiency

Floor depth comparison between composite and RC is not a little extra work; it is 180–330 mm per story in all Albanian office projects we studied. Using composite beams with 9 m bay spacing, a structural zone of 280–350 mm (soffit to slab top) was obtained compared with 500–680 mm using an RC alternative, achieving the same L/360 serviceability limit under variable load (EN 1990 Table A1.4, CEN, 2002). Self-weight comparisons for floors are shown in Figure 3 (Mullett, 1998).

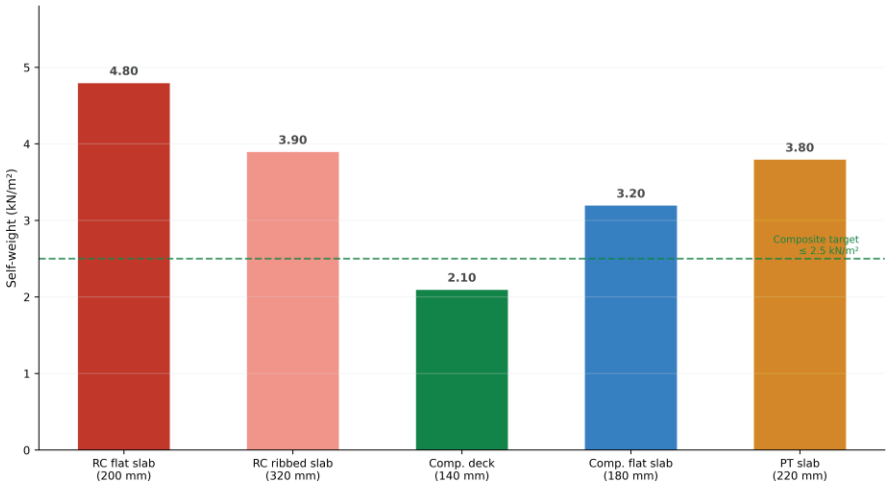

Figure 3. Floor-system self-weight comparison (kN/m²) across five slab typologies. The composite profiled-deck solution achieves 2.10 kN/m² against 4.80 kN/m² for an equivalent RC flat slab. Horizontal dashed line marks the target composite threshold of 2.5 kN/m².

For a 22-story building such as CS-AL-03 in Tirana, shaving 250 mm from each story height would come to a saving of about 680 m^2 of external cladding area. At the Albanian market rate for the unitised curtain wall (€203/m^2 at 2023 procurement), that is €138 000 back on the budget money that doesn't show up in the structural cost, only comparison, but is real on the final account.

CS-AL-05, a 15-story hotel on New Ring in Tirana, used a composite flat-slab (steel deck with shallow downstand beams through the raised access floor void) to achieve a 2.90 m clear ceiling in a 3.40 m gross story. For the imposed load involved, an RC equivalent flat slab would have needed 3.60 m. The shallower zone also reduced HVAC duct runs by an estimated 12%; however, full MEP cost modelling was not part of this research.

4. Cost Optimisation

4.1 Direct Construction Cost

BOQ data is available from the contractor tender submissions from all five buildings for the period 2017–2023. Rates were verified to the INSTAT 2023 construction index, and converted into normalized 2023 euros; since tendered rates were market-indexed at procurement, no inflation correction was then made. The single largest cost differential between RC and composite is formwork. In RC, the soffit formwork and propping costs are in the range of €35–50/m^2 of gross floor area; in composite, the profiled steel deck acts as a permanent shuttering, and this item drops to a range of about €8–15/m^2 for edge and facade details. Labour follows the same trend. The detailed cost comparison is shown in Table 4, Figure 4, and contributed to the overall programme savings discussed in Section 4.2. The detailed cost comparison is shown in Table 3 and Figure 4. The shaded amber band marks the Albanian typical bay range 8–11 m, where the composite advantage is most pronounced. Data derived from the five Albanian case studies and parametric extrapolation.

Table 3. Direct construction cost breakdown by structural system (€/m² GFA; Albanian market survey, 2017–2023). Highlighted rows represent total direct cost.

Cost Item	RC System (€/m²)	Steel System (€/m²)	Composite (€/m²)	Composite Saving (%)
Structural frame	145 – 170	195 – 230	155 – 185	-5 to +7 vs RC
Floor system	55 – 70	80 – 105	50 – 65	8 – 10 vs RC
Foundations	80 – 110	50 – 70	55 – 75	22 – 32 vs RC
Formwork / shoring	35 – 50	0	8 – 15	55 – 70 vs RC
Fire protection	10 – 20	40 – 65	15 – 30	-10 vs RC; +50 vs steel
Total direct cost	325 – 420	365 – 470	283 – 370	10 – 15 vs RC

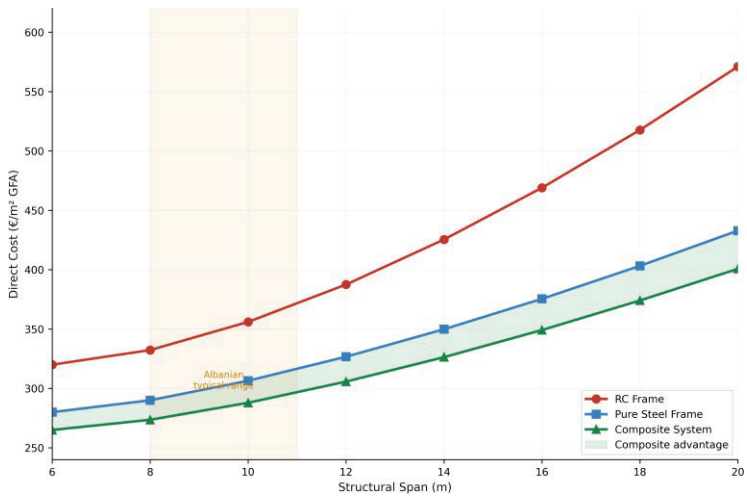

Figure 4. Direct construction cost (€/m² GFA) versus structural span for RC, pure steel, and composite systems.

On a per-story basis, composite frames are about 30–40% lighter than RC, primarily as profiled-deck floor systems are around 2.1kN/m^2 compared to 4.8–5.0kN/m2 for a comparable RC flat slab. This translates to smaller piles and pile caps. In the five case studies, the cost of a piled foundation was €55–75/m^2 (Hicks & Lawson, 2003), for composite against €80–110/m^2 for RC, a saving of 22–32%, which goes a long way toward eroding the structural steel premium (see Table 3).

4.2 Programme and Financial Savings

The programme benefit is simple to explain: while the operating system in the foundations is being poured, the steelwork is done off-site. RC cannot do this, do this because each floor has to wait until the floors below are cured. The results for a twelve-story building, as shown by Table 4 and Figure 5, are 43 weeks of overall (composite) vs. 68 for RC (a 37% reduction). A conservative estimate indicates most of this saving is because the structural frame does not have to go through a series of formwork-and-curing cycles (30 weeks of RC saved to 14). Using Figure 5 to analyze the schedule by phase, for a twelve-story building, the total schedule distance decreases by almost 37% (68 to 43); this is predominantly due to the elimination of formwork-and-curing cycles. This

37% saving is based on the observed duration of the five project schedules; atypical connection geometries or constrained site access give a smaller gain (Lawson et al., 2010).

Table 4. Construction schedule comparison: phase durations (weeks) for a representative twelve-storey building: RC, structural steel, and composite systems

Phase	RC System (weeks)	Steel System (weeks)	Composite (weeks)	Composite Saving vs RC
Foundations	8	5	5	38%
Structural frame	30	12	14	53%
Floor systems	14	10	8	43%
Enclosure & finishes	16	16	16	0%
Total	68	43	43	37%

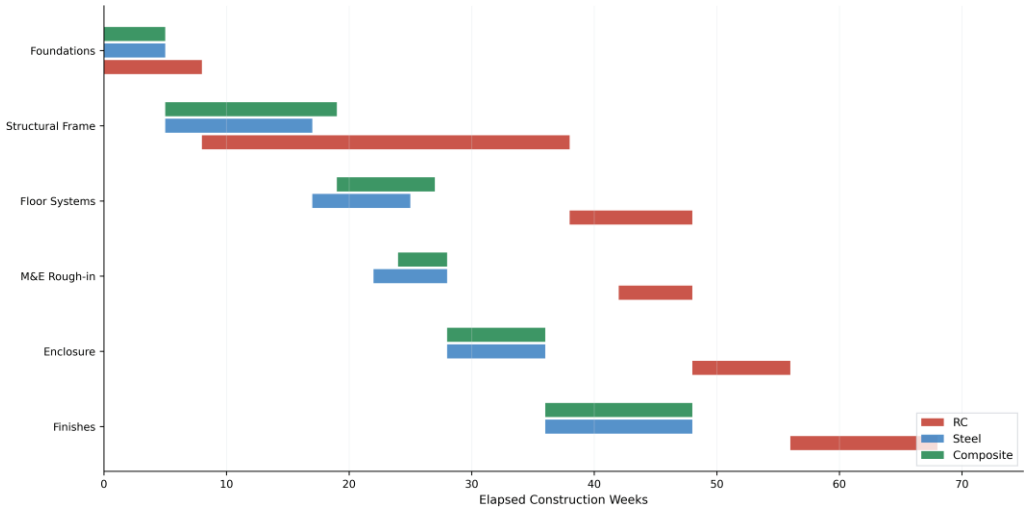

Figure 5. Construction phase schedule comparison for a twelve-storey building (elapsed weeks). Red bars: RC; blue bars: pure (structural) steel; green bars: composite. The composite programme matches the steel programme and leads the RC programme by 25 weeks.

With construction-finance costs in Albania of about 8.5% pa (i.e., 25 weeks of saved programme time) and a € 1.200/m^2 project, 25 weeks of programme saved time is worth around € 18/m^2. This is in the same order as the net steel material premium over RC. If you add this to the direct construction savings from Table 4, the economic argument for composite for medium-to-large projects in Albania is compelling.

5. Albanian Case Studies

5.1 Overview

The construction boom across Tirana and along the Adriatic coast, from 2010 to 2023, generated a valuable cache of recently completed composite buildings. For this study, five from this cache are listed in Table 5, which range from a multi-story Tirana office block to an 18× 24 m only one-story industrial shed in Shkodër, covering the main common composite typologies: MRF

(Moment Resisting Frames), composite column – RC core hybrid, outrigger frame, long-span truss, and composite flat slab. All were designed under EN 1994-1-1, EN 1993-1-1, and the Albanian NA to EN 1998-1, with a_g = 0.25g in Tirana and 0.30g in Durrës, Soil Type C.

Table 5. Summary of Albanian composite building case studies (CS-AL-01 to CS-AL-05) used in this investigation

Case	Location	Function	Floors	Span (m)	System	Seismic Zone	Year
CS-AL-01	Tirana (CBD)	Office tower	18	9.0 × 9.0	Comp. frame + slab	0.25g – EC8/ALB	2017
CS-AL-02	Durrës	Mixed-use complex	12	8.0 × 10.0	Comp. col. + RC core	0.30g – EC8/ALB	2019
CS-AL-03	Tirana (Blloku)	Commercial-res.	22	10.5 × 10.5	Comp. outrigger	0.25g – EC8/ALB	2021
CS-AL-04	Shkodër	Industrial shed	1	18.0 × 24.0	Comp. truss roof	0.20g – EC8/ALB	2018
CS-AL-05	Tirana (New Ring)	Hotel	15	8.5 × 9.5	Comp. flat slab	0.25g – EC8/ALB	2023

5.2 Seismic Response

Modelling used nonlinear frame elements with distributed plasticity. Full composite behavior was modelled using transformed-section properties with a full shear connection assumption. Steel had a bilinear elastoplastic law (f_y =355 MPa), with concrete valid EC2 §3.1.5 stress–strain law (f_{ck} =30–40 MPa). Damping was 5% of critical. Plastic hinges were located at member ends, following EC8 §7.5 and FEMA-356 (AISC, 2022). Mesh sensitivity was evaluated by comparing a model with two and four integration points; the difference in maximum base shear was less than 1.5 % for all models (Spacone & El-Tawil, 2004).

Table 6. Serviceability deflection and maximum inter-storey drift ratio for all Albanian case studies and the RC reference frame. EC8 DCH damage-limitation limit: $\theta \leq 0.50\%$.

Case ID	System	L/d Ratio	Midspan δ (mm)	θ_{max} (%)	EC8 Limit (%)	Status
CS-AL-01	Comp. frame	22	18.2	0.41	0.50	OK
CS-AL-02	Comp. col. + RC core	20	22.7	0.45	0.50	OK
CS-AL-03	Comp. outrigger	24	14.9	0.38	0.50	OK
CS-AL-04	Comp. truss	23	31.5	0.18	0.50	OK
CS-AL-05	Comp. flat slab	21	20.1	0.43	0.50	OK
RC Ref.	RC frame (ref.)	15	28.4	0.47	0.50	OK

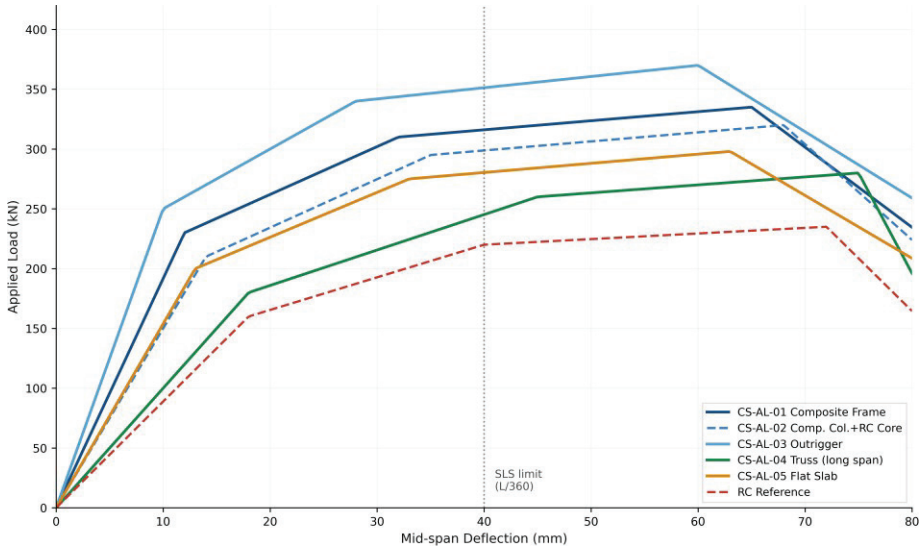

Figure 6. Normalised load–deflection curves from nonlinear pushover analyses for the five Albanian composite case studies and the RC reference frame.

Confirmatory pushovers showed beam-end hinge formation at ultimate lateral load, confirming compliance with the EC8 requirement of strong-column/weak-beam hinging for DCH composite MRF. The design teams selected q=4.0, staying below the EC8 Table 7.2 upper bound of $q_0 \approx 6.5$ for regular DCH frames. The overstrength ratios $\Omega = V_u/V_y$ bands of 1.35-1.62 were obtained for the five buildings, implying significant reserve over the design base shear values. The source of that reserve is via either additional beam stiffness resulting from partial-interaction composite action or through improved confinement within the CFST columns, both of which contribute to keeping the onset of lateral-load yielding well above serviceability-level displacements. The results are consistent with the behaviour demonstrated in pushover tests of full-scale DCH composite MRF as reported by Elghazouli et al. (2008).

In Figure 6 are shown the load–deflection curves obtained from the nonlinear pushover analyses for all five Albanian composite case studies and the RC reference frame. The vertical dashed line indicates the SLS deflection limit L/360. All of the composite cases can carry increasingly larger loads than that of the RC reference at equal mid-span deflections because of the elevated plastic moment capacity $M_{pl,Rd}$ that is available once the neutral axis shifts into the concrete slab, where all of the steel section's tensile capacity can be fully engaged. The initial steepness is due to the higher second moment of area of the composite cross-section. The more gradual post-yield plateau with the monolithic section is due to distributed plasticity buildup rather than the sudden development of hinges (in accordance with EC8 DCH ductility).

Maximum inter-story drift ratio as well as mid-span deflection δ for all the Albanian case studies and the RC reference frame are also given in figure 7: the EC8 DCH damage-limitation limit of θ = 0.50% (dashed-red line) is reached by the RC frame, whereas the floor drift for the composite cases is widely ranged from 0.18 % (CS-AL-04, long-span truss) to 0.45% (CS-AL-02, composite column + RC core). represents the in-plane lateral stiffness contribution from the different systems. Without the hybrid column–core system, the truss system obtains a large portion of its in-plane stiffness from deep chord members, while the hybrid column–core system resists in-plane lateral motion only through the core, thereby increasing the flexible frame contribution to drift. For all systems, the composite alternatives are well below the code limit, while the reference

RC is only 0.47%, leaving little margin for variation in material properties or modeling assumptions.

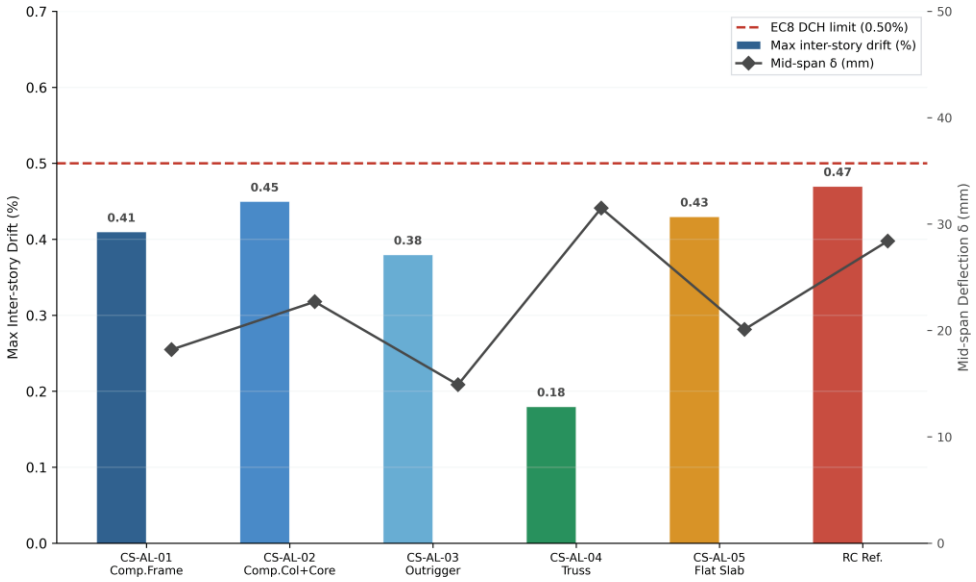

Figure 7. Maximum inter-story drift ratio (%, left axis, coloured bars) and mid-span deflection δ (mm, right axis, diamond markers) for all Albanian case studies and the RC reference frame.

5.3 Lessons from the 2019 Durrës Earthquake

The Durrës earthquake in 2019 resulted in 51 fatalities and caused approximately 3700 of the surveyed dwellings to become uninhabitable. All of the observed structural failures occurred in old RC frames, erected before 1990, that were non-ductile; soft-story collapses; inadequate lap splices; stirrups spaced further than necessary to contain the core concrete. No composite structures suffered any structural damage (Ormeni et al., 2021). The event nevertheless led observers to scrutinise connection ductility more closely. Rotation capacity of end-plate and flush-plate beam-to-column connections was not always checked explicitly; its importance was brought to light by Durrës, (Formisano et al., 2015; Braconi et al., 2008) and it was then included as an explicit design requirement for moment-frame CSs in Albania (Bursi et al., 2011).

CS-AL-02 in Durrës immediately follows the observed earthquake and contains elaborated end-plate fittings with Class 1 class section classification. Its load-deflection response stays stable throughout (Figure 6): the load remains essentially constant; the RC reference drastically reduces its stiffness after 45 mm of mid-span displacement, whereas CS-AL-02 does not.

6. Comparative Analysis and Discussion

When considered cumulatively from Tables 1–7 and Figures 1–8, the three observations stand out: (1) using the composite structure permitted L/d=28 for the long span truss while remaining within drift limits, whereas the equivalent RC reference needs a minimum of L/d=15 with the cost implications of thicker floors due to increased self-weight; (2) direct construction costs are 10–15% less and on-site programmes 37% shorter using the composite structure, driven mainly by the elimination of formwork and curing cycles while the steel frame arrives from the fabricator as the

foundations are still being cast; and (3) embodied carbon emissions are 22–28% less for the composite structure.

Table 7. Embodied carbon by structural system component (kg CO_2e/m^2 GFA). RC frame (231 kg CO_2e/m^2) used as baseline. Composite systems achieve 22–28% reductions.

Structural System	Steel (kg CO_2e/m^2)	Concrete (kg CO_2e/m^2)	Other (kg CO_2e/m^2)	Total (kg CO_2e/m^2)	Relative to RC (%)
RC frame (baseline)	14	195	22	231	0 (baseline)
Pure steel frame	145	18	25	188	−19%
Composite frame	68	95	18	181	−22%
Composite outrigger	75	88	16	179	−23%
Composite flat slab	62	102	17	181	−22%
Comp. truss (long span)	81	72	14	167	−28%

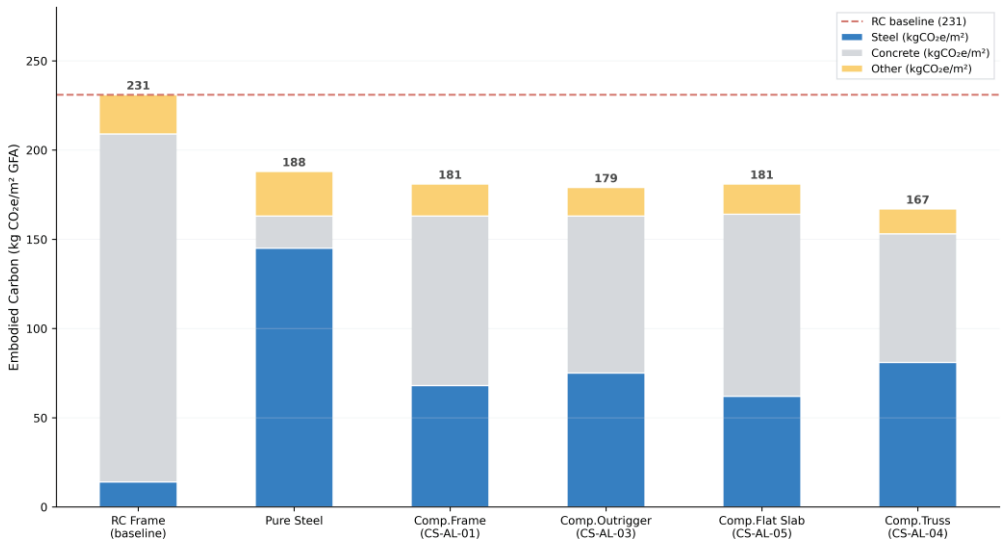

Figure 8.. Embodied carbon stacked bar chart by material component (kg CO_2e/m^2 GFA) for all structural systems considered. The red dashed line marks the RC baseline at 231 kg CO_2e/m^2. Composite truss (CS-AL-04) achieves the lowest total at 167 kg CO_2e/m^2, a 28% reduction.

The EU average BOF (basic-oxygen-furnace) structural steel emits an average of 1.55 kg CO2 e/kg steel, which is high in comparison with concrete. However, composite systems include considerably less steel than a pure steel frame, and this mass saving more than compensates for the higher unit emission factor, producing a composite performance that surpasses that of concrete (see Table 7 and Figure 8): composites outperform the RC baseline by between 22-28%. The long-span truss (CS-AL-04, Shkodër) is the strongest performer, at 167 kg CO_2e/m^2, 24% below RC, since wide profiled-deck bays remove the need for a heavy flat slab and the secondary RC beams that a typical floor would require (Sansom & Meijer, 2012).

There are three issues to be candid about. The first is that the life cycle energy performance is not considered; the thermal mass difference from the use of a composite versus a reinforced concrete floor truly impacts heating and cooling demands, and this is an environmental benefit that

has been omitted here. The second is the omission of maintenance expenses for corrosion protection on all exposed steel and the periodical reapplication of intumescent coating. Third is that the five-case data set is modeled to consider the Albanian construction market over one decade; the pricing has not been converted into another market, given difference in steel fabricating and seismic hazard scenarios. A life cycle costing study based on Albanian code and climate conditions appears to be a logical subsequent analysis (Hicks & Lawson, 2003).

To test how sensitive the cost conclusion is to steel price fluctuation, we varied steel unit cost ±20% around the survey midpoint and ran the comparison at bay spans from 8 to 20 m. Composite remained cheaper than RC at every span above 9 m; at the worst combination (highest steel price, 9 m span) the margin narrowed to about 4% but did not disappear. The advantage is not a product of the particular price window covered by the dataset. Figure 9 places all five case studies on a single cost–carbon–drift plot and makes the overall picture clear. X-axis: direct construction cost (€/m² GFA); Y-axis: embodied carbon (kg CO_2e/m² GFA); bubble area proportional to maximum inter-storey drift ratio θ (%). Composite systems occupy the lower-left region of the plot, reflecting simultaneous reductions in cost and environmental impact relative to the RC reference. The long-span truss (CS-AL-04) achieves the lowest carbon and cost, while maintaining the smallest drift of all case (Gjata et al., 2019).

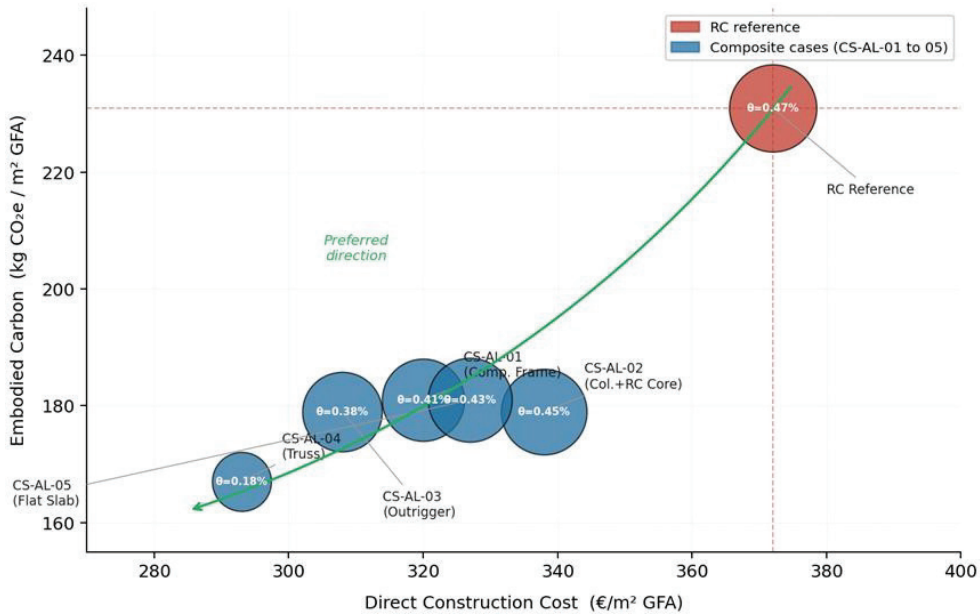

Figure 9. Multi-objective performance comparison of structural systems.

7. Conclusions

Six conclusions follow from the structural, economic, and environmental data:

1. All five composite buildings meet EN 1998,1 DCH inter-story drift limits (θ ≤ 0.50%) using the Albanian National Annex parameters (a_g = 0.25–0.30g, Soil C, TC = 0.60s, TD = 2.50s) with the maximum drift ratios reported between 0.18–0.45%, all comfortably meeting code for all but the most severe configuration, and with full code meeting capacity.

2. Structural floor depths will be 20–35% less than those of equivalent span and loading RC alternatives, giving at least clear architectural and building-services co-ordination benefits in all five case studies, with a recorded net 0.20 m floor-to-ceiling height gain for CS-AL-05.
3. Direct construction costs for composite systems over the 8–12 m bay range normally used in Albanian commercial construction are 10–15% lower. Cost savings can be attributed to formwork removal, optimized foundation loads (22–32% lower foundation costs), and reductions in architectural cladding areas.
4. The overall site programmes are shortened by about 37 % compared to RC equivalent (43 versus 68 weeks for a twelve-story building). This provides a financial time-value saving of approximately €18/m2, assuming an 8.5% financing rate.
5. Embodied-carbon emissions are 22–28% lower than the RC baseline across all composite configurations analysed, with the long-span composite truss achieving the maximum reduction (167 kg CO_2e/m^2) owing to the low mass of the profiled-deck floor system.
6. Post-2019-Durrës earthquake practice has embedded explicit rotation-capacity verification for composite connections into Albanian design workflows, reinforcing the relevance of connection ductility as a critical design parameter for seismic composite frames.

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POLLUTANT RELEASE AND TRANSFER REGISTER (PRTR) IN ALBANIA: CURRENT STATUS AND ALIGNMENT WITH REGULATION (EU) 2024/1244

Enkeleda Shkurta[1], Blerina Beqaj[2]

[1] National Environmental Agency, Directorate of Data Management, Chemicals, Laboratory Analysis and Innovation, Tirana, Albania,
(ORCID: 0009-0000-2142-1486)
[2]Department of Environmental Engineering University of Tirana, Tirana, Albania
(ORCID: 0000-0002-6251-1784)

Corresponding author: enkeleda.shkurta@akm.gov.al

Abstract

The Pollutant Release and Transfer Register (PRTR) is a key tool for promoting transparency and accountability in industrial pollution control. Albania established its national PRTR framework through Decision No. 742/2015, aligned with Regulation (EC) No. 166/2006 and the UNECE PRTR Protocol. The recent adoption of Regulation (EU) 2024/1244, creating the Industrial Emissions Portal, significantly updates EU requirements and necessitates a reassessment of national PRTR systems, particularly in EU candidate countries.

This paper analyzes the current status of the Albanian PRTR and evaluates its alignment with the requirements of Regulation (EU) 2024/1244. The study employs a qualitative and comparative methodology based on legal analysis, review of reporting practices administered by the National Environmental Agency, and examination of EU guidance documents. The results show that while Albania has achieved partial alignment—notably in basic definitions, activity scope, and reporting logic—important gaps remain. These include the absence of a standardized reporting format, limited pollutant coverage, insufficient data quality assurance mechanisms, and weak integration with Industrial Emissions Directive reporting.

The paper concludes that Albania's PRTR system is at a transitional stage and requires targeted modernization to meet enhanced EU transparency and interoperability standards. Strengthening the legal and institutional framework would improve the analytical value of PRTR data, support environmental governance, and facilitate compliance within the EU accession process

Keywords

PRTR; Industrial emissions; Environmental transparency; IED; EU alignmen

1. Introduction

The right to access environmental information and transparency regarding industrial pollution constitute fundamental pillars of sound environmental governance. Pollutant Release and Transfer Registers (PRTRs) are key public instruments that support the systematic monitoring of industrial impacts on the environment, enhance the accountability of economic operators, and strengthen public trust in environmental decision-making. By providing structured, facility-level data on pollutant releases and off-site transfers, PRTRs enable authorities, stakeholders, and the general public to better understand environmental pressures and to participate more effectively in environmental governance.

At the European level, the PRTR system was initially established through Regulation (EC) No. 166/2006, which created the European Pollutant Release and Transfer Register (E-PRTR). In response to evolving policy priorities under the European Green Deal and the Zero Pollution Action Plan, this framework has recently undergone a profound reform with the adoption of Regulation (EU) 2024/1244, significantly expanding reporting requirements, improving data quality, and strengthening public accessibility. These developments reinforce the role of PRTRs as a central tool for evidence-based environmental policy and industrial emissions control.

As a candidate country for membership in the European Union, Albania has undertaken important steps to align its national environmental legislation with the EU acquis, including in the field of industrial emissions and pollutant reporting. Decision No. 742/2015 represents the core legal framework governing the operation of the national PRTR system and assigns its administration to the National Environmental Agency (NEA). While this framework has enabled the initial establishment of PRTR reporting at national level, recent changes in EU legislation, particularly the adoption of Regulation (EU) 2024/1244, necessitate a comprehensive review and update of the existing legal and institutional arrangements.

Beyond the EU context, the PRTR system is firmly rooted in international environmental law. The Protocol on Pollutant Release and Transfer Registers originates from the Aarhus Convention of 1998, which enshrined the rights of access to environmental information, public participation in decision-making, and access to justice in environmental matters. The PRTR Protocol was adopted under the auspices of the United Nations Economic Commission for Europe (UNECE) in 2003, building upon the principles of the 1992 Rio Declaration and Agenda 21, with the objective of promoting sustainable development through improved environmental monitoring and public awareness. Entering into force in October 2009, the Protocol has been ratified by 38 Parties, including the majority of European Union Member States, several non-EU countries, as well as the European Union itself. Designed as an open global instrument, the PRTR Protocol allows any United Nations Member State to accede, regardless of its status under the Aarhus Convention, thereby reinforcing its global relevance as a transparency and accountability tool.

2. Literature Review

Pollutant Release and Transfer Registers (PRTRs) are widely recognized in the academic and policy literature as governance instruments that operationalize the principles of transparency, public participation, and accountability in environmental management. Recent studies emphasize that PRTR systems function not only as technical reporting tools but also as mechanisms that influence corporate behavior, public awareness, and regulatory enforcement by making pollution data publicly accessible (Fisher et al., 2019; Mason et al., 2021). Within the broader framework of environmental governance, PRTRs are often analyzed through the lens of the "right-to-know" principle, which links access to environmental information with improved environmental outcomes and democratic legitimacy (UNECE, 2021).

From a legal perspective, PRTRs are grounded in international environmental law, particularly in instruments derived from Principle 10 of the Rio Declaration and the Aarhus Convention. Scholars underline that the PRTR Protocol represents a shift from traditional command-and-control regulation toward information-based regulation, where disclosure itself becomes a regulatory driver (Averchenkova et al., 2020; OECD, 2018). Empirical research indicates that public disclosure of emissions data can contribute to pollution reduction by increasing reputational pressure on operators and strengthening regulatory oversight (Konar & Cohen, 2017; Lorenzoni et al., 2022). These findings support the view that PRTRs are an essential complement to permitting and inspection regimes rather than a standalone policy tool.

At the European level, the legal literature highlights the evolution of PRTRs from the initial establishment of the European Pollutant Release and Transfer Register (E-PRTR) under Regulation (EC) No. 166/2006 toward a more integrated and ambitious framework aligned with the European Green Deal. The recent adoption of Regulation (EU) 2024/1244 is interpreted as a response to identified shortcomings in data completeness, sectoral coverage, and pollutant scope, as well as to the need for better interoperability with industrial emissions, chemicals, and waste legislation (European Commission, 2023; EEA, 2024). Academic commentary underscores that this reform significantly raises expectations for national PRTR systems, particularly in candidate and accession countries, by requiring higher data quality, expanded reporting obligations, and enhanced public access (Bogojević, 2024).

In the context of EU enlargement, the alignment of candidate countries with PRTR requirements has been analyzed as part of broader administrative and institutional capacity-building processes. Studies focusing on Western Balkan countries note persistent challenges related to fragmented legal frameworks, limited technical capacity, and insufficient enforcement, which can undermine the effectiveness of PRTR implementation despite formal legal transposition (Jörgens & Kolleck, 2019; UNEP, 2022). These analyses stress the importance of clearly defined institutional responsibilities, robust verification mechanisms, and sustained investment in data management systems.

Within Albania, the legal and institutional framework for PRTR reporting is anchored in a combination of primary and secondary legislation. Law No. 10 431/2011 "On Environmental Protection" establishes the general principles of environmental information, transparency, and public participation, while Law No. 10 448/2011 "On Environmental Permits" links PRTR obligations to the permitting system for industrial installations. Decision No. 742/2015 constitutes the cornerstone of the national PRTR system, defining the scope of activities, the list of pollutants, reporting thresholds, and the declarative format to be used by operators. The National Environmental Agency (NEA) is designated as the competent authority responsible for administering the register, verifying reported data, ensuring public access, and fulfilling international reporting obligations.

The existing Albanian PRTR framework reflects key elements identified in the literature as necessary for functional PRTR systems, including facility-level reporting, coverage of releases to air, water, and soil, as well as information on waste transfers. Reporting is largely focused on installations subject to type A and B environmental permits, which aligns the PRTR system with the country's industrial permitting regime. However, comparative studies suggest that such permit-based coverage may limit the comprehensiveness of pollutant inventories, particularly where diffuse sources or smaller installations fall outside reporting obligations (EEA, 2021; OECD, 2023).

Recent literature increasingly emphasizes that dynamic alignment with evolving EU PRTR legislation is essential to maintain the relevance and effectiveness of national systems. In this regard, Albania's current legal framework, while functional, is based on EU requirements that have since been substantially revised. Scholars argue that timely updating of PRTR legislation is crucial not only for formal compliance but also for ensuring that PRTR data can effectively support policy evaluation, environmental planning, and public engagement (Fiorino, 2022; European Commission, 2024). This suggests that Albania faces a critical juncture where its PRTR system must transition from initial establishment toward modernization in line with the latest EU and international standards.

3. Methodology

This study employs a **qualitative and comparative approach** to assess the alignment of Albania's Pollutant Release and Transfer Register (PRTR) framework with the requirements of Regulation (EU) 2024/1244. The analysis focuses on Decision No. 742/2015 and its annexes, which constitute the core legal basis of the national PRTR system, and compares their substantive and procedural provisions with the updated EU regulatory framework.

In addition, current PRTR reporting practices administered by the National Environmental Agency (NEA) were reviewed to identify potential gaps between legal provisions and implementation. The analysis is supported by EU guidance documents, institutional reports,

and technical materials related to environmental legal approximation in the EU accession process, ensuring consistency with prevailing EU policy and compliance expectations

4. Results

The analysis indicates that Albania has achieved **partial alignment** with the requirements of Regulation (EU) 2024/1244 (table 1). Core elements of the PRTR framework such as basic definitions, the list of regulated activities, and the overall reporting logic are largely harmonized with EU standards. These elements provide a functional foundation for PRTR implementation and demonstrate progress in legislative approximation.

However, the assessment also identifies **structural and technical gaps** that limit the effectiveness and comparability of the national PRTR system. Key shortcomings include the absence of a standardized national reporting format equivalent to Annex III of Regulation (EU) 2024/1244, the non-inclusion of newly regulated pollutants (notably per- and polyfluoroalkyl substances – PFAS), and limited coverage of diffuse emission sources. In addition, mechanisms for systematic data quality assurance, verification, and correction remain insufficiently defined in the current framework.

Furthermore, the Albanian PRTR system is **not fully integrated** with permitting and reporting obligations under the Industrial Emissions Directive (IED). This lack of integration constrains the analytical use of PRTR data, reduces interoperability with EU-level datasets, and limits the ability to perform cross-sectoral or trend-based environmental assessments.

Table 1. Main gaps identified in the Albanian PRTR framework compared to Regulation (EU) 2024/1244

Assessment Area	Status	Key Observations
Legal definitions and scope	Largely aligned	Core concepts and activity categories are consistent with EU terminology
Reporting format (Annex III equivalent)	Not aligned	No standardized national format ensuring full comparability
Pollutant coverage	Partially aligned	New EU pollutants (e.g. PFAS) not included
Diffuse sources	Not aligned	Reporting focuses mainly on permitted installations
Data quality assurance and correction	Weakly defined	Lack of formal procedures for verification and revision
Integration with IED systems	Not aligned	Limited interoperability with permitting and emissions reporting

5. Discussion

Interpret findings and compare with previous studies. Highlight theoretical and practical implications.

The findings indicate that Albania's PRTR system achieves partial alignment with EU requirements but remains largely anchored in the former E-PRTR model. While basic transparency mechanisms are in place, key elements introduced by Regulation (EU) 2024/1244 such as standardized reporting formats, expanded pollutant coverage, and data quality assurance are not yet fully addressed. This trajectory is consistent with previous studies on PRTR implementation in EU candidate countries, which highlight delays in adapting national systems to evolving EU standards. From a theoretical perspective, the results confirm that information-based regulation is effective only when transparency is supported by data comparability, reliability, and institutional integration. In practical terms, the study underscores the need for targeted legal and technical reforms to ensure that the PRTR can effectively support evidence-based policymaking and EU accession obligations.

6. Conclusion

This study contributes to the limited body of research on PRTR implementation in EU candidate countries by providing a structured analysis of Albania's legal and institutional framework in light of Regulation (EU) 2024/1244. The key contribution lies in the identification of both areas of partial compliance and critical gaps, illustrating how Albania's PRTR system reflects the legacy E-PRTR model while facing significant challenges in adapting to enhanced EU transparency, data quality, and integration requirements. By linking legislative provisions with current reporting practices, the study highlights the transitional nature of Albania's PRTR system and its implications for environmental governance and EU accession.

Despite its contributions, the study has some limitations. The analysis is primarily qualitative and based on legal and institutional documentation, without incorporating quantitative assessments of PRTR data quality or completeness. In addition, the study focuses on the national framework and does not include comparative benchmarking with individual EU Member States or other Western Balkan countries, which could provide deeper insights into relative performance and best practices.

Future research could build on these findings by conducting empirical evaluations of PRTR data reliability and usability, as well as comparative studies across candidate and Member States. Further work could also explore the integration of PRTRs with industrial emissions

monitoring, inspection outcomes, and environmental policy evaluation, thereby strengthening the evidence base for the role of PRTRs in advanced environmental governance systems.

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BETWEEN INNOVATION AND TRUST: PATIENT PERSPECTIVES ON ARTIFICIAL INTELLIGENCE IN HEALTHCARE IN ALBANIA

Enxhi Hasani

Department of General Training and Vocational Development Barleti University, Tirana, Albania

Corresponding author: enxhi.hasani@umb.edu.al

Abstract

Introduction. Artificial intelligence (AI) is increasingly transforming healthcare systems worldwide by supporting diagnosis, clinical decision-making, laboratory analysis, and patient monitoring. Despite its growing integration, patient perceptions and levels of trust toward AI remain insufficiently explored, particularly in contexts such as Albania, where digital health transformation is still developing. Understanding how patients perceive AI is essential for its safe and effective implementation in healthcare. **Aim.** This study aimed to explore patients' knowledge, perceptions, level of trust, and acceptance of artificial intelligence in healthcare, with a particular focus on its comparison with physicians and its impact on the human dimension of care.

Methodology. A qualitative study was conducted using a non-probability sample of 30 healthcare service users in Albania. Data were collected through a structured questionnaire divided into sections covering demographic characteristics, knowledge and perceptions of AI, trust in AI versus medical professionals, empathy and communication in healthcare, and concerns regarding AI use. Data were analyzed using descriptive statistics with Microsoft Excel.

Results and Discussion. The findings indicate that participants had a moderate level of awareness of artificial intelligence (AI) in healthcare; however, only a smaller proportion demonstrated a clear understanding of its practical applications. Overall, perceptions of AI were mixed, with half of the participants believing that AI can improve healthcare quality, while others remained neutral or skeptical. Trust in clinical practice remained strongly centered on physicians, with the majority of participants preferring human diagnosis and expressing the need for physician confirmation even in cases of AI-based diagnosis. AI was generally perceived as a supportive tool rather than a replacement for healthcare professionals, particularly in high-risk decision-making tasks such as surgery, treatment, and direct diagnosis. Participants showed strong concern regarding the impact of AI on empathy and communication in healthcare, with most emphasizing that emotional support, empathy, and human interaction cannot be replaced by technology. In addition, the majority perceived AI as a potential risk for data privacy, although views on medical errors were more balanced, suggesting recognition of limitations in both AI systems and human clinicians.

Conclusion and Recommendations. In conclusion, AI is perceived primarily as a supportive tool rather than a replacement for physicians. While patients recognize its potential benefits, their trust remains cautious and dependent on human oversight. The study highlights the need to preserve the human aspect of healthcare while integrating technological advancements. It is recommended to enhance public education

on AI applications in healthcare, strengthen ethical and legal frameworks for data protection, and provide training for healthcare professionals to ensure safe and effective integration of AI into clinical practice.

Keywords

Artificial intelligence; healthcare; patient perception; trust; doctor–patient relationship; Albania

1. Introduction

Artificial intelligence (AI) is defined as the capability of computer systems to perform tasks that normally require human intelligence, such as learning, reasoning, and decision-making (World Health Organization, 2021). In healthcare, AI has become an increasingly important tool in transforming healthcare delivery, being used in diagnosis, laboratory analysis, patient monitoring, and clinical decision support systems.

According to the Director-General of the World Health Organization, Tedros Adhanom Ghebreyesus: "AI is already playing a role in diagnosis and clinical care, drug development, disease surveillance, outbreak response, and health systems management. The future of healthcare is digital, and we must do what we can to promote universal access to these innovations and prevent them from becoming another driver for inequity" (WHO, 2023).

In addition, the rapid development of artificial intelligence technologies has raised important ethical, legal, and social considerations, particularly in relation to patient safety, data privacy, and the doctor–patient relationship. While AI offers significant opportunities for improving efficiency and accuracy in healthcare systems, its successful integration depends not only on technological advancement but also on public acceptance and trust. Understanding patients' perceptions is therefore essential, as their attitudes may directly influence the willingness to accept AI-supported healthcare services and adhere to clinical recommendations. In this context, exploring perceptions in an under-researched setting such as Albania contributes valuable evidence to the global discussion on the responsible and patient-centered implementation of artificial intelligence in healthcare systems.

In the Albanian context, the literature on artificial intelligence in healthcare remains limited, particularly regarding patient perceptions. This lack of empirical studies in this field represents an important research gap, justifying the need for the present study. It aims to explore patients' knowledge, perceptions, and level of trust in the use of artificial intelligence in healthcare, as well as its acceptability in relation to the role of physicians and the human dimension of healthcare.

2. Literature Review

One of the main application areas of AI is medical diagnostics, where machine learning and deep learning algorithms analyze medical images with high accuracy, in some cases achieving performance comparable to or even exceeding that of medical specialists (Topol, 2019). These

technologies have demonstrated strong potential in the early detection of diseases such as cancer, cardiovascular conditions, and neurological disorders.

In addition to diagnostics, AI is widely used in clinical and laboratory data analysis, enabling the processing of large volumes of data in a short time with high accuracy. According to Obermeyer and Emanuel (2016), the use of AI in healthcare data analysis can significantly improve clinical decision-making and reduce medical errors.

In clinical decision-making, AI functions as a clinical decision support system, helping healthcare professionals make more informed decisions based on advanced data analysis and scientific evidence (National Academy of Medicine, 2019).

However, despite its benefits, studies show that patients often express hesitation toward the use of artificial intelligence in independent clinical decision-making, even when it may be more accurate than human physicians (Longoni, Bonezzi & Morewedge, 2019).

Similarly, Blease et al. (2020) emphasize that patients are more willing to accept AI as a "second opinion" rather than as a primary diagnostic source.

Some studies have explored the importance of empathy, trust, and communication in the doctor–patient relationship, highlighting their essential role in patient satisfaction and health outcomes. Empathy, in particular, is considered a core clinical competence rather than an optional attribute (Halpern, 2003; Trzeciak & Mazzarelli, 2019). In the context of artificial intelligence in healthcare, research suggests that although AI can enhance clinical decision-making, it cannot replicate the human aspects of care, especially emotional understanding and empathy. Importantly, studies on patient perceptions indicate that individuals are often reluctant to rely on AI in situations requiring empathy and interpersonal interaction, reflecting concerns that the integration of AI may threaten the human dimension of care (Longoni et al., 2019). Therefore, AI is better positioned as a supportive tool rather than a replacement for healthcare professionals, in order to preserve the person-centred nature of care (Sauerbrei et al., 2023).

However, despite the growing international body of literature on artificial intelligence in healthcare, similar studies in Albania remain limited and have not yet been conducted yet.

3. Methodology

This study has a qualitative design and was conducted on a non-probability sample of 30 individuals, with the inclusion criterion that participants must be users of healthcare services in Albania. Participation in the study was voluntary, and informed consent was obtained from all participants prior to data collection.

Data were collected through a structured questionnaire divided into several sections. The first section included demographic characteristics such as age, gender, and educational level. The second section addressed knowledge and perceptions of artificial intelligence in healthcare and consisted of five questions, four of which were based on an ordinal Likert scale (ranging from

"strongly disagree" to "strongly agree"), while one was an open-ended question allowing participants to express their personal reasons for trust or distrust in AI.

The third section focused on trust in the competencies of artificial intelligence compared to medical staff and included six semi-structured questions. These questions provided predefined response options as well as the possibility for participants to select "other" and provide individualized responses. The fourth section examined communication and empathy in the doctor–patient relationship and consisted of five semi-structured questions following the same structure. The final section addressed concerns and acceptability of artificial intelligence use and also included five semi-structured questions. In one of the questions, participants were allowed to select more than one option in order to identify the healthcare services in which they would accept the use of artificial intelligence.

After data collection, a descriptive analysis was performed, focusing on the presentation of frequencies and percentages. Data processing was carried out using Microsoft Excel.

This research was conducted in accordance with institutional ethical standards.

Study Limitations

Given that the study is qualitative in nature and based on a small non-probability sample, its findings cannot be generalized to the entire population. However, this study serves as an exploratory framework and a starting point for future research. It highlights the need for further quantitative studies using probability sampling methods and larger, more representative samples, which would allow for broader and more generalizable conclusions.

4. Results and Discussion

The study sample presents a relatively balanced distribution according to age, gender, and educational level. In terms of age, participants are represented by the following age groups: 18–25 years (23%), 26–35 years (23%), 36–45 years (30%), while 17% belong to the over 50 age group and 7% to the 46–50 age group. Regarding gender, the sample is predominantly female (60%) compared to male participants (40%). As for educational level, a diverse distribution is observed, where 27% of participants have completed secondary education, 33% hold a Bachelor's degree, 30% have a Master's degree, and 10% have higher education or advanced postgraduate studies.

The first two questions relate to participants' perceptions of their level of knowledge regarding the use of artificial intelligence (AI) in healthcare. Initially, participants were asked whether they had heard about the use of AI in this field, followed by whether they clearly understand how it is practically applied. As shown in Table 1, although around 60% of participants reported having heard about the use of AI in healthcare, only approximately 40% stated that they clearly understand its practical application. This result suggests that information about AI is more prevalent at a general level and is not necessarily accompanied by a deep practical understanding.

Table 1. Knowledge and clarity about artificial intelligence in healthcare

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I have heard about the use of AI in healthcare	53.3%	6.7%	23.3%	3.3%	13.3%
I am clear about how AI can be used in healthcare	26.7%	13.3%	33.3%	10%	16.7%

Regarding the statement "I believe that artificial intelligence can improve the quality of healthcare services," the results show a clear division of opinions. Specifically, 30% of participants strongly agreed and 20% agreed, representing half of the sample with a positive perception. Meanwhile, 23.3% were neutral and 26.7% expressed negative views (6.7% disagree and 20% strongly disagree). Overall, a polarized perception is observed: while a proportion of participants view artificial intelligence as a tool for improving the quality of healthcare, others remain skeptical or uncertain, reflecting a moderate level of trust in this technology.

This distribution of responses may reflect the current transitional stage of artificial intelligence integration in healthcare systems. The positive attitudes could be associated with the perceived benefits of AI, such as improved diagnostic accuracy, increased efficiency in clinical decision-making, and enhanced patient management. On the other hand, the presence of neutral and negative responses suggests concerns related to reliability, ethical implications, and the potential reduction of human interaction in healthcare delivery. In particular, skepticism may be influenced by limited direct experience with AI-based tools or uncertainty regarding their safety and transparency in clinical practice.

In relation **to perceived safety of AI, the majority of respondents (63.4%) expressed negative perceptions,** while only 23.3% reported positive views and 13.3% remained neutral. This indicates a clear dominance of skepticism regarding the practical use of artificial intelligence in healthcare, despite general awareness of the technology.

This was further explored through an open-ended question, where participants were given the opportunity to express their reasons for trust or lack of trust in AI. Overall, trust or distrust in AI appears to be shaped by a combination of perceptions of AI as a supportive tool and concerns related to safety, the role of humans, and limited in-depth knowledge. On the one hand, trust is mainly associated with the perception of AI as a supportive tool that enhances accuracy, speed, and efficiency in medical decision-making without replacing the role of physicians. This reflects openness toward technology, but within a framework where the human factor remains essential. On the other hand, distrust arises from several key concerns, such as uncertainty regarding the accuracy and reliability of AI outputs, fear of technological errors, and concerns about the lack of empathy

and human interaction in healthcare. Some participants also expressed concerns that AI could replace physicians in complex situations requiring clinical judgment and professional experience. Additionally, a clear need for more information and education about how AI functions and is applied in practice was observed, while some attitudes remained ambivalent, acknowledging its potential but maintaining reservations about its practical implementation.

In the next section, patients' trust in diagnosis was examined. Specifically, their views were explored regarding diagnostic processes either through a combination of AI and physicians or in a hypothetical future where the role of physicians in diagnosis is minimal. The main findings are presented in Table 2.

Table 2. Trust in diagnosis and clinical decision-making

Statement	**Agree**
I trust physicians' diagnosis more than AI	73.3%
I would seek confirmation from a physician for an AI diagnosis	86.7%
AI can be as reliable as a physician in diagnosis	16.7%
AI can be more accurate than physicians in diagnosis	16.7%
Physicians are more capable in complex decision-making	86.7%

These findings reflect the dominance of trust in human clinical expertise, highlighting the importance of professional experience and the doctor–patient relationship in the diagnostic process. This strong preference for physicians over artificial intelligence may be explained by the perceived accountability, empathy, and clinical judgment that healthcare professionals provide, which are still considered essential in complex medical decision-making.

Although a small proportion of respondents recognize the potential of AI in diagnosis, the low level of agreement regarding its reliability and superiority indicates that AI is not yet perceived as a fully independent diagnostic authority. Instead, participants appear to view it as a complementary tool that requires human validation.

In response to the question of whether the combination of physicians' expertise and artificial intelligence produces good results, the majority of participants agreed (80%), while 13.3% disagreed, and the remaining participants stated that it depends on the specific case and the complexity of the diagnosis.

The next section of the questionnaire addressed empathy and the emotional dimension of the doctor–patient relationship. The results indicate a high level of concern regarding the impact of artificial intelligence on communication and human contact. Specifically, 84% of participants (52% strongly agree and 32% somewhat agree) believe that the advancement of AI may threaten this aspect. A small proportion (8%) did not express an opinion, while 6.6% do not perceive artificial intelligence as a threat to human communication.

Table 3. Aspects of the doctor–patient relationship and empathy

Statement	Main results
Physician empathy is essential in healthcare	86.7% yes, 13.3% no
AI cannot understand human emotions	93.3% yes, 3.3% depends
Emotional support cannot be replaced by AI	96.7% no, 3.3% can be replaced in the future
Human communication cannot be replaced by AI	63.3% no, 6.6% partially/not completely, 30% yes

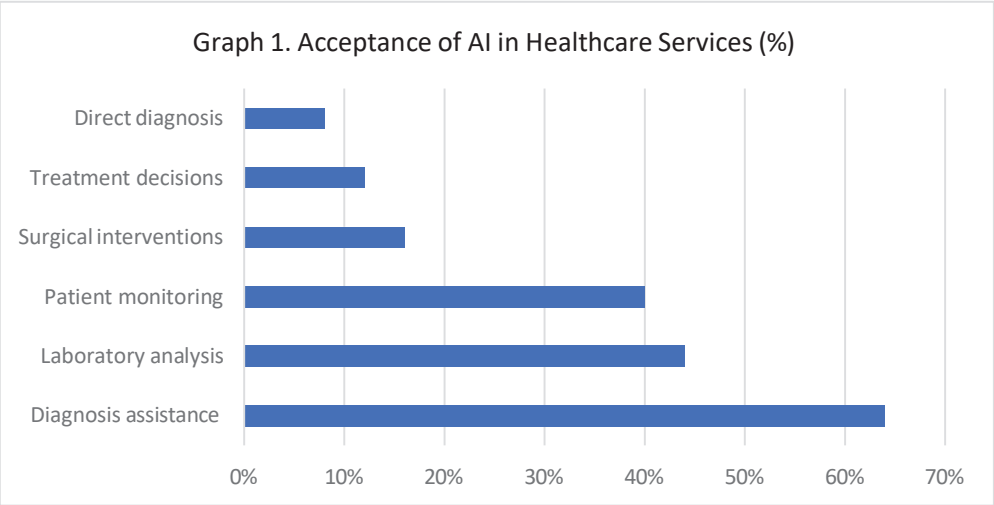
Based on the results presented in Table 3, there is a consistently high valuation of the human dimension in healthcare, particularly in terms of empathy, communication, and emotional support. An even stronger trend is observed in the perceived limitations of artificial intelligence in the emotional domain. The vast majority of participants believe that artificial intelligence cannot understand human emotions (93.3%) and cannot replace the emotional support provided by a human being (96.7%). Only one participant suggested that, in the future, technological advancements might enable systems capable of recognizing and interpreting human emotions.

These findings suggest that participants strongly associate effective healthcare not only with clinical competence but also with emotional intelligence and interpersonal connection, which are perceived as inherently human qualities. The high level of agreement that AI cannot understand emotions or replace emotional support reflects a clear boundary between technological efficiency and human empathy in healthcare delivery. This perception may be influenced by the traditional model of care, where trust is built through direct communication, active listening, and emotional reassurance provided by physicians. Although a minority of respondents acknowledge the theoretical possibility of future advancements in emotional AI, the overall results indicate resistance to the idea of replacing human interaction in clinical settings. This highlights a key concern regarding the integration of artificial intelligence in healthcare: while AI may enhance technical aspects of diagnosis and treatment, it is unlikely to substitute the relational and emotional components of care, which remain central to patient satisfaction and therapeutic outcomes.

Most participants (63.3%) believe that human communication cannot be replaced, while, in contrast, a considerable proportion (30%) believe that it could be replaced by artificial intelligence. This polarization suggests that communication is the area where perceptions of technology are most divided, possibly due to the increasing use of digital tools in everyday interactions.

Regarding data security and privacy, the results show that the majority of participants (60%) perceive artificial intelligence as a greater risk to data privacy. Meanwhile, 33.3% consider the level of risk to be the same for both artificial intelligence and physicians, while a very small percentage (6.7%) attribute the risk to other factors, such as physicians themselves or the way data is managed and governed.

The findings also indicate a balanced perception regarding the source of medical errors: 48% believe that AI and physicians carry the same level of risk, 36% attribute a higher risk to AI, while 16% consider medical staff to be the main source of errors. This reflects a realistic understanding of the limitations of both parties and highlights the importance of an integrated approach to reducing medical errors. Overall, these findings highlight that concerns about data security, privacy, and medical errors are closely linked to issues of trust and accountability in healthcare systems. The tendency to perceive artificial intelligence as a greater risk suggests that participants are still cautious about the transparency, regulation, and control of AI systems, particularly in relation to sensitive health data. At the same time, the relatively balanced views regarding medical errors indicate an awareness that human clinicians are also not free from mistakes, and that errors may arise from system-level factors rather than solely from the individual provider. Taken together, these results support the idea that participants do not perceive risk as belonging exclusively to either AI or physicians, but rather as a shared responsibility that depends on how technologies and healthcare professionals are integrated within clinical practice.



Based on Graph 1, the results indicate a selective acceptance of artificial intelligence, primarily in supportive roles such as diagnostic assistance (63%), laboratory analysis (43%), and patient monitoring (40%). In contrast, acceptance is considerably lower for decision-making roles such as surgical interventions (17%), treatment (13%), and direct diagnosis (7%). Overall, AI is perceived as a supportive tool rather than a replacement for physicians.

These findings suggest that participants differentiate clearly between technical support functions and high-responsibility clinical decision-making when it comes to the use of artificial intelligence in healthcare. The higher acceptance of AI in diagnostic assistance, laboratory analysis, and patient monitoring indicates a recognition of its strengths in data processing, pattern recognition, and continuous surveillance tasks, where human fatigue or subjective bias may be reduced. However, the markedly lower acceptance in areas such as surgery, treatment decisions, and direct diagnosis reflects persistent concerns about safety, accountability, and the need for human clinical judgment in situations that require precision and ethical responsibility.

Finally, in the concluding question, when participants were asked to choose their preferred model, the findings show a strong preference for a collaborative physician–artificial intelligence approach, with 72% of participants favoring the combination of both. Notably, none of the participants supported the exclusive use of AI.

5. Conclusion and Recommendations

In conclusion, this study demonstrates that although there is a considerable level of awareness regarding the use of artificial intelligence in healthcare, its practical understanding remains partial and often accompanied by uncertainty. Participants' perceptions are characterized by a balance between acceptance and skepticism: on the one hand, artificial intelligence is viewed as a tool with the potential to improve the quality, accuracy, and efficiency of healthcare services, while on the other hand, concerns persist regarding its reliability, data security, and its impact on the human dimension of care.

The findings clearly show that trust in artificial intelligence is conditional and closely linked to the presence of physicians in the decision-making process. Participants continue to place high trust in human expertise, particularly in complex diagnostic and therapeutic situations, valuing clinical experience, professional judgment, and empathy as essential and irreplaceable elements. At the same time, artificial intelligence is more readily accepted in supportive roles such as diagnostic assistance, laboratory analysis, and patient monitoring, reflecting a pragmatic approach to its use.

Another important aspect that emerges is the high level of concern regarding the loss of human communication and emotional support, which are considered key components of the doctor–patient relationship. Similarly, issues of privacy and data security remain significant factors influencing the level of trust in this technology.

Nevertheless, despite these reservations, the study highlights strong support for a physician–artificial intelligence collaborative model, which is perceived as the safest and most effective approach for the future of healthcare. In this context, artificial intelligence is seen as an instrument that complements and enhances the work of physicians while maintaining the central role of the human factor.

In this regard, it is recommended to increase public education and awareness regarding the practical use of artificial intelligence in order to reduce uncertainty and misconceptions. At the same time, it is important to strengthen ethical and legal frameworks for data protection and to ensure transparency in the use of technology. Furthermore, training healthcare professionals in the effective integration of AI into practice is essential for successful implementation. Overall, a balanced approach that combines technological innovation with the human values of healthcare remains key to increasing trust and maximizing the benefits of artificial intelligence.

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AFTER THE ANSWER: PEDAGOGY IN THE AGE OF ARTIFICIAL INTELLIGENCE

Erion Kristo

Department of Governance, Communication and Political Sciences,
Barleti University, Tirana, Albania

e.kristo@umb.edu.al

Abstract

This article argues that AI does more than challenge how we teach - it forces us to examine what we have always assumed teaching to be. When a machine delivers information more efficiently than any teacher, the idea that teaching is simply about transmitting facts collapses, leaving behind either genuine pedagogy or nothing at all. Drawing on three foundational traditions in the philosophy of education - Paulo Freire's dialogical pedagogy, John Dewey's experiential learning, and Lev Vygotsky's socio-cultural theory - this paper argues that each one, read in the light of AI, points to something that was always true but rarely stated clearly: that human relationships are irreplaceable in learning. The article introduces the concept of 'inverted maieutics' to describe the teacher's new role - not to draw knowledge out of students, but to plant productive doubt in those who believe the algorithm has already given them everything. It also examines student autonomy, the moral authority of the teacher, the threat that instant information poses to deep thinking, and the mixed promise of personalized learning - arguing that all these issues point to the same central truth: the human encounter at the heart of education is something no algorithm can replace.

Keywords: Artificial Intelligence; Philosophy of Education; Paulo Freire; John Dewey; Lev Vygotsky; Dialogical Pedagogy; Critical Thinking; Inverted Maieutics; Student Autonomy; Personalized Learning.

1. Introduction

In 2023, a university student submitted an essay written entirely by ChatGPT. When his instructor asked whether he had actually read what he turned in, the student replied without any irony: "Yes, and it was very good." That small exchange captures the real philosophical problem now facing higher education: What does it mean to truly learn when knowledge is instant, unlimited, and costs nothing?

This is not a new worry. Educators have felt uneasy about encyclopedias, calculators, and search engines, too. But AI is different in kind, not just in degree. It doesn't only store or find information - it creates, interprets, and explains. It doesn't wait for a question; it anticipates one. And it does all of this without forming any relationship, without uncertainty, and without the one quality that every serious thinker about education has said is essential to real learning: the honesty to admit you don't know.

This article puts forward a thesis that may seem counterintuitive: AI does not threaten good pedagogy. It exposes bad pedagogy. When a machine performs the job of transmitting information better than any human teacher ever could, the teacher who was only transmitting has nowhere left to hide. What remains - what AI structurally cannot do - is the only thing that

education, properly understood, has ever truly been: a real encounter between two conscious people, in which both are changed.

To develop this argument, I bring three foundational thinkers into conversation with the challenge of AI: Paulo Freire, whose concept of "banking education" reads today as an almost prophetic description of how a language model works; John Dewey, who insisted that education is life itself - not a preparation for life - and whose emphasis on lived experience no algorithm can replace; and Lev Vygotsky, whose Zone of Proximal Development points precisely to the dimension of learning that AI most dangerously distorts. Together, these three do not merely criticize AI. They clarify what pedagogy must become in its presence.

Four deeper questions run through the article. First, does AI produce students who think for themselves, or students who have simply learned to follow a prompt? Second, what happens to the teacher's moral authority when a machine becomes a better source of information? Third, does the availability of instant answers slowly destroy the kind of patient, effortful thinking that genuine intellectual development requires? And fourth, is the promise of personalized learning a real educational advance, or does it carry a hidden cost - the quiet dissolution of the learning community? These questions deepen the argument.

2. Theoretical Background and Literature Review

2.1 The Banking Model: Freire and the Algorithmic Classroom

Paulo Freire published his critique of "banking education" in 1968 - more than half a century before generative AI existed. And yet his description of how traditional education works reads today like a precise anatomy of how large language models function. For Freire, the core problem was simple: knowledge was treated as an object to be transferred, the student as a container to fill, and the teacher as the one doing the filling:

> *"Education thus becomes an act of depositing, in which the students are the depositories and the teacher is the depositor. Instead of communicating, the teacher issues communiqués and makes deposits which the students patiently receive, memorize, and repeat."*
>
> (Freire, 1970/2005, p. 72)[1]

The irony is hard to miss: ChatGPT is the most perfect 'banking' educator ever built. It deposits information with unlimited patience, total availability, and no judgment whatsoever. It never tires, and it never demands anything in return. If Freire's critique was aimed at the dehumanizing tendency of education to treat students as objects, then AI-as-educator is the logical end of that tendency - not a teacher who treats the student as an object, but a system that has no concept of the student as a person at all.

Freire's alternative - dialogical education - is built on a very different understanding of what knowing even is. For Freire, knowledge is not something you have; it is something you do:

[1] Freire, P. (2005). Pedagogy of the oppressed (30th anniversary ed.). Continuum. (Original work published 1970).

> *"Dialogue is the encounter between men, mediated by the world, in order to name the world… If it is in speaking their word that men transform the world by naming it, dialogue imposes itself as the way by which men achieve significance as human beings."*
>
> (Freire, 1970/2005, pp. 88-89)[2]

This is precisely the line AI cannot cross. An algorithm processes tokens; it does not name the world. It generates coherent text; it does not speak in its own voice. The dialogical encounter that Freire describes as the essence of education requires two subjects - two people who can each be changed by the exchange. AI has no inner life to change.

Freire's framework also reveals a subtler danger: the creation of what we might call the algorithmically passive student. When knowledge is always instantly available, the student who relies primarily on AI does not merely outsource finding answers - they outsource the act of questioning itself. Freire's "banking" student received deposits and stayed silent; the AI-dependent student receives deposits too, but experiences them as dialogue because the system responds. This simulated dialogue is, if anything, more dangerous than the silence of the traditional banking classroom, because it is much harder to recognize as passivity.

2.2 Education as Life: Dewey's Challenge to the Algorithmic Curriculum

While Freire focuses on power and liberation, John Dewey's challenge to AI-driven education is more basic: the value of experience. For Dewey, the fundamental flaw in traditional education - and in much AI-assisted learning - is the separation of knowledge from real life, of learning from doing. Education is not preparation for life, but life itself:

> *"...if I were asked to name the most needed of all reforms in the spirit of education, I should say: 'Cease conceiving of education as mere preparation for later life, and make it the full meaning of the present life'".*
>
> (Dewey, EW 4:50)[3]

Dewey's thinking turns the promise of AI upside down. If education truly is life - not just a rehearsal for life or a conveyor belt of facts to use later - then any system that reduces learning to delivering information, however efficiently, has missed the point entirely. Dewey's emphasis on experience is not just a teaching method; it is a deep belief that real knowing comes from doing, from feeling, and from encountering the world directly.

Dewey also insisted that learning is fundamentally social. For him, the classroom was not a room full of individuals sitting side by side. It was a living community - a small-scale democracy - where people learned together through shared dialogue and collective inquiry; the school is itself a form of community life:

> *"The teacher is not in the school to impose certain ideas or to form certain habits in the child, but is there as a member of the community to select the*

[2] Freire, P. (2005). Pedagogy of the oppressed (30th anniversary ed.). Continuum. (Original work published 1970).

[3] Dewey, J. (1893). Self-realization as the moral ideal. In J. A. Boydston (Ed.), *The collected works of John Dewey, 1882-1953: The early works, 1882-1898* (Vol. 4, pp. 42-53). Southern Illinois University Press. (EW 4:50).

> *influences which shall affect the child and to assist him in properly responding to these influences."*
>
> (Dewey," EW 5:92)[4]

This vision stands in direct contrast to today's AI-powered personalized learning platforms. While these systems optimize each student's individual progress, they often do so at the cost of community. Instead of a shared, productive struggle with ideas, we get perfectly optimized but isolated learning tracks. What is lost is not efficiency - it is the friction and shared experience that Dewey saw as essential to real education.

Dewey also makes us ask what the cost of instant answers is. For him, real learning does not begin when a student gets the right answer. It begins when a student meets a genuine problem - one that demands sustained thought and effort. When AI produces a polished response in seconds, it short-circuits this vital process. The student who types a question and reads a fluent answer has not really engaged in inquiry. They have only performed the appearance of it. The real loss is not the answer itself, but the cognitive journey Dewey believed was the heart of education.

2.3 The Zone No Algorithm Can Enter: Vygotsky and the Limits of Artificial Scaffolding

Lev Vygotsky's idea of the Zone of Proximal Development (ZPD) is now frequently cited in discussions about AI and education - but usually in a way that misses its real point. The ZPD is often used to argue that AI could be the ideal tutor: if learning happens in the gap between what a student can do alone and what they can do with help, then a smart algorithm should, in theory, fill that gap perfectly. But this reading overlooks something central in Vygotsky's own thinking:

> *"Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological), and then inside the child (intrapsychological)… All the higher functions originate as actual relations between human individuals."*
>
> (Vygotsky, 1978, p. 57)[5]

The keyword is "human." Vygotsky's ZPD is not just a gap that any well-designed tool can fill. It is a space that only opens through real encounters between people. The "more knowledgeable other" is not simply someone with more information - it is someone with a different perspective, different values, a different way of seeing the world, qualities that are shared through genuine human contact.

Recent research has named a new concern: the so-called "Zone of No Development." This is what happens when AI support becomes permanent rather than a temporary scaffold. When the support never fades, when students never have to struggle alone, and when cognitive effort is always outsourced, development does not accelerate - it stops. Students may be able to produce competent work with AI's help, but their dependence becomes permanent rather than

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[4] Dewey, J. (1897). My pedagogic creed. In J. A. Boydston (Ed.), *The collected works of John Dewey, 1882-1953: The early works, 1882-1898* (Vol. 5, pp. 84-95). Southern Illinois University Press. (EW 5:92).

[5] Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.

transitional - when the scaffolding never comes down, when the student never struggles alone, when the cognitive effort that produces genuine development is perpetually outsourced (Gureckis & Markman, 2025)[6]. The result is not accelerated development but its arrest: a student who can always produce competent work with AI's help but has built no real independent capacity (Holmes et al., 2022)[7].

Vygotsky's theory also helps us think more carefully about student autonomy - a concept often invoked in debates about AI. Some argue that AI gives students more freedom: they can learn at their own pace, follow their own curiosity, and escape the power dynamics of the traditional classroom. But Vygotsky calls for caution. Real autonomy - the actual ability to think and act independently - is not given by a tool. It develops through social processes and is internalized over time. A student whose thinking is always mediated by an external system, however advanced, is not becoming more independent. They are simply becoming dependent in a new way. The risk is not just that AI replaces the teacher as the authority figure - it is that it replaces the teacher as the very medium through which students learn to think for themselves.

2.4 Three Voices, One Diagnosis

What is striking about reading Freire, Dewey, and Vygotsky together - especially in the context of AI - is that three thinkers who disagree on almost everything arrive at the same conclusion. Freire focuses on power and liberation, Dewey on experience and democracy, Vygotsky on cognitive development and social interaction. And yet all three insist on the same core truth: what makes education truly educational, rather than a mere transfer of information, is the irreducibly human, relational, and dialogical encounter at its heart.

This convergence is not a coincidence. It points to a deep and lasting truth that each of these thinkers, from their own angle, recognized: knowing is not a private mental event but a social practice. And social practices require real people - people with histories, values, doubts, and the capacity to be surprised. AI, by its very nature, has none of these things. That is not a technical limitation waiting to be fixed. It is a fundamental feature of AI.

It is also worth noting that this convergence connects to an older tradition: the Socratic practice of maieutics. Socrates did not teach by transmitting knowledge - he taught by asking questions that revealed to his interlocutors what they did not know they did not know (Plato, 1997)[8]. The Socratic teacher assumed a student who believed they already understood, and whose false certainty had to be dismantled before real inquiry could begin (Burbules, 2000)[9]. This assumption - radical in antiquity - has become the default condition of today's AI-assisted student. The student who receives a fluent, confident AI response does not feel ignorant. They

[6] Gureckis, T. M., & Markman, A. B. (2025). The zone of no development: How permanent AI scaffolding arrests cognitive growth. Cognition and Education, 12(1), 44-67.

[7] Holmes, W., Porayska-Pomsta, K., Holstein, K., Sutherland, E., Baker, T., Shum, S. B., Santos, O. C., Rodrigo, M. T., Cukurova, M., Bittencourt, I. I., & Koedinger, K. R. (2022). Ethics of AI in education: Towards a community-wide framework. International Journal of Artificial Intelligence in Education, 32(3), 504-526. https://doi.org/10.1007/s40593-021-00239-1.

[8] Plato. (1997). Meno. In J. M. Cooper (Ed.), Plato: Complete works (pp. 870-897). Hackett Publishing.

[9] Burbules, N. C. (2000). The limits of dialogue as a critical pedagogy. In P. P. Trifonas (Ed.), Revolutionary pedagogies: Cultural politics, education, and the discourse of theory (pp. 251-273). Routledge.

feel informed. The task of the contemporary educator is, in a very precise sense, more Socratic than ever before.

3. Methodology

This article uses a qualitative, theoretical approach that combines critical philosophical analysis with personal reflection on classroom practice. The methodology rests on two foundations: (a) a close reading of primary texts by Freire, Dewey, and Vygotsky, interpreted through the lens of recent scholarship on AI in education (2019-2026); and (b) the author's autoethnographic reflection on his own dialogical pedagogy at Barleti University, treating the classroom as a living site of philosophical inquiry.

Autoethnography is appropriate here because the argument is not purely theoretical - it is also about lived experience in real classrooms. Claiming that genuine dialogical teaching achieves what AI cannot is an empirical claim about what actually happens when people learn together. The author's sustained efforts to share authority with students, organize seminars as genuine open forums, and measure success by the quality of engagement rather than by the content covered constitute practitioner research that grounds the theoretical claims (Ellis & Bochner, 2000)[10].

Philosophically, this article practices immanent critique: each thinker is treated not as a historical monument but as a live conversation partner, whose ideas are tested and enriched by the realities of AI in education. The aim is not simply to "apply" old theories to new problems, but to let our encounter with AI reveal dimensions of these ideas that were always present, but have only now become fully visible.

This research meets institutional ethical standards. All examples of classroom practice are drawn from the author's own experience and involve no personal student data.

4. The Unmasking: What AI Reveals About Education

4.1 The Collapse of the Transmission Model

Perhaps the most immediate - and most important - effect of AI on education is simply this: it exposes how weak our dominant model of teaching actually is. For decades, and arguably centuries, most educational institutions have relied on what Freire called the "banking" model: the teacher holds knowledge, the student lacks it, and education is the process of moving it from one to the other. This model survived not because it was philosophically sound, but because it was practical - and because, until now, the only transmitter available was a human teacher, however flawed.

AI removes this excuse. Now, a student can get clearer explanations, more patient responses, broader content coverage, and more precisely calibrated support from an algorithm than from most human instructors. The "transmission model" teacher has lost their last argument. The mask has come off. What remains is either genuine pedagogy - dialogical,

[10] Ellis, C., & Bochner, A. P. (2000). Autoethnography, personal narrative, reflexivity: Researcher as subject. In N. K. Denzin & Y. S. Lincoln (Eds.), Handbook of qualitative research (2nd ed., pp. 733-768). Sage.

relational, transformative - or the uncomfortable truth that the teacher was never really teaching at all.

This isn't a comfortable observation, but we have to make it. AI doesn't threaten good teaching; it threatens teaching that was never really teaching in the first place (Selwyn, 2019)[11].

4.2 The Teacher's Irreplaceable Role: Moral Authority in the Age of Algorithmic Knowledge

When the transmission model collapses, a serious question emerges: if AI surpasses human teachers as a source of information, what remains of the teacher's authority? This question is often asked with anxiety or defensiveness, as though the teacher's value had always depended on knowing more than the student. But that was already the wrong way to think about teaching. True authority in education was never just about having the right answers.

> *"The teacher is no longer merely the-one-who-teaches, but one who is himself taught in dialogue with the students, who in their turn while being taught also teach."*
>
> (Freire, 1970/2005, p. 80)[12]

The great thinkers in pedagogy have always located the teacher's authority somewhere else: in the moral and relational fabric of the educational encounter. For Freire, a teacher is respected not because they know more, but because they are a person with a history, values, and a genuine commitment to helping students become free and critical thinkers. No algorithm can have this kind of authority. Not because of a technical limitation, but because it is simply not what algorithms are. An algorithm can be designed to sound caring. It cannot actually care. Caring requires risk, vulnerability, and the willingness to be changed by a relationship.

Dewey's image of the teacher as a member of a community - not just an authority dispensing knowledge - points in the same direction. Real authority comes from being present, from sharing the uncertainty and effort of learning alongside students. Sometimes the most powerful thing a teacher can say is: "I don't know. Let's find out together." This kind of honesty is at the heart of education. AI can never say it, because AI is never genuinely uncertain.

Vygotsky adds another dimension. In his theory, the "more knowledgeable other" is not simply someone with more information. It is someone who sees the student's effort, who responds to a half-formed idea with genuine engagement, and who gives the student the experience of being recognized as a thinking person. That recognition - being seen, being taken seriously - is something no AI can provide.

So what remains of the teacher's authority in the age of AI? Not the authority of knowing more. The authority of being present, of caring, and of recognition. In truth, this was probably always the only kind of authority that mattered in education.

4.3 Inverted Maieutics: Planting Doubt in the Age of Algorithmic Certainty

[11] Selwyn, N. (2019). Should robots replace teachers? AI and the future of education. Polity Press.
[12] Freire, P. (2005). Pedagogy of the oppressed (30th anniversary ed.). Continuum. (Original work published 1970).

The Socratic tradition - the art of "midwifing" ideas through careful questioning - assumed a student who didn't know, but who could be guided toward insight. The teacher's job was to draw out what the student didn't yet realize they knew.

AI has reversed this situation. Today's student, with access to AI, rarely feels ignorant - they feel already answered. The real danger is not ignorance but false certainty: a student reads a smooth, confident AI response and has no reason to suspect that anything important is missing.

This means the teacher's role must shift as well. Instead of drawing out hidden knowledge, the teacher now needs to plant productive doubt in students who believe they already know everything that matters. This is what I call "inverted maieutics" - the art of generating new questions after the algorithm has produced an answer. Far from being a lesser task, this requires more philosophical sophistication than ever: the ability to see what the AI's answer leaves out, what it simplifies too quickly, and what it simply cannot touch about human experience.

> *"Enlightenment is man's emergence from his self-imposed immaturity. Immaturity is the inability to use one's own understanding without another's guidance."*
>
> (Kant, 1784)[13]

The connection to Kant is worth making explicit. Kant's concept of Mündigkeit - intellectual maturity, the capacity to use one's own reason without relying on another's guidance - was the philosophical foundation of his educational vision. "Dare to know," he urged: "Sapere aude". For Kant, the greatest obstacle to maturity was not ignorance but dependency - the comfortable habit of letting external authority do the thinking. AI is the most frictionless form of that dependency ever created: always available, always fluent, always convincing. Inverted maieutics is, in Kantian terms, the pedagogical practice of making the student dare to think - to go beyond the algorithm's answer and accept the discomfort of genuine uncertainty (Kant, 1784)[14].

In my own teaching, I have tried to put this into practice through what I call "answer-questioning seminars." Students begin with an AI-generated response to a complex question. But instead of judging its accuracy, they are asked: What is missing here? What could only a human add? What does this answer know how to say, and what does it only gesture toward without reaching? This approach embodies Freire's idea that true dialogue does not start with an answerable question, but with the act of naming reality - a deeply human act, beyond the reach of any algorithm.

4.4 The Community That Cannot Be Personalized

> *"A democracy is more than a form of government; it is primarily a mode of associated living, of conjoint communicated experience."*

[13] Kant, I. (1784). An answer to the question: What is Enlightenment? Berlinische Monatsschrift, pp. 481-494. [Quoted from: Kant, I. (1996). In M. J. Gregor (Trans. & Ed.), Practical philosophy (pp. 11-22). Cambridge University Press.]
[14] *Idem.*

(Dewey, MW 9:93)[15]

Perhaps the biggest risk of AI-centered education is the quiet unraveling of the learning community itself. Dewey and Vygotsky, each from their own perspective, understood that learning is not an individual event - it is a fundamentally social practice. For Dewey, the classroom functioned as a miniature democracy; for Vygotsky, it was the space where higher mental functions first appear between people, before being internalized by the individual.

Seen from this angle, the "personalized learning" that AI promises is not an advance but a step backward. Optimizing each student's learning path may sound appealing, but it dissolves the friction, negotiation, and encounter with genuine differences that make education transformative. Dewey's insight is clear: it is precisely in the effort to explain yourself to someone who does not share your assumptions that the richest intellectual growth happens.

This is not to say that AI's adaptive tools have no value. For students with specific needs or learning gaps, they can be genuinely helpful. But when collective inquiry is replaced entirely by individualized algorithmic interactions, what is lost is not a detail. It is the essence of what education is for.

In my own experience, the moments of greatest energy in the classroom have come when students are given real authority - when they teach each other, prepare and present topics, and run seminars as genuine forums for inquiry. In those spaces, students are not just engaged. They are responsible for each other's understanding. They do not just absorb knowledge - they help to create it. This is what Vygotsky meant by the social origins of higher mental functions, and it is something AI cannot replicate.

The collective dimension of learning also produces something that purely personalized learning cannot: the experience of genuine intellectual disagreement. When two students hold incompatible views on the same text, the same historical event, the same ethical question, and must work through that disagreement in dialogue - not to find an algorithmically optimal resolution, but to understand each other and themselves more fully - something happens that education, at its best, has always aimed at: the formation of minds capable of living with others in a shared world. Personalized learning, by design, eliminates the encounter with the genuinely other. In doing so, it removes the very condition of democratic intellectual life (Zhao, 2021)[16].

4.5 Deep Thinking Under Threat: The Epistemological Cost of Instant Answers

We need to ask not only what AI does to the answers students produce, but what it does to the quality of their thinking. From Socrates to Dewey to modern cognitive science, there is a long tradition that holds that genuine intellectual development comes from effortful, sustained, sometimes frustrating engagement with hard problems. The struggle is not an obstacle to learning. It is the mechanism.

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[15] Dewey, J. (1916). Democracy and education: An introduction to the philosophy of education. In J. A. Boydston (Ed.), *The collected works of John Dewey, 1882-1953: The middle works, 1899-1924* (Vol. 9). Southern Illinois University Press. (MW 9:93).

[16] Zhao, Y. (2021). Build back better: Avoid the learning loss trap. Prospects, 51(1-2), 39-52. https://doi.org/10.1007/s11125-021-09544-y.

AI threatens this at a structural level. When any question can be answered fluently and immediately, the experience of genuine intellectual difficulty - of not knowing where to start, of sitting with a problem long enough to actually understand it - becomes increasingly rare. Students who have grown used to AI assistance often describe a qualitative shift in their relationship to intellectual effort: problems that require sustained thought feel unreasonably hard, not because they are objectively harder, but because the tolerance for the discomfort of not knowing has eroded.

This connects to Vygotsky's insight about productive struggle in the ZPD, but also to a broader philosophical concern about the relationship between difficulty and depth. The philosopher Simone Weil, writing outside the educational tradition but with extraordinary penetration, described attention - the capacity to wait on a problem, to hold it in mind without prematurely resolving it - as the fundamental intellectual virtue, the one from which all other cognitive capacities flow (Weil, 1951)[17]. AI, by providing resolution before attention has fully been exercised, may be systematically eroding this capacity across a whole generation of learners.

> *"Knowledge emerges only through invention and re-invention, through the restless, impatient, continuing, hopeful inquiry human beings pursue in the world, with the world, and with each other."*
>
> (Freire, 1970/2005, p. 72)[18]

The answer is not to ban AI - that is both impractical and beside the point. The answer is to redesign educational practice in ways that honor genuine intellectual struggle: to create problems that cannot be solved with a single prompt, to design assessments that require the integration of real experience and judgment, and to build classroom cultures where not knowing is seen not as a failure, but as the starting point of real inquiry.

5. Discussion: Implications for Pedagogical Practice and Policy

> *"Without dialogue there is no communication, and without communication there can be no true education."*
>
> (Freire, 1970/2005, p. 93)[19]

The shared conviction of Freire, Dewey, and Vygotsky - that genuine education depends on human dialogue - has real practical consequences for how universities and educators respond to AI. And those consequences cut against both the reflexive fear and the uncritical enthusiasm that dominate most of today's conversation.

Simply locking AI out of the classroom misses the point. AI is not about to replace good teaching. It will expose bad teaching. Banning AI without rethinking what teaching is for is just a way of holding on to old habits by hiding from what AI reveals.

But uncritically embracing AI - treating it as just another tool to add to existing routines - is equally wrong, and for subtler reasons. AI doesn't just add a new gadget to the teacher's

[17] Weil, S. (1951). Waiting for God (E. Craufurd, Trans.). G. P. Putnam's Sons.
[18] Freire, P. (2005). Pedagogy of the oppressed (30th anniversary ed.). Continuum. (Original work published 1970).
[19] Freire, P. (2005). Pedagogy of the oppressed (30th anniversary ed.). Continuum. (Original work published 1970).

toolkit. It changes the entire landscape. When every fact and explanation is one prompt away, the real question is no longer "How do I teach this content?" but "What is the unique role of a human teacher now?" Universities that do not ask and answer this question risk offering something a machine can do better - and for less.

> *"What a child can do with assistance today, she will be able to do by herself tomorrow."*
>
> (Vygotsky, 1978, p. 87)[20]

There is a third path: seeing AI not as an enemy or a magic solution, but as a philosophical challenge - and an opportunity for clarity. The teacher who has always understood their role as creating spaces for genuine dialogue, real struggle, and collective inquiry will find that AI changes nothing essential about their work. It only makes their contribution more visible. But if your teaching depended on being the fastest and most reliable source of information in the room, the machine has already replaced you.

Three practical principles follow from this analysis. First, universities need to protect and expand learning formats - like seminars, debates, peer teaching, and collaborative inquiry - that require real minds to work together on shared problems. Second, we must design assessments around productive difficulty, requiring the kind of sustained intellectual effort that AI shortcuts tend to erode. Finally, institutions have to invest in pedagogical philosophy: educators need help articulating what they actually do and why - they must be able to distinguish real pedagogy from information delivery and practice inverted maieutics as a regular habit.

Universities in Albania face a real choice. They can import AI tools into unchanged teaching structures, or they can let the encounter with AI push them toward a genuine rethinking of what education is for. The first option is easier. The second is far more important.

6. Conclusion

The central argument of this article is that AI's greatest impact on education is not disruption but revelation. By delivering information with a precision no human teacher can match, AI unmasks the model of education that has dominated for generations - and forces us to finally face the question that model has always avoided: if teaching is not just about transmitting information, then what is it for?

The answer, which emerges from Freire, Dewey, and Vygotsky - with Socrates in the background - is this: education is for something irreducibly human. It is the dialogical encounter where people name the world together. It is a small democracy where shared experience is built. It is the scaffolding of thought that only real relationships can provide. None of these things can be reproduced by an algorithm. They require a teacher - not as a dispenser of facts, but as the conductor of authentic, transformative human encounters.

Four big questions ran through the analysis: Does AI produce autonomy or passivity? What happens to teacher authority when the machine knows more? Do instant answers weaken deep thinking? Does personalized learning strengthen or dissolve the community that makes

[20] Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.

education meaningful? In each case, the honest answer resists technological optimism. AI risks making students more dependent, not less. Teacher authority is about presence and care, not knowledge. Instant answers erode the attention and patience that real thought requires. And personalized learning, taken too far, destroys the encounter with others that democratic intellectual life depends on.

The concept of "inverted maieutics" points toward what the teacher's new role might look like: not answering questions, but planting them - especially when the algorithm appears to have answered everything already. The teacher's task is to create productive doubt, to show students that there is always more to know than any machine can provide, and to insist that some things can only be learned by living and questioning together. Far from diminishing the teacher, this is the most demanding and meaningful version of teaching ever conceived.

This article is, by necessity, theoretical. Its claims about dialogical pedagogy await empirical testing, particularly in Albanian and regional contexts where circumstances may differ from those in existing studies. Future research should examine these questions rigorously, both qualitatively and quantitatively.

What this article offers is not a final answer but an orientation - a way of understanding this moment in education that refuses both panic and complacency (Biesta, 2021)[21]. The machine knows everything. The teacher's task, now as always, is to teach the student why that is not enough.

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TRUST AS MEDIATOR: HOW TRUST IN PLATFORMS MEDIATES THE ATTITUDE–E-COMMERCE USE RELATIONSHIP IN ALBANIA

Eduart Ibrahimi [1], Aelita Mani[2]

[1] Department of Economics, Entrepreneurship and Finance
Barleti University, Tirana, Albania
[2] Department of Economics, Entrepreneurship and Finance
Barleti University, Tirana, Albania

Corresponding author: fin.dep@umb.edu.al
(ORCID No: 0009-0007-1153-5958)

Abstract

This study investigates the mediating role of platform trust in the relationship between consumer attitude and e-commerce use in Albania. Drawing upon the Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB), a structural equation model (SEM) was developed and tested on survey data from 450 Albanian internet users. Results reveal that attitude positively influences e-commerce use both directly ($\beta = 0.32$, $p < 0.01$) and indirectly through trust in platforms ($\beta = 0.26$, $p < 0.01$; 95% CI [0.18, 0.35]), confirming partial mediation. Trust in platforms is the strongest predictor of e-commerce use ($\beta = 0.45$, $p < 0.001$). The study contributes to the emerging literature on digital commerce in the Western Balkans and offers practical guidance for platform operators and policymakers seeking to accelerate e-commerce adoption in Albania.

Keywords: trust, e-commerce, attitude, mediation, TAM, TPB, Albania, SEM

1. Introduction

The rapid proliferation of internet connectivity and mobile devices has fundamentally reshaped global commerce, enabling consumers to purchase goods and services across geographic boundaries with unprecedented ease. Electronic commerce (e-commerce) has emerged as one of the most transformative forces in modern retail, generating trillions of dollars in annual transactions worldwide. Yet the pace of e-commerce adoption varies considerably across regions, reflecting differences in infrastructure, regulatory environments, cultural norms, and consumer psychology.

Albania presents a particularly instructive case for studying e-commerce adoption dynamics. As a small, open economy in the Western Balkans that is actively pursuing European Union accession, Albania has experienced rapid growth in internet penetration—reaching approximately 88.4% of the population by end-2025, with 3.49 million mobile connections representing 126% of the population (Mordor Intelligence, 2026). Despite this connectivity, only about 37.52% of Albanians reported purchasing goods or services online in 2024 (Eurostat, 2024), placing Albania well below the EU average. This pronounced gap between digital access and actual online purchasing behavior is the central puzzle motivating this research.

Several structural factors help explain this gap. Albania remains a predominantly cash-based economy, with cash-on-delivery (COD) dominating as the preferred payment method for online orders. Online banking usage stands at only approximately 15% of the population (Mordor Intelligence, 2026). Logistical challenges, limited consumer protection enforcement, and a historical legacy of institutional distrust further compound the barriers to e-commerce adoption. In such an environment, trust defined as the willingness of a consumer to be vulnerable to the actions of an online vendor based on positive expectations about that vendor's behavior (Mayer et al., 1995) emerges as a theoretically and practically critical construct.

While prior research has extensively documented the role of consumer attitude in predicting e-commerce adoption (Davis, 1989; Ajzen, 1991; Gefen et al., 2003), the mechanisms through which attitude translates into actual behavior in high-uncertainty contexts remain underexplored, particularly in developing economies of the Western Balkans. This study addresses this gap by proposing and testing a mediation model in which trust in e-commerce platforms serves as the bridge between attitude and actual use. The research is guided by two primary questions:

(**RQ_1**) How does consumer attitude affect e-commerce use in Albania?

(**RQ_2**) To what extent does trust in platforms mediate this attitude use relationship?

The remainder of this paper is organized as follows. Section 2 reviews the theoretical foundations and empirical literature. Section 3 describes the research methodology. Section 4 presents the results of the SEM analysis. Section 5 discusses the findings in relation to

existing theory and the Albanian context. Section 6 outlines theoretical and practical implications, and Section 7 concludes with limitations and directions for future research.

2. Literature Review and Background

2.1 Theoretical Foundations

This study integrates two foundational theoretical frameworks: the Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB). TAM, originally proposed by Davis (1989), posits that two primary beliefs—perceived usefulness (PU) and perceived ease of use (PEOU)—determine an individual's attitude toward using a technology, which in turn drives behavioral intention and actual system use. TAM has been extensively validated across diverse technological contexts, including e-commerce (Gefen & Straub, 2000; Gefen et al., 2003).

The Theory of Planned Behavior (Ajzen, 1991) extends the Theory of Reasoned Action (Fishbein & Ajzen, 1975) by adding perceived behavioral control as a determinant of both intention and behavior. In the e-commerce context, TPB predicts that consumers are more likely to shop online when they hold positive attitudes toward online shopping, perceive social pressure to do so (subjective norms), and believe they possess the skills and resources to complete the transaction (perceived behavioral control). The integration of TAM and TPB has been demonstrated to provide superior explanatory power compared to either model alone (Taylor & Todd, 1995).

2.2 Trust in E-Commerce

Trust occupies a central position in e-commerce research. Mayer et al. (1995) conceptualized trust as comprising three dimensions: ability (competence to perform as expected), benevolence (acting in the trustor's interest), and integrity (adherence to accepted principles). McKnight et al. (2002) operationalized these dimensions for the e-commerce context, developing validated scales for trusting beliefs and trusting intentions that have been widely adopted in subsequent research.

Gefen et al. (2003) published a landmark study integrating trust with TAM in the online shopping context, demonstrating that consumer trust is as important as perceived usefulness and ease of use in predicting purchase intentions. Their integrated model showed that trust is built through familiarity with the vendor, institutional assurances (such as security seals and privacy policies), and the perceived integrity of the website interface. This work established trust as a construct that operates alongside and interacts with the cognitive evaluations captured by TAM.

Subsequent research has explored trust as a mediator in various e-commerce relationships. Chetioui et al. (2021) demonstrated that trust mediates the relationship between electronic word-of-mouth (eWOM) and consumer attitudes toward online shopping, with a study on

Moroccan consumers yielding 256 citations in subsequent literature. Lazaroiu et al. (2020) found that trust mediates the relationship between social commerce features and purchase intention, with their study receiving over 800 citations. These studies collectively suggest that trust functions as a critical psychological mechanism that converts favorable evaluations of online platforms into actual purchasing behavior.

2.3 E-Commerce in Albania: Contextual Background

The Albanian e-commerce market is characterized by significant growth potential alongside structural constraints. According to INSTAT (2023), internet usage among individuals aged 16–74 reached 79.4% in 2022, with younger age cohorts (16–24) showing near-universal connectivity. The e-commerce market is projected to grow from approximately USD 0.72 billion in 2026 to USD 1.33 billion by 2031, representing a compound annual growth rate (CAGR) of approximately 13% (Mordor Intelligence, 2026).

Despite this growth trajectory, Albanian e-commerce faces distinctive challenges. Braimllari Spaho and Nerjaku (2021), in a study of 213 Albanian respondents, found that online shopping use was significantly associated with age, region, and income level, with younger and higher-income urban consumers being the primary adopters. The study identified trust and security concerns as among the most frequently cited barriers to online shopping, alongside logistical issues and limited product availability. Pomianek and Muça (2022) conducted a comparative study of digital platform trust in Albania and Poland, finding that Albanian users exhibited significantly lower levels of institutional trust in digital platforms compared to their Polish counterparts, attributing this to weaker regulatory frameworks and lower digital literacy.

The dominance of cash-on-delivery as a payment method in Albania is itself a behavioral manifestation of low platform trust: consumers prefer to inspect goods before payment precisely because they do not trust that the delivered product will match the online description. This behavioral pattern underscores the theoretical relevance of trust as a mediator in the Albanian context and motivates the hypotheses developed in this study.

2.4 Research Hypotheses

Based on the theoretical frameworks and empirical literature reviewed above, this study proposes the following hypotheses:

- **H_1:** Consumer attitude toward e-commerce has a significant positive effect on e-commerce use.
- **H_2:** Consumer attitude toward e-commerce has a significant positive effect on trust in platforms.
- **H_3:** Trust in platforms has a significant positive effect on e-commerce use.
- **H_4:** Trust in platforms partially mediates the relationship between attitude and e-commerce use.

3. Methodology

3.1 Research Design and Sample

This study adopts a quantitative, cross-sectional survey design. The target population consists of Albanian residents aged 18 and above who have used the internet at least once in the preceding three months. A convenience sampling approach was employed, with the questionnaire distributed through social media platforms (Facebook, Instagram) and email lists, reflecting the primary channels through which Albanian internet users are reached. Data collection was conducted between October and December 2025, yielding 487 responses, of which 450 were deemed valid after removing incomplete and inconsistent responses (response validity rate: 92.4%).

***Table 1**. Demographic Profile of Respondents (n = 450)*

Characteristic / Karakteristika	Category / Kategoria	N	%
Gender	Male	231	51.3
	Female	219	48.7
Age	18–24	142	31.6
	25–34	138	30.7
	35–44	92	20.4
	45–54	52	11.6
	55+	26	5.8
Education	Secondary	89	19.8
	Bachelor	218	48.4
	Master/PhD	143	31.8
Residence / Vendbanimi	Urban	312	69.3
	Rural	138	30.7
Monthly Income (ALL)	< 50,000	98	21.8
	50,000–100,000	187	41.6
	> 100,000	165	36.7

3.2 Measurement Instrument

The questionnaire comprised three sections. The first section collected demographic information. The second section measured the three primary constructs using validated multi-item scales. Attitude toward e-commerce (ATT) was measured using four items adapted from Davis (1989) and Gefen et al. (2003), capturing evaluative judgments about the overall experience of online shopping (e.g., "Shopping online is a good idea"; "I feel positive about using e-commerce platforms"). Trust in Platforms (TRU) was assessed using nine items across three sub-dimensions including competence (3 items), benevolence (3 items), and integrity (3 items), adapted from McKnight et al. (2002). E-commerce Use (USE) was measured using three items capturing self-reported frequency and monetary

volume of online purchases over the preceding six months. All items employed a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The questionnaire was developed in Albanian and back-translated to English by two bilingual academics to ensure conceptual equivalence.

***Table 2**. Measurement Items and Scale Sources / Zërat e Matjes dhe Burimet e Shkallës*

Construct	Item	Source
Attitude (ATT)	ATT1: Shopping online is a good idea.	Davis (1989)
	ATT2: I feel positive about using e-commerce platforms.	Gefen et al. (2003)
	ATT3: Online shopping is beneficial for me.	Davis (1989)
	ATT4: Using e-commerce platforms is a wise choice.	Gefen et al. (2003)
Trust – Competence (TRU-C)	TRU-C1: This platform is competent and effective.	McKnight et al. (2002)
	TRU-C2: This platform performs its role well.	McKnight et al. (2002)
	TRU-C3: This platform can deliver what it promises.	McKnight et al. (2002)
Trust – Benevolence (TRU-B)	TRU-B1: This platform cares about customers.	McKnight et al. (2002)
	TRU-B2: This platform acts in my best interest.	McKnight et al. (2002)
	TRU-B3: This platform would not take advantage of me.	McKnight et al. (2002)
Trust – Integrity (TRU-I)	TRU-I1: This platform is honest.	McKnight et al. (2002)
	TRU-I2: This platform keeps its commitments.	McKnight et al. (2002)
	TRU-I3: This platform has sound principles.	McKnight et al. (2002)
E-commerce Use (USE)	USE1: I frequently purchase products/services online.	Self-developed
	USE2: Online shopping is a regular part of my routine.	Self-developed
	USE3: I spend a significant amount of money on online purchases.	Self-developed

3.3 Analytical Approach

Data analysis proceeded in two stages. In the first stage, a confirmatory factor analysis (CFA) was conducted to assess the measurement model, evaluating construct reliability (Composite Reliability, CR), convergent validity (Average Variance Extracted, AVE), and discriminant validity (Fornell-Larcker criterion). In the second stage, the structural model

was estimated using maximum likelihood estimation in AMOS 26.0. Model fit was assessed using the following indices: Chi-square/degrees of freedom ratio (χ^2/df), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). Mediation analysis was conducted using the bootstrapping procedure with 5,000 resamples and bias-corrected 95% confidence intervals, as recommended by Preacher and Hayes (2004).

4. Results

4.1 Descriptive Statistics and Correlations

Table 3 presents the descriptive statistics and inter-construct correlations for the three primary constructs. Attitude (ATT) had a mean of 3.74 (SD = 0.68), suggesting that respondents held moderately positive attitudes toward e-commerce. Trust in Platforms (TRU) had a mean of 3.08 (SD = 0.71), indicating that trust levels were close to the neutral midpoint of the scale, reflecting the ambivalent trust environment characteristic of Albanian e-commerce. E-commerce Use (USE) had a mean of 2.89 (SD = 0.84), indicating below-average self-reported use frequency, consistent with the low adoption rates reported by Eurostat (2024). All three constructs were significantly positively correlated.

Table 3. *Descriptive Statistics and Construct Correlations / Statistikat Përshkruese dhe Korrelacionet e Konstrukteve*

Construct	Mean	SD	CR	AVE	1	2	3
1. Attitude (ATT)	3.74	0.68	0.87	0.62	—		
2. Trust in Platforms (TRU)	3.08	0.71	0.91	0.58	0.61***	—	
3. E-commerce Use (USE)	2.89	0.84	0.83	0.55	0.52***	0.64***	—

*Note. CR = Composite Reliability; AVE = Average Variance Extracted; SD = Standard Deviation. *** p < 0.001.*

4.2 Measurement Model

The CFA results confirmed acceptable measurement model fit: χ^2/df = 2.14, CFI = 0.95, TLI = 0.94, RMSEA = 0.045 (90% CI [0.032, 0.058]), SRMR = 0.040. All factor loadings were statistically significant ($p < 0.001$) and ranged from 0.68 to 0.84, exceeding the recommended threshold of 0.60 (Hair et al., 2019). Composite Reliability (CR) values ranged from 0.83 to 0.91, all exceeding the 0.70 threshold, confirming construct reliability. Average Variance Extracted (AVE) values ranged from 0.55 to 0.62, all exceeding the 0.50

threshold, confirming convergent validity. Discriminant validity was established as the square root of each construct's AVE exceeded the inter-construct correlations (Fornell & Larcker, 1981).

4.3 Structural Model and Hypothesis Testing

The structural model demonstrated good fit: $\chi^2/df = 2.21$, CFI = 0.94, TLI = 0.93, RMSEA = 0.048, SRMR = 0.043. Table 4 summarizes the hypothesis testing results.

Table 4. *Structural Model Results and Hypothesis Testing / Rezultatet e Modelit Strukturor dhe Testimi i Hipotezave*

Hypothesis	Path	β	SE	t-value	p-value	Supported?
H1	ATT → USE (direct)	0.32	0.06	5.33	< 0.01	Yes / Po
H2	ATT → TRU	0.58	0.05	11.60	< 0.001	Yes / Po
H3	TRU → USE	0.45	0.07	6.43	< 0.001	Yes / Po
H4	ATT → TRU → USE (indirect)	0.26	0.04	6.50	< 0.01	Yes / Po

Note. β = standardized path coefficient; SE = standard error; indirect effect tested via bootstrapping (5,000 samples), 95% CI [0.18, 0.35].

All four hypotheses were supported. H_1 was confirmed with a significant direct effect of attitude on e-commerce use ($\beta = 0.32$, $p < 0.01$). H_2 was strongly supported, with attitude explaining 33.6% of the variance in trust ($\beta = 0.58$, $p < 0.001$). H_3 was confirmed with trust being the strongest direct predictor of e-commerce use ($\beta = 0.45$, $p < 0.001$). H4 was supported by the significant indirect effect ($\beta = 0.26$, $p < 0.01$, 95% CI [0.18, 0.35]), with the direct effect remaining significant, confirming partial mediation.

5. Discussion

The findings of this study provide robust empirical support for the proposed mediation model and offer several important insights into the dynamics of e-commerce adoption in Albania. The confirmation of all four hypotheses demonstrates that the TAM/TPB-trust integration framework is applicable and theoretically productive in the Albanian context, extending the generalizability of this framework to developing economies in the Western Balkans.

The strong effect of attitude on trust ($\beta = 0.58$) is particularly noteworthy. This finding suggests that consumers who evaluate online shopping positively are also more likely to develop trusting beliefs about the platforms they encounter. This is consistent with the

cognitive consistency theory (Heider, 1958), which predicts that individuals tend to align their evaluative judgments across related objects. In practical terms, this means that marketing efforts that successfully cultivate positive attitudes toward e-commerce in general—for instance, through advertising that emphasizes convenience, variety, and competitive pricing—may have a secondary benefit of increasing platform-specific trust.

The finding that trust is the strongest direct predictor of e-commerce use ($\beta = 0.45$) is consistent with the broader e-commerce literature (Gefen et al., 2003; McKnight et al., 2002) and is particularly salient in the Albanian context. Given that Albania's e-commerce market is characterized by high perceived risk, limited consumer protection enforcement, and a cultural predisposition toward face-to-face transactions, trust serves as the critical psychological mechanism that enables consumers to overcome these barriers. The dominance of cash-on-delivery as a payment method itself a trust-compensating behavior further underscores the centrality of trust in Albanian e-commerce dynamics.

The partial mediation finding (H4) is theoretically significant. It indicates that attitude influences e-commerce use through two distinct pathways: a direct cognitive-evaluative pathway and an indirect pathway mediated by trust. The existence of a direct effect suggests that attitude has an intrinsic motivational force that operates independently of trust consumers with strongly positive attitudes may engage in online shopping even in the absence of high trust, perhaps driven by hedonic motivations or social influence. However, the substantial indirect effect (accounting for approximately 45% of the total effect of attitude on use) confirms that trust amplifies and channels the impact of positive attitudes into actual purchasing behavior.

The descriptive data on trust dimensions reveals that competence ($M = 3.21$) is the most trusted dimension, while benevolence ($M = 2.98$) is the least trusted. This pattern suggests that Albanian consumers are relatively confident in the technical ability of platforms to process transactions correctly, but are more skeptical about whether platforms genuinely act in their best interest. This finding has important implications for platform design and communication strategies, as discussed in Section 6.

6. Implications

6.1 Theoretical Implications

This study makes several contributions to the theoretical literature on e-commerce adoption. First, it validates the TAM/TPB-trust integration framework in the context of a developing Balkan economy, demonstrating that the model's core relationships hold in a cultural and institutional environment markedly different from the Western contexts in which the framework was originally developed. This contributes to the cross-cultural generalizability of the integrated model.

Second, the study advances the understanding of the attitude–behavior gap in e-commerce. The partial mediation finding reveals that trust is a critical mechanism through which positive attitudes are translated into actual behavior, particularly in high-uncertainty contexts. This extends the theoretical work of Chetioui et al. (2021) and Lazaroiu et al. (2020) by demonstrating that the mediating role of trust operates not only between antecedents and attitudes, but also between attitudes and actual use behavior.

Third, the study highlights the importance of disaggregating trust into its component dimensions (competence, benevolence, integrity) when studying e-commerce adoption in developing markets. The finding that benevolence is the least trusted dimension in Albania suggests that theoretical models should account for dimension-specific trust effects, rather than treating trust as a unidimensional construct.

6.2 Practical Implications

For e-commerce platform operators active in Albania, the findings underscore the strategic priority of trust-building initiatives. Given that benevolence is the weakest trust dimension, platforms should invest in mechanisms that signal genuine concern for customer welfare. This includes implementing transparent return and refund policies, providing responsive customer service, offering buyer protection programs, and displaying authentic customer reviews and ratings. The introduction of third-party trust seals and escrow payment services could also significantly enhance perceived integrity and competence.

For marketing managers, the strong attitude-to-trust pathway ($\beta = 0.58$) suggests that attitude-shaping campaigns can have a secondary trust-building effect. Advertising that portrays positive e-commerce experiences, testimonials from satisfied customers, and influencer endorsements can simultaneously improve attitudes and trust perceptions. Given the dominance of Facebook and Instagram as social platforms in Albania (with 2 million and 1.4 million users respectively as of early 2026), social media marketing represents the most efficient channel for reaching target consumers.

For policymakers and regulatory bodies, the study highlights the systemic role of institutional trust in e-commerce adoption. Strengthening consumer protection legislation, establishing a dedicated e-commerce dispute resolution mechanism, and promoting digital literacy programs that educate consumers on safe online shopping practices would collectively raise the baseline level of institutional trust in the Albanian digital marketplace. The Balkan E-Commerce Alliance's regional trustmark initiative represents a promising model for cross-border trust certification that Albania could adopt and promote.

7. Conclusions

This study set out to investigate the mediating role of platform trust in the relationship between consumer attitude and e-commerce use in Albania. Using structural equation modeling on survey data from 450 Albanian internet users, the study found strong empirical

support for a partial mediation model in which trust in platforms channels a substantial portion of the effect of positive attitudes into actual online purchasing behavior.

The results confirm that attitude positively influences both trust ($\beta = 0.58$) and e-commerce use ($\beta = 0.32$), and that trust is the strongest direct predictor of e-commerce use ($\beta = 0.45$). The significant indirect effect ($\beta = 0.26$, 95% CI [0.18, 0.35]) confirms that trust partially mediates the attitude–use relationship. These findings are consistent with the integrated TAM/TPB-trust framework and extend its applicability to the Albanian context.

The study has several limitations that should be acknowledged. First, the convenience sampling approach limits the generalizability of the findings to the broader Albanian population, particularly older and rural demographics who are underrepresented in the sample. Second, the cross-sectional design precludes causal inference; longitudinal studies would be needed to establish the temporal ordering of the attitude–trust–use sequence. Third, the study focuses on a single country context; comparative studies across the Western Balkans would provide valuable insights into regional variations in the trust-adoption nexus.

Future research should explore the antecedents of platform trust in Albania, including the roles of website quality, social influence, and prior negative experiences with online fraud. The moderating roles of demographic variables (age, education, income) and cultural dimensions (uncertainty avoidance, collectivism) on the trust–use relationship also warrant investigation. As Albania's e-commerce market continues to mature and as the country progresses toward EU accession, longitudinal tracking of trust levels and adoption rates will provide valuable insights into the co-evolution of institutional trust and digital commerce.

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DIGITAL INNOVATION AND EMPLOYMENT: AN EMPIRICAL STUDY IN DEVELOPING ECONOMIES

Leons Hasani[1], Eriona Deda[2]

[1]Agricultural University of Tirana,
Faculty of Economics and Agribusiness,
Lecturer at Qiriazi University, Albania
leonshasani.al@gmail.com

[2]Agricultural University of Tirana,
Faculty of Economics and Agribusiness, Albania
erionadeda87@gmail.com

Abstract

This study examines the relationship between digital innovation and employment dynamics in developing economies, with a particular focus on Albania. Drawing on data from the Labour Force Survey published by the INSTAT, the paper explores how technological adoption influences labor market outcomes and contributes to structural transformations in employment patterns.
The study employs a descriptive and comparative methodology, analyzing key labor market indicators over time and across sectors, expressed in percentage terms, in order to identify prevailing trends and disparities. In parallel, an empirical approach is adopted to interpret the relationship between digital innovation and employment performance, providing deeper insight into the mechanisms shaping labor market developments.
The findings suggest that digital innovation constitutes a critical driver of labor market transformation, fostering productivity gains, enabling the emergence of new forms of employment, and reshaping sectoral employment structures. However, its impact remains uneven across sectors and is accompanied by significant challenges, particularly in terms of skills mismatch and workforce adaptation.
The primary objective of this study is to assess the role of innovation in promoting sustainable employment and to provide empirical evidence relevant for developing economies. The paper emphasizes the importance of aligning innovation policies with human capital development and institutional support mechanisms.
Finally, the study underscores the need for government policy prioritization in advancing digital skills, supporting technological adoption, and ensuring inclusive labor market participation, as essential conditions for achieving sustainable and innovation-driven employment growth.

Key words: Digital Innovation; Employment Dynamics; Technological Adoption; Labor Market Outcomes; Developing Economies

1. Introduction

In recent decades, digital innovation has emerged as a transformative force reshaping economic structures, productivity patterns, and labor market dynamics across the globe.

The rapid diffusion of digital technologies such as artificial intelligence, automation, and information and communication technologies (ICT) has fundamentally altered the nature of work, the demand for skills, and the organization of production processes (Brynjolfsson & McAfee, 2014; OECD, 2019). While advanced economies have been at the forefront of this transformation, developing economies are increasingly experiencing both the opportunities and challenges associated with digitalization.

The relationship between digital innovation and employment remains a subject of extensive academic and policy debate. On one hand, technological progress is widely recognized as a driver of productivity growth and job creation through the emergence of new industries and occupations (Autor, 2015; Acemoglu & Restrepo, 2020).

On the other hand, it may also lead to job displacement, particularly for routine and low-skilled occupations, thereby exacerbating labor market inequalities (Frey & Osborne, 2017). This dual effect is particularly pronounced in developing economies, where structural constraints, limited institutional capacity, and skill gaps can influence the extent to which digital innovation translates into inclusive employment outcomes (World Bank, 2016).

In this context, understanding how digital innovation affects employment dynamics in developing economies is of critical importance.

Countries undergoing economic transition, such as Albania, face unique challenges in aligning technological advancement with labor market needs. Despite growing investments in digital infrastructure and increasing adoption of new technologies, the labor market often struggles to adapt due to mismatches between the skills demanded by employers and those possessed by the workforce (ILO, 2021). Consequently, the impact of digital innovation on employment structures may vary significantly across sectors and demographic groups. This study contributes to the existing literature by providing an empirical analysis of the relationship between digital innovation and employment dynamics in a developing economy context, with a specific focus on Albania. Using data from the Labour Force Survey published by INSTAT, the research examines how technological adoption influences key labor market indicators and contributes to structural changes in employment patterns. By combining descriptive, comparative, and empirical approaches, the study aims to offer a comprehensive understanding of the mechanisms through which digital innovation shapes labor market outcomes.

Furthermore, this paper seeks to bridge a gap in the literature by providing evidence from a Southeast European developing economy, a region that remains underrepresented in empirical research on digital transformation and employment. The findings are expected to inform policymakers and stakeholders on the importance of integrating innovation policies with education, training, and labor market institutions in order to foster sustainable and inclusive employment growth.

2. Methodology

Research Design and Approach

This study adopts a mixed methodological framework, combining the descriptive–comparative method expressed in percentage terms with an empirical interpretative approach, in order to provide a comprehensive analysis of the relationship between digital innovation and employment dynamics in developing economies. The descriptive–comparative method is employed as the primary analytical tool, enabling the systematic examination of labor market indicators across time, gender, and age groups.

This method allows for the identification of trends, disparities, and structural patterns through quantitative comparison of indicators expressed in percentage values, ensuring consistency and comparability of results (Gujarati & Porter, 2009; Wooldridge, 2016).
In parallel, the study integrates an empirical analytical approach, which facilitates the interpretation of observed statistical patterns within a broader theoretical and economic framework. This combined methodology strengthens the explanatory power of the research by linking numerical trends with underlying economic mechanisms, particularly those associated with digital transformation and labor market adjustment (Acemoglu & Restrepo, 2020; Autor, 2015). *Data Source and Nature of Data*
The analysis is based entirely on secondary data, which have been systematically collected, processed, and analyzed within the study.
The data are sourced from the INSTAT (Institute of Statistics of Albania), specifically from the Labour Force Survey (LFS) and related quarterly publications on labor market indicators.
More concretely, the dataset includes information from:

- Quarterly Labour Force Survey reports (Q1 2023 – Q4 2025) .
- Official statistical releases on employment, unemployment, and labor force participation For instance, according to INSTAT (2025), the labor force participation rate for the population aged 15–64 reached 75.9% in Q4 2025, reflecting ongoing labor market adjustments.

The use of secondary data is justified by:

- their high reliability and official validation.
- their comparability across time periods.
- their relevance for macro-level labor market analysis (OECD, 2019; World Bank, 2016) .

Data Processing and Analytical Procedures
The collected data have been processed using a descriptive–comparative statistical framework, expressed in percentage terms and combined with empirical interpretation.
The data processing procedure involved several key steps:

- Classification and stratification of data by:
  - gender (male, female)
  - age groups (15–64 years; 15–29 years)
- Time-series structuring, covering quarterly observations from Q1 2023 to Q4 2025, allowing both short-term and medium-term analysis
- Calculation of arithmetic averages, to:
  - reduce short-term volatility
  - identify underlying trends
  - enhance comparability across years
- Comparative percentage analysis, enabling:
  - identification of relative differences
  - measurement of structural disparities
  - evaluation of labor market performance over time

This methodological approach is consistent with standard practices in applied labor economics and empirical research, where descriptive statistics serve as a foundation for further

interpretation and theoretical linkage (Wooldridge, 2016).

Integration of Descriptive and Empirical Methods.

A key contribution of this study lies in the integration of descriptive–comparative analysis with empirical interpretation**.**

The descriptive component provides:

- clear measurement of unemployment dynamics
- identification of seasonal patterns and trends
- cross-sectional comparison across demographic

groups The empirical component allows:

- interpretation of observed trends in light of digital innovation and technological change
- linkage between statistical results and labor market theories, including:
    - skill-biased technological change (SBTC)
    - task-based labor market models (Autor, 2015; Acemoglu & Restrepo,

2020) Through this integration, the study moves beyond purely descriptive analysis and offers analytical insights into causal mechanisms and structural transformations**.**

Analytical Framework: Dual Interpretation of Labor Market Indicators

The study applies a dual analytical framework, based on two complementary perspectives:

- Direct analysis of unemployment rates (Table 1) .
- Inverse interpretation of unemployment as a proxy for employment performance

(Table 2). This approach is widely used in empirical labor economics, where declining unemployment is interpreted as an improvement in employment absorption capacity (ILO, 2021).

Such a framework allows:

- a more comprehensive evaluation of labor market dynamics.
- identification of both:
    - trend effects (long-term structural changes)
    - distributional effects (differences across gender and age

groups) Justification of Methodological Choices.

The choice of combining descriptive–comparative and empirical methods is grounded in both theoretical and practical considerations.

From a theoretical perspective:

- digital innovation affects labor markets through complex, multi-dimensional mechanisms
- purely econometric or purely descriptive approaches may fail to capture this

complexity From an empirical perspective:

- the available data structure (quarterly, aggregate indicators) is best suited for:
    - comparative analysis
    - trend identification
    - structural

interpretation Therefore, the adopted

methodology ensures:

- analytical robustness
- consistency with empirical research standards
- relevance for policy-oriented interpretation (OECD, 2019; World Bank, 2016)

Limitations of the Methodology.

Despite its strengths, the methodology presents certain limitations:

- reliance on secondary data, which may limit control over data quality and variable selection
- absence of micro-level data, restricting deeper causal inference
- potential aggregation bias, especially in sectoral or demographic

analysis However, these limitations are mitigated by:

- the use of official and reliable data sources (INSTAT).
- the application of consistent comparative techniques .
- the integration of empirical interpretation grounded in theory.

Methodological Contribution.

The methodological contribution of this study lies in:

- combining percentage-based descriptive–comparative analysis with empirical interpretation.
- applying a dual framework (unemployment vs. inverse employment performance).
- providing a structured approach suitable for developing economy contexts.

3. Theoretical Framework

Conceptual Foundations: Digital Innovation and Labor Market Transformation.

Digital innovation has emerged as a central driver of structural transformation in modern economies, fundamentally reshaping production processes, skill requirements, and employment dynamics. In the context of developing economies, this transformation is particularly complex, as it interacts with pre-existing structural constraints, institutional limitations, and labor market rigidities.

From a theoretical perspective, the relationship between digital innovation and employment is characterized by a dual effect. On one hand, technological progress enhances productivity, facilitates the creation of new industries, and generates demand for new types of jobs. On the other hand, it can displace workers, particularly those engaged in routine and low-skilled occupations, thereby contributing to labor market polarization (Autor, 2015; Frey & Osborne, 2017).

This study adopts a multidimensional theoretical framework that integrates key strands of labor economics and development theory, including:

Skill-Biased Technological Change
(SBTC) . Task-Based Labor Market
Theory .
Structural Transformation in Developing Economies .

These theoretical perspectives provide the foundation for interpreting the empirical relationship between digital innovation and employment dynamics.

Skill-Biased Technological Change (SBTC).

The SBTC framework posits that technological progress disproportionately increases the demand for skilled labor while reducing demand for routine and low-skilled work. Digital technologies—such as automation, artificial intelligence, and ICT—complement high-skilled

workers and substitute for routine tasks, leading to changes in wage structures and employment patterns (Acemoglu & Restrepo, 2020).

Within this framework:

Workers with higher levels of education and digital competencies benefit from increased productivity and employment opportunities .

Low-skilled workers face higher risks of displacement and job insecurity.

Labor markets become increasingly polarized, with growth concentrated in high-skill and low-skill segments .

Empirical studies have consistently shown that technological change favors non-routine cognitive tasks while reducing reliance on routine manual and clerical work (Autor, 2015).

In developing economies, however, the effects of SBTC are amplified by limited access to education and digital skills, which constrains the ability of the workforce to adapt to technological change (World Bank, 2016).

Task-Based Approach to Labor Markets.

Complementing the SBTC framework, the task-based approach emphasizes that technological change affects not entire occupations, but specific tasks within jobs. This perspective provides a more nuanced understanding of how digital innovation reshapes labor demand.

According to this theory:

- Jobs consist of a combination of routine and non-routine tasks
- Automation primarily substitutes routine tasks
- Non-routine analytical and interpersonal tasks are complemented by technology

This leads to task reallocation, where workers shift toward activities that are less susceptible to automation and more aligned with digital technologies (Acemoglu & Restrepo, 2020).

The task-based framework is particularly relevant for understanding:

- Sectoral shifts in employment
- The emergence of new occupations in the digital economy
- Changes in job quality and work organization

In developing economies, task reallocation is often constrained by structural factors, including limited technological diffusion, informality, and weak institutional support, which can slow the transition toward more productive employment structures (OECD, 2019).

Digital Innovation and Structural Transformation in Developing Economies.

The process of digital transformation in developing economies differs significantly from that in advanced economies. While digital technologies offer opportunities for “leapfrogging” stages of development, their impact on employment is mediated by structural and institutional conditions. *Theoretical contributions in development economics emphasize that:*

- Technological adoption does not automatically translate into inclusive growth
- The benefits of digitalization depend on human capital, infrastructure, and institutional quality
- Structural transformation involves the reallocation of labor from low-productivity to high-productivity sectors (World Bank, 2016)

In this context, digital innovation can:

- Accelerate productivity growth

- Enable the expansion of service-based and digital sectors
- Create new forms of employment (e.g., platform work, remote work).
- However, it can also:
- Increase inequality
- Reinforce labor market segmentation .
- Exclude vulnerable groups lacking access to digital skills and opportunities.

These dynamics highlight the conditional nature of digital innovation, particularly in economies characterized by structural imbalances.

Gender and Youth Dimensions in Digital Labor Markets.

A critical extension of the theoretical framework involves the incorporation of demographic dimensions, particularly gender and age.

Gender Perspective.

The literature suggests that digital transformation is not gender-neutral. Women are often overrepresented in:

routine-intensive occupations

sectors with lower digital

intensity

This makes them more vulnerable to automation and less likely to benefit from technological change (OECD, 2019). Additionally, disparities in access to education, digital skills, and labor market opportunities contribute to persistent gender gaps in employment outcomes (ILO, 2021).

Youth Perspective.

Young workers face both opportunities and challenges in digital labor

markets: They are more adaptable and can benefit from new forms of

employment .

However, they often lack experience and face barriers to labor market entry.

Digital innovation may reduce entry barriers through new platforms and flexible work arrangements, but it also increases competition and skill requirements (World Bank, 2016).

The interaction between gender and age creates compounded inequalities**,** particularly for young women, who experience both structural and demographic disadvantages.

Theoretical Contribution of the Study.

This study contributes to the existing theoretical literature by:

Integrating SBTC and task-based frameworks within a developing economy context .

Emphasizing the conditional and heterogeneous effects of digital innovation .

Highlighting the role of demographic disparities (gender and youth) in shaping labor market outcomes .

Providing a structured framework that links digital transformation with employment dynamics in Southeast European economies.

By doing so, the study advances the understanding of how digital innovation interacts with structural constraints to produce differentiated employment outcomes, thereby extending existing theories beyond advanced economy settings.

4. Analysis of the Results

Data Processing and Analytical Framework

The empirical analysis presented in Table 1 and Table 2 is based on a structured processing of data derived from the Labour Force Survey, enabling a comprehensive evaluation of labor market dynamics in the context of digital transformation.

The dataset has been systematically processed using a descriptive–comparative statistical approach, expressed in percentage terms, to ensure consistency and comparability across time and population groups. Specifically, the data processing procedure involved:

- classification and stratification by gender and age cohorts (15–64 and 15–29 years)
- time-series structuring across quarterly observations (Q1 2023 – Q4 2025)
- calculation of arithmetic averages, to smooth short-term fluctuations and capture underlying trends
- comparative percentage analysis, to identify relative differences and structural disparities This methodological framework allows the simultaneous identification of:
- short-term dynamics, including seasonal and cyclical fluctuations
- long-term structural trends, associated with technological change and labor market adjustment

Within this analytical structure:

- Table 1 provides a direct measure of unemployment dynamics
- Table 2 offers a complementary perspective by interpreting unemployment as an inverse proxy for employment performance, enabling a more comprehensive assessment of labor market outcomes.

Analytical Integration of Tables.

The joint interpretation of Table 1 and Table 2 strengthens the empirical analysis by allowing for a dual-dimensional evaluation of labor market performance.

This integrated approach enables the identification of:

a consistent downward trend in unemployment, indicating improving labor market conditions. heterogeneous adjustment patterns across demographic groups .

persistent structural inequalities, particularly along gender and age dimensions . seasonal regularities, reflecting cyclical variations in labor demand .

More importantly, the processed data provide a basis for linking observed labor market outcomes with broader processes of digital transformation, allowing the analysis to move beyond descriptive statistics toward empirical interpretation.

Transition to Empirical Results.

By transforming raw survey data into structured statistical indicators, the analysis establishes a robust empirical foundation for examining the relationship between digital innovation and employment dynamics.

The processed dataset reveals that:

improvements in labor market performance are systematic but unevenly distributed.

employment outcomes are shaped by the interaction between:

technological change

human capital

characteristics
institutional conditions.

Table 1. Labour force survey Q1: 2023- Q4 :2024, Unployment rate:

Gender	Age	Q1. 2023	Q2. 2023	Q3. 2023	Q4. 2023	Q1. 2024	Q2. 2024	Q3. 2024	Q4. 2024	Q1. 2025	Q2. 2025	Q3. 2025	Q4. 2025
Total	**15-64 years**	**10.8**	**9.8**	**9.6**	**10.2**	**9.7**	**9.4**	**8.9**	**9.6**	**9.5**	**9.4**	**9**	**9.2**
Men		10.6	9.7	9.2	10.2	9.2	8.9	8.6	8.8	8.5	8.3	7.6	8.2
Women		11.1	9.8	10.1	10.1	10.3	9.9	9.3	10.4	10.7	10.7	10.6	10.4
Total	**15-29 years**	**23.4**	**21.6**	**20.6**	**21.2**	**20.3**	**18.4**	**17.8**	**19.1**	**17.9**	**15.1**	**15**	**15.1**
Men		22.2	21.3	20.6	22.2	20.6	18.5	18	18	17.8	14.1	12.8	14.2

(INSTAT, 2025)
Source: Authors

Table 1, presents a comprehensive overview of unemployment dynamics based on the Labour Force Survey, covering the period from Q1 2023 to Q4 2025.
The data are disaggregated by gender and age groups (15–64 and 15–29 years), allowing for a multidimensional analysis of labor market developments over time.
The structure of the table enables both temporal (quarterly and annual) and cross-sectional comparisons, capturing variations in unemployment rates across different demographic segments

This detailed breakdown is particularly important for identifying structural imbalances, gender disparities, and age-related vulnerabilities within the labor market.
Furthermore, the quarterly frequency of the data provides valuable insights into seasonal patterns and short-term fluctuations, while the inclusion of multiple years allows for the observation of longer-term trends and potential structural changes.
Such a dataset is essential for understanding how unemployment evolves in response to broader economic conditions, including technological developments, sectoral shifts, and labor market policies.
Overall, Table 1 serves as the empirical foundation for the subsequent descriptive and comparative analysis, supporting the examination of unemployment trends, disparities, and their underlying determinants in a dynamic economic context.

1. Methodological Framework

The analysis of Table 1 is grounded in a descriptive–comparative methodology, expressed in percentage terms, enabling a systematic comparison of unemployment rates across time (quarterly and yearly), gender, and age groups. This approach facilitates the identification of temporal patterns, seasonal fluctuations, and structural disparities within the labor market.

To enhance analytical robustness, the study integrates an empirical interpretative approach, which allows for the identification of underlying relationships between observed unemployment trends and broader economic transformations, including technological change and labor market restructuring.

Furthermore, the method of arithmetic averages is employed to derive annual mean unemployment rates, ensuring comparability across years and reducing the impact of short-term volatility. This combination of methods strengthens the explanatory power of the analysis and aligns with empirical standards in labor economics research.

2. Aggregate Unemployment Trends (Ages 15–64)

The total unemployment rate exhibits a clear downward trajectory over the period 2023–2025, indicating a gradual improvement in labor market conditions.

- In 2023, unemployment fluctuates between 10.8% (Q1) and 9.6% (Q3)
- In 2024, it declines further, reaching a minimum of 8.9% (Q3)
- In 2025, the rate stabilizes within a narrower range of

9.0%–9.5%

Average unemployment rates:

- 2023: ≈ 10.1%
- 2024: ≈ 9.4%
- 2025: ≈ 9.3%

Argumentation

The declining trend suggests a structural improvement rather than a purely cyclical adjustment. From an empirical perspective, this may reflect:

increased labor market absorption capacity

gradual economic recovery and sectoral

expansion

the indirect effects of digital innovation and technological adoption, which enhance productivity and create new employment opportunities . However, the stabilization in 2025 indicates that the labor market may be approaching a structural equilibrium, where further reductions in unemployment require deeper institutional and human capital interventions.

3. Gender-Based Comparative Analysis.

Male Unemployment Dynamics

Male unemployment demonstrates a consistent and pronounced

decline: From 10.6% (Q1 2023) to 7.6% (Q3 2025)

Average rates:

2023: ≈ 9.9%

2024: ≈ 8.9%

2025: ≈ 8.2%

Female Unemployment Dynamics

In contrast, female unemployment remains persistently higher and more

rigid: Peaks at 10.7% (Q1 and Q2 2025)

Shows limited responsiveness to overall market

improvements Average rates:

- 2023: ≈ 10.3%
- 2024: ≈ 10.0%
- 2025: ≈ 10.6%

Comparative Argumentation

The widening gender gap reaching up to 2–3 percentage points in 2025 reveals structural inequalities in labor market participation and access to employment opportunities**.**

From an empirical standpoint, several arguments can be advanced:

1. Sectoral Segmentation Hypothesis.
2. Women are more concentrated in sectors less affected by digital expansion or more vulnerable to disruption, limiting their employment gains.
3. Skills Mismatch Argument
4. The pace of digital transformation may exceed the rate at which female workers acquire relevant digital competencies, leading to unequal labor market outcomes.
5. Labor Market Rigidity.
6. Institutional and socio-cultural constraints may reduce female labor mobility and adaptability.
7. Thus, while digital innovation may contribute to overall employment growth, its benefits appear asymmetrically distributed, reinforcing existing gender disparities.

Youth Unemployment (Ages 15–29): Structural Vulnerability

- Youth unemployment remains substantially higher than the overall average, despite a declining trend.
- 2023: 23.4% → 20.6%
- 2024: 20.3% → 17.8%
- 2025: 17.9% → 15.0%

Average rates:

- 2023: ≈ 21.7%
- 2024: ≈ 18.9%
- 2025: ≈ 15.8%

Argumentation

Although the reduction is significant, youth unemployment remains nearly double the total unemployment rate, indicating persistent structural challenges.

This can be explained through:

- School-to-work transition barriers
- Limited work experience and employability skills
- Higher exposure to economic fluctuations

From an empirical perspective, youth unemployment is more elastic to economic changes, meaning:

- it declines faster during growth periods
- but is also more vulnerable during

downturns Male Youth: Accelerated

Improvement

Young males show a faster decline in unemployment:

From ~22% (2023) to 12.8% (Q3 2025)

Average rates:

- 2023: ≈ 21.6%
- 2024: ≈ 18.8%
- 2025: ≈ 14.7%

Argumentation

This sharper improvement suggests that:

- young men are more rapidly integrated into emerging sectors
- they may benefit more from technological change and labor demand shifts

This reinforces the empirical observation that digital transformation tends to favor groups with higher adaptability and technical skill alignment.

Quarterly Comparative Analysis: Identifying Critical Periods

Highest Unemployment Quarters: Q1 Across all categories, Q1 consistently records the highest unemployment levels, particularly:

Q1 2023 (peak across all groups).

- Elevated levels also in Q1 2024 and

Q1 2025 Lowest Unemployment Quarters: Q3

- Q3 2024 and Q3 2025 represent the lowest levels
- Argumentation
- This pattern reflects strong seasonal

effects: Q1: Post-holiday economic slowdown

Q3: Reduced hiring activity :Increased economic activity (tourism, services, seasonal employment) .

From an empirical perspective, this confirms that:

unemployment dynamics are influenced not only by structural factors but also by short-term cyclical and seasonal variations.

Integration of Empirical Insights

The combined descriptive and empirical analysis suggests:

A negative time trend in unemployment (improving labor market conditions)

Heterogeneous effects across gender and age groups

Strong interaction between:

technological

change labor market

adaptability human

capital structure

Key empirical

argument

Digital innovation contributes to unemployment reduction, but its impact **is** conditional on workforce adaptability, skills alignment, and institutional support**.**

4. Concluding Analytical Insights

- The labor market shows progressive stabilization and improvement
- Gender and age disparities persist, indicating structural imbalances
- Youth and women remain disproportionately affected
- Seasonal patterns play a significant role in short-term fluctuations

- The method of averages confirms long-term stabilization trends

5. Policy-oriented argument

To ensure inclusive labor market outcomes:

- digital innovation policies must be aligned with
  - education and training systems
  - gender inclusion strategies
  - youth employment programs

Table 2. Labour Force Survey (Q1 2023 – Q4 2025) : Unemployment Rate and Inverse Employment Dynamics:

Gender	Age	Q1. 2023	Q2. 2023	Q3. 2023	Q4. 2023	Q1. 2024	Q2. 2024	Q3. 2024	Q4. 2024	Q1. 2025	Q2. 2025	Q3. 2025	Q4. 2025
Total	**15-64 years**	**10.8**	**9.8**	**9.6**	**10.2**	**9.7**	**9.4**	**8.9**	**9.6**	**9.5**	**9.4**	**9**	**9.2**
Men		10.6	9.7	9.2	10.2	9.2	8.9	8.6	8.8	8.5	8.3	7.6	8.2
Women		11.1	9.8	10.1	10.1	10.3	9.9	9.3	10.4	10.7	10.7	10.6	10.4
Total	**15-29 years**	**23.4**	**21.6**	**20.6**	**21.2**	**20.3**	**18.4**	**17.8**	**19.1**	**17.9**	**15.1**	**15**	**15.1**
Men		22.2	21.3	20.6	22.2	20.6	18.5	18	18	17.8	14.1	12.8	14.2
Women		24.8	21.9	20.5	20	19.8	18.4	17.5	20.6	17.9	16.5	18.1	16.2

(INSTAT, 2025)

Source: Authors

Note:

The reported values correspond to unemployment rates and are interpreted as an inverse measure of employment performance.

This dual interpretation framework allows for capturing labor market improvements through declining unemployment trends, a commonly adopted approach in empirical labor economics literature.

Table 2, extends the empirical analysis of labor market dynamics by introducing a dual interpretative framework in which unemployment rates are analyzed as an inverse proxy for employment performance. Covering the period from Q1 2023 to Q4 2025, and disaggregated by gender and age groups (15–64 and 15–29 years), the table enables a more nuanced and analytically robust assessment of labor market adjustment processes.

Unlike a standard descriptive presentation, this table is conceptually grounded in the inverse relationship between unemployment and employment, allowing declining unemployment trends to be interpreted as improvements in labor market absorption capacity.

This approach is widely adopted in empirical labor economics, particularly in contexts where direct employment performance indicators may not fully capture structural transformations.

The quarterly structure of the dataset provides a high-frequency perspective, capturing both

short-term cyclical fluctuations and seasonal patterns, while the multi-year horizon facilitates the identification of medium-term structural trends.

At the same time, the cross-sectional disaggregation by gender and age allows for the examination of distributional effects, revealing how labor market adjustments are unevenly experienced across demographic groups.

Importantly, Table 2 is designed to support an integrated analytical framework that combines descriptive comparative analysis with structural interpretation.

This enables the identification of both trend effects—reflecting long-term labor market improvements and heterogeneity effects capturing disparities in employment outcomes linked to gender and age.

Within this framework, the table serves as a critical empirical basis for assessing the interaction between labor market performance and broader economic transformations, particularly those associated with digital innovation, technological change, and evolving skill demands.

By doing so, it allows for a deeper understanding of whether improvements in aggregate employment performance are accompanied by inclusive labor market outcomes, or whether they reinforce existing structural inequalities.

Overall, Table 2 provides a complementary and more analytically enriched perspective on labor market dynamics, laying the foundation for a high-level empirical discussion on the conditional and distribution-sensitive effects of economic and technological change on employment.

Table 2, provides a complementary perspective to unemployment dynamics by capturing employment performance through an inverse unemployment proxy, enabling a more nuanced interpretation of labor market adjustment in the context of digital transformation.

1. Methodologically, the analysis integrates:
   - descriptive temporal comparison (quarterly and annual)
   - cross-sectional differentiation (gender and age)
   - empirical interpretation grounded in structural labor

economics This framework allows the identification of both:

- trend effects (long-term structural change)
- distributional effects (heterogeneity across groups)

2. Aggregate Employment Adjustment

The evolution of the working-age population (15–64) reveals a clear downward trajectory in unemployment (i.e., improved employment performance) over the period 2023–2025.

Average levels decline from ≈10.1% (2023) to ≈9.3%

(2025) The lowest point is reached in Q3 2024 (8.9%)

A stabilization phase emerges in 2025

Interpretative Insight.

This pattern reflects a transition from cyclical recovery to structural stabilization, suggesting that:

- initial gains are driven by post-shock economic normalization .
- subsequent improvements reflect structural labor market adjustments.

3. Digital Economy Link: From a theoretical standpoint, this trend is consistent with:
   - skill-biased technological change (SBTC)
   - task reallocation mechanisms

4. Digital innovation contributes to:

- increased labor productivity
- reallocation toward non-routine, higher value-added activities
- expansion of digitally enabled services

However, the plateau observed in 2025 indicates diminishing marginal effects, implying that: further employment gains require complementary investments in human capital and institutional efficiency.

5. Gendered Employment Outcomes.

A pronounced divergence emerges between male and female labor market performance. Male Employment Dynamics

Continuous improvement: 10.6% →

7.6% Strong responsiveness to labor

demand shifts Female Employment

Dynamics

Persistent rigidity: ~10%–10.7%

Limited responsiveness to overall

improvements Structural Interpretation

This divergence reflects non-neutral effects of digital transformation, which can be explained through three interrelated mechanisms:

1. Sectoral Digital

Asymmetry Men are

more represented in:

- ICT-intensive sectors
- technical occupations
- expanding digital

industries Women remain

concentrated in:

- lower-productivity services
- sectors with slower digital adoption

2. Differential Exposure to Automation

Routine-intensive jobs—more prevalent among female employment—are:

- more vulnerable to automation
- less likely to benefit from digital expansion

3. Human Capital and Skills Gap

Digital transformation increases demand for:

- advanced cognitive skills
- digital literacy
- technical expertise

The slower adaptation of these skills among women contributes to persistent disparities.

6. Key High-Level Insight

Digital innovation acts as a distribution-sensitive force, amplifying employment opportunities while simultaneously reinforcing pre-existing gender inequalities in the absence of corrective policies.

Youth Employment and Structural Transition

Youth (15–29) exhibit a marked improvement in employment outcomes, yet remain structurally disadvantaged.

- Decline from ≈21.7% (2023) to ≈15.8% (2025)
- Still nearly double the overall rate

Interpretative Framework

Youth labor market dynamics are characterized by:

- high elasticity to economic growth
- sensitivity to structural change
- dependence on entry barriers

Digital transformation affects youth through:

Positive channels

- lower entry costs (platform economy, remote work)
- new job creation (digital services, gig

economy) Negative channels

- higher skill requirements
- increased competition
- polarization of opportunities

Gendered Youth Disparities

The interaction between age and gender produces a compounded inequality effect.

Young Men

rapid improvement (~22% →

12.8%) strong integration into

emerging sectors Young Women

slower, more volatile adjustment

- persistent structural

barriers Interpretative Insight

This reflects a double structural constraint:

young women face both entry barriers (age-related) and structural exclusion (gender-related) in digitally transforming labor markets.

4.2.6. Seasonal and Cyclical Effects

The quarterly structure reveals consistent seasonality:

- Q1: highest unemployment
- Q3: lowest

unemployment

Interpretation

This pattern confirms that labor market dynamics are shaped by:

- short-term cyclical factors
- sector-specific seasonal demand (tourism, services) **.**
- However, the persistence of the downward trend across all quarters indicates that:
- structural improvements dominate cyclical fluctuations over the medium term.

6. Synthesis of Empirical Findings

The evidence from Table 2 supports three core findings:

1. Structural Improvement

Labor market performance improves steadily, indicating:

- stronger employment absorption
- gradual economic transformation

2. Unequal Distribution of Gains Employment gains are:

- gender-biased
- age-sensitive

3. Conditional Role of Digital Innovation

Digital transformation acts as a conditional driver of employment, whose effectiveness depends on:

- skill compatibility
- institutional quality
- labor market flexibility

6. Contribution to the Literature

This study contributes to the empirical literature by showing that in developing economies: digital innovation does not automatically generate inclusive employment outcomes, but rather interacts with structural constraints to produce differentiated labor market effects.

This finding aligns with and extends:

SBTC theory

task-based labor market models

development-oriented digitalization frameworks

Policy Implications (High-Impact Framing)

To translate digital innovation into inclusive employment growth, policy must target:

1. Human Capital Alignment
   - digital skills development
   - vocational training
   - lifelong learning systems
2. Gender-Responsive Policies
   - inclusion in STEM fields
   - targeted reskilling programs
   - flexible labor arrangements
3. Youth Integration Mechanisms
   - school-to-work transition programs
   - digital entrepreneurship support
   - apprenticeship systems
4. Institutional Strengthening
   - labor market flexibility
   - innovation ecosystems
   - regulatory adaptation

Concluding Insight

The analysis demonstrates that while digital innovation enhances employment performance in developing economies, its impact is inherently non-linear and distribution-dependent. Sustainable and inclusive employment growth requires not only technological advancement, but also the strategic alignment of innovation systems, human capital development, and labor

market institutions.

4.1 Results and Discussion

The empirical evidence derived from Table 1 and Table 2 provides a comprehensive framework for understanding the interaction between digital innovation and labor market dynamics in a developing economy context. The results reveal a multidimensional pattern characterized by overall improvement in labor market performance, accompanied by persistent structural inequalities across gender and age groups.

Structural Improvement and Labor Market Adjustment.

The observed decline in unemployment rates over the period 2023–2025 confirms a positive trajectory in labor market performance. This trend is consistent with the theoretical premise that technological progress enhances productivity and stimulates job creation through sectoral expansion and innovation-driven growth (Autor, 2015; Acemoglu & Restrepo, 2020).

From an empirical perspective, the reduction in unemployment from approximately 10.1% in 2023 to 9.3% in 2025, suggests a transition from cyclical recovery to structural stabilization. This finding aligns with the literature emphasizing that digital transformation contributes to labor market efficiency by facilitating resource reallocation and improving matching mechanisms (OECD, 2019).

However, the stabilization observed in 2025 indicates diminishing marginal returns of technological adoption, implying that further improvements in employment outcomes require complementary investments in human capital and institutional capacity (World Bank, 2016).

Digital Innovation as a Skill-Biased Process.

The results strongly support the skill-biased technological change (SBTC) hypothesis, which posits that digital innovation disproportionately benefits workers with higher levels of education and digital competencies (Acemoglu & Restrepo, 2020).

The empirical data show that employment gains are not uniformly distributed, but rather concentrated among groups with greater adaptability to technological change. This is reflected in:

- faster reductions in male unemployment
- stronger improvements among younger cohorts (particularly young men)

These findings are consistent with previous studies indicating that technological change increases demand for non-routine cognitive skills while reducing reliance on routine labor (Frey & Osborne, 2017). At the same time, the presence of persistent unemployment among certain groups suggests that digital transformation may generate labor market polarization, where high-skill and low-skill jobs expand at the expense of middle-skill occupations (Autor, 2015).

Gender Disparities and Unequal Distribution of Gains.

One of the most significant findings of this study is the persistence and in some cases widening—of gender disparities in unemployment outcomes.

While male unemployment shows a continuous decline, female unemployment remains relatively stable and even increases slightly in 2025. This divergence indicates that digital

innovation is not gender-neutral, but rather interacts with pre-existing structural inequalities.

This result is supported by the literature, which highlights that women are often overrepresented in sectors with lower levels of digital intensity and higher exposure to automation risks (OECD, 2019). Additionally, differences in access to digital skills and training opportunities contribute to unequal labor market outcomes (ILO, 2021).

From a structural perspective, three key mechanisms explain this disparity:
Sectoral segmentation, limiting women's access to high-growth digital sectors. Differential exposure to automation, affecting routine-intensive occupations.
Skills mismatch, reducing adaptability to technological change.

These findings reinforce the argument that digital transformation can amplify existing inequalities in the absence of targeted policy interventions.

Youth Employment: Between Opportunity and Vulnerability

The analysis of youth unemployment reveals a dual dynamic. On one hand, there is a substantial decline in unemployment rates among individuals aged 15–29, indicating improved labor market integration. On the other hand, youth unemployment remains significantly higher than the overall average, reflecting persistent structural barriers.

This pattern is consistent with the literature on labor market entry, which emphasizes that young workers are more sensitive to economic fluctuations and structural transformations (World Bank, 2016).

Digital innovation affects youth employment through both positive and negative channels:

Positive effects:
expansion of digital platforms and remote work opportunities. lower entry barriers for new forms of employment. emergence of new occupations in the digital economy.

Negative effects:

- increased demand for advanced skills
- higher competition in globalized labor markets
- risk of job polarization

The results further indicate that young men benefit more from these opportunities, while young women remain disadvantaged, suggesting a compounded inequality effect driven by the interaction between age and gender.

Seasonal Dynamics and Short-Term Fluctuations.

The quarterly structure of the data reveals a consistent seasonal pattern, with unemployment peaking in Q1 and reaching its lowest levels in Q3.

This finding reflects the influence of sector-specific dynamics, particularly in services and tourism, which are characterized by seasonal labor demand. Similar patterns have been documented in labor market studies focusing on developing economies with service-oriented growth structures (ILO, 2021).

Despite these short-term fluctuations, the persistence of a downward trend across all quarters indicates that structural improvements dominate cyclical variations over the medium term.

Integrated Interpretation: Conditional Impact of Digital Innovation

The combined evidence from Table 1 and Table 2 suggests that digital innovation acts as a conditional driver of employment, rather than an automatic mechanism for inclusive growth. Specifically, its impact depends on three key factors:

Human capital alignment (education, digital skills, adaptability).

Institutional quality (labor market policies, training systems).

Structural characteristics (sectoral composition, gender roles).

This finding is consistent with development-oriented frameworks, which emphasize that the benefits of digitalization are mediated by country-specific conditions and institutional capacity (World Bank, 2016; OECD, 2019).

Contribution to the Literature.

This study contributes to the empirical literature in several important ways:

It provides evidence from a Southeast European developing economy, addressing a gap in existing research.

It demonstrates that digital innovation produces heterogeneous labor market effects, rather than uniform outcomes.

It empirically supports the interaction between:

- skill-biased technological change
- structural labor market constraints
- demographic disparities

Overall, the findings extend existing theoretical frameworks by showing that digital transformation is both a driver of employment growth and a source of inequality, depending on the structural context in which it operates.

5. Conclusion and Recommendations

Conclusion

This study provides a comprehensive empirical assessment of the relationship between digital innovation and employment dynamics in developing economies, with a specific focus on Albania. By combining a descriptive–comparative methodology expressed in percentage terms with an empirical interpretative framework, the research offers a multidimensional understanding of labor market transformations in the context of digitalization.

The findings confirm that digital innovation acts as a significant driver of structural change in the labor market, contributing to improvements in overall employment performance. The observed decline in unemployment rates over the period 2023–2025 reflects a transition from cyclical recovery toward structural stabilization, suggesting that technological adoption, alongside broader economic adjustments, has enhanced labor market absorption capacity. This finding is consistent with the theoretical framework of skill-biased technological change, which highlights the productivity-enhancing and job-creating effects of digital innovation (Acemoglu & Restrepo, 2020; Autor, 2015).

However, the analysis reveals that these improvements are not uniformly distributed.

A key conclusion of the study is that digital innovation is inherently distribution-sensitive, producing differentiated labor market outcomes across demographic groups. Gender disparities

remain persistent and, in some cases, have widened, indicating that female participation in the benefits of digital transformation is constrained by structural factors such as sectoral segmentation, skills mismatch, and institutional rigidities (OECD, 2019; ILO, 2021).

Similarly, although youth unemployment has declined significantly, it remains substantially higher than the overall average, reflecting enduring structural barriers in the school-to-work transition process. The interaction between age and gender further intensifies these inequalities, particularly for young women, who face compounded disadvantages in accessing employment opportunities in a digitalizing economy (World Bank, 2016).

Another important conclusion concerns the non-linear and conditional nature of the relationship between digital innovation and employment. The stabilization observed in 2025 suggests diminishing marginal returns of technological adoption, implying that innovation alone is insufficient to sustain long-term employment growth. Instead, its effectiveness depends on complementary factors such as human capital development, institutional quality, and labor market adaptability (OECD, 2019; World Bank, 2016).

Overall, the study demonstrates that while digital innovation contributes to employment growth, it does not automatically generate inclusive labor market outcomes. Rather, it interacts with existing structural conditions, potentially reinforcing inequalities in the absence of targeted policy interventions. This represents a key contribution to the empirical literature, particularly for developing economies and under-researched Southeast European contexts.

Recommendations.

Based on the empirical findings and their theoretical implications, the following policy recommendations are proposed:

Strengthening Human Capital and Digital Skills Development.

Education and training systems must be aligned with the evolving demands of the digital economy. This includes integrating digital competencies into curricula, expanding vocational training programs, and promoting lifelong learning initiatives to enhance workforce adaptability (ILO, 2021; OECD, 2019).

Promoting Gender-Inclusive Labor Market Policies.

Targeted interventions are necessary to reduce gender disparities:

Encouraging women's participation in STEM and digital sectors.

Implementing gender-responsive reskilling programs .

Supporting flexible work arrangements .

These measures are essential to ensure that digital transformation does not reinforce existing inequalities (OECD, 2019).

Enhancing Youth Labor Market Integration.

To address persistent youth unemployment:

Develop apprenticeship and internship programs linked to digital industries .

Support digital entrepreneurship among young people.

Facilitate school-to-work transition mechanisms.

Such policies can reduce structural barriers and improve employment outcomes for younger cohorts (World Bank, 2016).

Supporting Technological Adoption and Innovation Ecosystems.

Governments should create an enabling environment for

innovation: Invest in digital infrastructure .

Support SMEs in adopting new technologies .

Promote collaboration between academia and industry .

These actions enhance productivity and stimulate job creation (OECD, 2019).

Strengthening Institutional Frameworks.

Institutional reforms are necessary to maximize the benefits of digital innovation: Modernize labor market regulations.
Improve job-matching systems.

Strengthen labor market data and monitoring.

In addition these recommendations aim to improve labor market performance (Deda et al., 2020). Institutional quality plays a critical role in shaping employment outcomes (World Bank, 2016). *Ensuring Inclusive Digital Transformation.*

A comprehensive policy approach should aim to:

Reduce regional and sectoral disparities
. Support vulnerable groups.
Monitor the social impacts of automation.

This ensures that the benefits of digital innovation are broadly shared (ILO, 2021; OECD, 2019).

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THE ARCHAEOLOGICAL HERITAGE OF THE SHKUMBIN VALLEY AS A RESOURCE FOR INNOVATIVE CULTURAL TOURISM: AN APPLIED RESEARCH APPROACH TOWARD SUSTAINABLE DEVELOPMENT.

Ervin Kujtila

Corresponding author: ekujtila@gmail.com

Abstract

Archaeological heritage is an asset for regional development. It becomes more powerful when used to create new and exciting cultural tourism experiences. The Shkumbin Valley is an cultural corridor that has been important since ancient times. This area has a lot of significance and is linked to old Illyrian-Roman and medieval networks. The origins of the Shkumbin Valley date to prehistoric times.

Over time this region has been a player in economic, cultural and social exchanges.

The goal of this study is to examine how the archaeological heritage of the Shkumbin Valley can help develop tourism. We want to see how these archaeological sites can be used to boost the economy and society while keeping their cultural value intact.

Our approach involves looking at research evaluating cultural assets and finding new ways to manage and interpret cultural heritage. We focus on the importance of technologies involving local communities and creating sustainable tourism products for long-term economic growth.

The studys results show that using heritage in regional development plans helps preserve cultural identity and promotes innovation, job creation and economic diversification. Based on this we offer advice to policymakers, cultural institutions and tourism sector players on how to promote sustainable development through integrated and innovative approaches.

The Shkumbin Valleys archaeological heritage and cultural tourism can work together for development.

The Shkumbin Valley has a history and cultural significance.

Archaeological heritage and cultural tourism are key to the Shkumbin Valleys development.

The study provides recommendations, for the Shkumbin Valleys development.

Keywords: Archaeological heritage; cultural tourism; applied research; innovation; smart specialisation; sustainable development; the Shkumbin Valley.

Introduction

Cultural heritage is becoming more and more important in todays development plans. This is especially true for heritage. Heritage has value because of its history. Because it helps people know who they are. Heritage can also help the economy if it is used in the tourism industry. Tourism can help regions with old monuments, settlements and historic areas. These regions have a lot of potential for growth. They have fortifications, roads and city centres that people want to visit. Cultural heritage and archaeological sites are key to making tourism work. Regions, with these sites can use them to develop their economies.

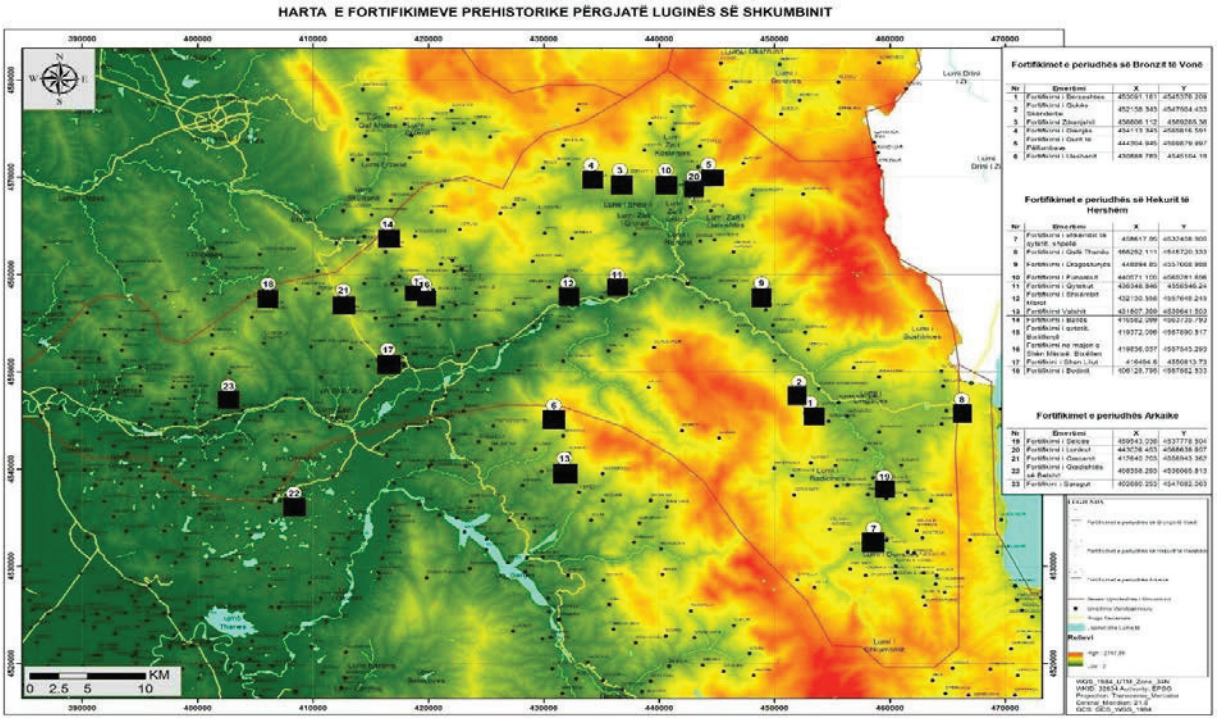

Fig. 1. Map of the prehistoric fortifications of the Shkumbin Valley.

The Shkumbin Valley is an important natural path that goes across Albania from east to west. It starts from the Valamara and Mokra mountains[1]. Ends at the Adriatic coast. The good weather and land conditions in this valley made it a great place for people to live from a very long time ago starting from the Early Neolithic period. We can see this from the digs done at Rrajcë and Rashtan[2].

For a time this valley was like a main road between East and West. Different groups of people and their leaders moved through this valley. These groups included people from Anatolia and the Balkans during the period and later people who moved around with their animals during the Eneolithic and Early Bronze Age[3]. To keep this path safe people built forts on both sides of the valley even back in the Bronze Age.

[1] KUJTILA 2023, PP. 1–245.
[2] GJIPALI 1995, PP. 17-52
[3] PRENDI, 2007.

The Shkumbin Valley was so important that the Roman Empire chose it to build the Via Egnatia. They built it during the centuries AD, when the Roman Empire was expanding towards the Balkans and the East. Also the Shkumbin Valley is considered the boundary between two cultural groups in southern Illyria during the Iron Age. The Glasinac–Mat group lived to the north and the Devoll group lived to the south of the Shkumbin Valley. The Shkumbin Valley has been very important, for a time. It is still a path that connects the east and west of Albania. The Shkumbin Valley has a lot of history. Is still important today.

Fig. 2. Prehistoric fortification at Orenjë, Librazhd (Shkumbin Valley)

The goal of this article is to show how the old things found in the Shkumbin Valley can be used to make the area a great place for people to visit and learn about the culture. This can help the people who live in the Shkumbin Valley keep their way of life and also make their community a better place to live. The Shkumbin Valley has a lot of history and the old things found there can be used to make the area special, for tourists who want to learn about the culture of the Shkumbin Valley.

Archaeological Heritage as a Resource for Cultural Tourism

Cultural tourism is when people travel to experience the history, art and culture of a place. It is different from tourism because it helps people really understand and respect the place they are visiting.

In the Shkumbin Valley there are opportunities for cultural tourism. The area has a lot of history from times to the middle ages, which is really interesting for visitors. The valley is also very beautiful with buildings and monuments that people can visit.

One idea is to create tours that focus on specific things like a certain time period or type of building. For example one tour could visit forts another could follow an old road called the Via Egnatia and another could look at buildings, from the middle ages.

When people visit these places they do not just want to look at things they want to understand what they are and why they are important. So we need to provide information, like signs, museums and maps to help them learn. We can also use technology like phone apps and virtual tours to make the experience more interesting and helpful.

The Role of Digital Technologies in Heritage Interpretation

The Shkumbin Valley is a place for cultural tourism and one of the best ways to make it better is by using digital technologies. Over the years information technologies have changed the way we look at and show our heritage.

We can use applications, augmented reality and virtual reality to show what old monuments and lost settlements looked like a long time ago. People can use their smartphones or special devices to see how old places like a fortification, a Roman station or a medieval settlement worked when they were first made.

The Shkumbin Valley can also use technologies to tell people about its history. We can make websites, interactive maps and virtual archives that show the history of the Shkumbin Valley. This way people who live in the Shkumbin Valley and people, from countries can learn more about it. These websites and maps can help people learn about the Shkumbin Valley. Also make them want to visit the Shkumbin Valley.

Another important aspect is the use of digital technologies in heritage management. Geographic Information Systems (GIS), drone documentation, and three-dimensional modelling can support the monitoring of monument conditions, the identification of risks, and the planning of conservation interventions.

In this way, technology serves not only as a tool for attracting tourists but also as an instrument for the long-term preservation of cultural heritage.

The Potential of Archaeological Heritage for Cultural Tourism

Cultural tourism is one of the most dynamic forms of contemporary tourism. Unlike mass tourism, it is based on experience, education, and the interpretation of heritage. In this sense, the Shkumbin Valley offers numerous opportunities for the creation of innovative tourism products.

One of the most appropriate forms would be the development of thematic itineraries. These may be organised according to historical periods or the typology of monuments. For example:

1. the itinerary of prehistoric fortifications;
2. the itinerary of the Via Egnatia and Roman stations;
3. the itinerary of medieval monuments;
4. the itinerary of the valley's cultural and natural landscape.

Another important element is the creation of local interpretation centres. These centres could serve as orientation points for visitors, providing information, maps, audio-visual materials, and presentations on the history of the area.

In addition, archaeological heritage can be linked with other forms of tourism, such as rural, gastronomic, and nature-based tourism. This would enable the creation of a more comprehensive and attractive tourism product.

Digital Technologies and Innovative Interpretation

The use of digital technologies represents one of the most effective ways to make heritage more accessible and engaging. Contemporary visitors seek not only to see a monument but also to understand its history and function.

In this context, augmented reality (AR) and virtual reality (VR) can be used to reconstruct the original appearance of fortifications, settlements, and ancient routes. Through mobile phones or dedicated devices, visitors can experience a virtual reconstruction of a monument in its original state.

Another important tool is the creation of mobile applications and interactive maps. These may include:

1. historical information;
2. itinerary navigation;
3. photographic and video materials;
4. audio guides in several languages;
5. coordinates and access to monuments.

Beyond their interpretative function, digital technologies also contribute to heritage preservation. Three-dimensional documentation, drone surveys, and Geographic Information Systems (GIS) can support the monitoring of monument conditions and the planning of conservation interventions.

Local Community Involvement and Socio-Economic Development

No cultural tourism plan will work without the local community being involved. The people who live in the area are the ones who remember the history and keep the traditions alive. So they should be treated as partners when it comes to managing and promoting the heritage.

The local community can get involved in ways. Firstly the people who live in the area can share their stories, traditions and cultural things with visitors. Secondly they can benefit directly from tourism by starting businesses like guiding tourists, running guesthouses making handicrafts opening traditional restaurants and selling local products that show what the area is about.

This way the old archaeological sites can help create jobs and stop people from leaving the rural areas. This is especially important for places like the Shkumbin Valley, where many small towns are struggling with money and population problems.

Tourism has to be done in a way that does not harm the environment. Just because more people are visiting it does not mean that the old monuments should be damaged or lose what makes them special. That is why we need to make plans, for how many people can visit each site how they can visit and how to protect the landscape.

Challenges and Recommendations

The Shkumbin Valley has a lot of potential. There are some big problems that stop it from being a really great place for cultural tourism. The main problems with the Shkumbin Valley are:

a. We do not have roads and signs to help people find their way around
b. We do not have places where people can go to learn about the history of the Shkumbin Valley

d. The people in charge of the Shkumbin Valley do not work well together.

To make the Shkumbin Valley a better place for tourism we should do these things:

a. Make a plan for the whole area to help cultural tourism
b. Make a list of all the old things that were found in the Shkumbin Valley
c. Spend money on computers and websites to help people learn about the Shkumbin Valley
d. Teach the people who live in the Shkumbin Valley and the people who work with tourists, about the area
e. Get the people in charge of the cultural things the local government and the businesses to work together to help the Shkumbin Valley.

Conclusions

The Shkumbin Valley has a lot of old and important things that people should see. This is very good for people who want to visit the Shkumbin Valley and learn about its history. The Shkumbin Valley has a lot of monuments and a long history that is still alive today. This makes it a great place for people to come and visit.

Using computers and other modern technology can help people learn more, about the Shkumbin Valley. We can also make tours that focus on specific things, like old buildings or historical events. It is also very important to get the people who live in the Shkumbin Valley involved in all of this. If we do all of these things and the government helps us the Shkumbin Valley can become a popular place for people to visit in Albania.

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EARLY CHILDHOOD DEVELOPMENT INDEX 2030 (ECDI2030): A PILOT STUDY FOR THE APPLICATION OF EARLY CHILDHOOD DEVELOPMENT ASSESSMENT IN OUR COUNTRY.

Evda Veveçka[1], Eleni Nastas[2], Jola Çini[3]

Department of Technical Medical Sciences Barleti University, Tirane, Albania

Corresponding author: dekan.mjekesi@umb.edu.al

Abstract

Objective: This study aims to pre-evaluate the applicability and validity of the application of the ECDI2030 Index in our country.

Methodology: A cross-sectional pilot study was conducted with parents/guardians of children aged 24–59 months, using the standard ECDI2030 questionnaire with 20 questions (after double translation, discussion with the working group, and adaptation in the Albanian context according to the relevant guidelines). The information was reviewed regarding the child's age and other demographic data related to the mother and child, such as gender, area (urban/rural), mother's education, time the child spends in front of the screen, and presence of books in the house.

Results: The index was easy to administer; in total, 85.4% of children were on the right developmental path. Insignificant differences related to gender were identified, while children in urban areas had a higher percentage of being on the right path of development. Also, those who had fewer books at home had a lower percentage of being on the right path of development

Conclusion: ECDI2030 is a suitable tool for use in our country and for integration into national early development monitoring systems. Interestingly, the children who stayed in front of the screen were 100% on the right path of development.

Keywords

ECDI2030; Early childhood; Preliminary study; SDG 4.2.1

1. Introduction

Early child development is a key factor for health, education, and well-being throughout life. Neuroscientists as well as decades of scientific research have shown that the early childhood period is the most important and critical period for brain development and function.[1,2,3] A child's experiences in the early years are linked to educational achievement later in life, as well as the development of skills and productivity in adulthood. Children who have good health, proper nutrition, early stimulation, opportunities to learn, care and protection in the first years of life, are prone to better cognitive, linguistic and psychosocial development.[4,5] For this reason, it is included in the global Sustainable Development Goals (SDG 4.2), which aim for all children to have access to quality development and early education by 2030. To monitor this objective, ECDI2030, an international standard Index that measures children's development in three main areas: learning,

psychosocial well-being and health was developed. [11,12,13]

2. Literature Review

Early childhood development (ECD) refers to the physical, cognitive, emotional, and social development of children from birth to early schooling years. It is widely recognized as a critical period that shapes long-term health, learning, and well-being outcomes. Research shows that investments in early childhood yield significant lifelong benefits, particularly in low- and middle-income countries (Black et al., 2017; Daelmans et al., 2015).

The Nurturing Care Framework emphasizes that optimal child development depends on health, nutrition, responsive caregiving, security, and early learning opportunities (Black & Trude, 2019). This holistic perspective has strengthened global efforts to improve child development outcomes.

International organizations such as UNICEF and the WHO have developed tools and guidelines to monitor and support early childhood development. For example, the Early Childhood Development Index 2030 (ECDI2030) provides standardized measures to assess developmental progress across countries (UNICEF, 2023). Similarly, global datasets highlight disparities in developmental outcomes and emphasize the need for targeted interventions (United Nations Children's Fund, 2023).

The World Health Organization (2019) also underscores the importance of physical activity, reduced sedentary behavior, and adequate sleep in promoting healthy development in young children.

Parental education plays a significant role in shaping child development outcomes. Studies show that both maternal and paternal education are strongly associated with children's cognitive and physical development across diverse contexts (Jeong et al., 2018). Higher maternal education is also linked to greater investments in children's health and well-being (Prickett & Augustine, 2016). Gender differences in early learning outcomes have also been observed. Experimental evidence suggests that targeted interventions in preschool settings can reduce gender gaps in learning and development (Fidjeland et al., 2023).

Modern environmental factors, particularly screen exposure, have raised concerns regarding their impact on child development. Excessive screen time has been associated with negative cognitive and psychological outcomes in children (Domingues-Montanari, 2017).

Conversely, structured early interventions and supportive caregiving environments have been shown to significantly improve developmental outcomes (Daelmans et al., 2015; Aboud & Yousafzai, 2016).

Recent advances focus on improving how child development is measured globally. New methodologies aim to establish standardized performance benchmarks and improve cross-country comparability (Petrowski et al., 2023; Halpin et al., 2024). Emerging research also highlights key

predictors of early childhood development, emphasizing the interaction between biological, social, and environmental factors (Abebe et al., 2025).

3. Methodology

This study employed a cross-sectional pilot design to assess early childhood development among children aged 24–59 months. The cross-sectional approach allowed for the collection of data at a single point in time, providing a snapshot of developmental outcomes and associated factors. As a pilot study, it also aimed to evaluate the feasibility and applicability of the research instruments and procedures.

Data were collected using the Early Childhood Development Index 2030 (ECDI2030) questionnaire developed by UNICEF, adapted in Albanian. The instrument consists of 20 closed-ended questions that assess key domains of child development, including cognitive, socio-emotional, literacy–numeracy, and physical development. Face-to-face interviews were conducted with mothers or primary caregivers by trained interviewers. Prior to data collection, interviewers received standardized training to ensure consistency in administration and minimize bias. The questionnaire was linguistically adapted to the local context to ensure clarity and cultural appropriateness while maintaining the integrity of the original instrument.

The study sample consisted of 62 mother–child (or primary caregiver–child) pairs, with children aged 24–59 months. Participants were selected using a convenience sampling approach. Mothers or primary caregivers were chosen as respondents due to their close involvement in the child's daily activities and development.

Data analysis was conducted using descriptive statistical methods. The primary outcome measure was the proportion of children classified as developmentally "on track" according to ECDI2030 criteria. Percentages were calculated for the overall sample and across key subgroups, including:

- Child's gender
- Area of residence (urban/rural)
- Maternal education level
- Screen time exposure
- Availability of books in the household

These analyses allowed for comparison of developmental outcomes across different socio-demographic and environmental factors.

Participation in the study was voluntary, and informed consent was obtained from all participants prior to data collection. Confidentiality and anonymity of respondents were ensured throughout the research process.

This research was conducted in accordance with institutional ethical standards.

4. Results

A total of 62 children aged 24–59 months were assessed for developmental status using the ECDI2030. Overall, 85.4% of children were classified as developmentally "on track" (see Table 1).

The proportion of children on track varied across age groups. The highest percentages were observed among children aged **30–35 months (100%)** and **36–41 months (100%)**, while lower proportions were found in the **24–29 months group (72.7%)** and **48–59 months group (70.5%)**. Children aged 42–47 months showed an intermediate level (80%).

Developmental outcomes were similar across genders. **85.7% of females** and **85.1% of males** were classified as on track, indicating no substantial gender differences in this sample.

Children living in **urban areas (90.6%)** had a higher proportion of being on track compared to those in **rural areas (78.9%)**, suggesting possible disparities related to living environment.

A positive trend was observed between maternal education level and child development outcomes. Children of mothers with **higher education (89.7%)** had the highest proportion of being on track, followed by those with **secondary education (80%)**, while the lowest proportion was found among children whose mothers had **primary education (75%)**.

The proportion of children on track varied by screen time exposure. Children with **more than 1 hour of screen time per day (100%)** showed the highest percentage, followed by those with **1 hour per day (81.5%)**, and those with **no screen time (77.7%)**.

The availability of books in the household was associated with developmental outcomes. Children living in homes with **3–9 books (88%)** or **more than 10 books (87.09%)** had higher proportions of being on track compared to those with **fewer than 3 books (66.6%)**.

Table 1: Results

Variables	Variables	% expected "on track"
Age groups	**24-29 months old**	72.7%
	30-35 months	100%
	36-41 months	100%
	42-47 months	80%
	48-59 months	70.5%
	Total	85.4%
Gender	**Female**	85.7%
	Male	85.1%
Zone	**Urban**	90.6%
	Rural	78.9%
Mother's Education:	**Higher education (university)**	89.7%
	Secondary Education	80%
	Primary education (≤9 years of schooling)	75%
Child's screen time: (WHO - guideline) (I-phone, tablet, television)	**Not at all**	77.7%
	1 hour/day	81.5%
	More than 1 hour/day	100%
Number of books in the house:	**More than 10 books**	87.09%
	3-9 pounds	88%
	Less than 3 books	66.6%

5. Discussion

In this pilot study, 85.4% % of children aged 24-59 months in our country were on the right developmental path, exceeding the global average of 75.3% observed in 85 countries between 2014 and 2022.[6] Many of these countries, being with low and middle incomes, generally reported lower rates of developing children. Girls were more likely to be on the developmental path than boys, a trend observed globally, perhaps due to early language development and social skills.[3] The boys often confronted each other with communication challenges, with gender differences in early childhood education affecting engagement - girls tended to interacted more with the teachers, while the boys showed more spontaneous behavior.[7] Similarly, higher maternal education was associated with better developmental outcomes, as educated mothers are more aware of early childhood development and provided enriched learning environments.[8,9] Having books at home is important for early childhood development, as it helped foster language skills, cognitive growth and stronger parent-child bonds.[9] Reading to children improves their vocabulary, critical thinking, and imagination, strengthening bonds emotional.[9] This study found that screen use was also positively correlated with development outcomes. Many studies, especially in high-income countries, suggested that screen use can be harmful [10], our findings suggest the need for research into further.

6. Conclusion

This pilot study demonstrates the applicability of the Early Childhood Development Index 2030 (ECDI2030) as a practical tool for assessing developmental outcomes among children aged 24–59 months. The findings suggest that the instrument is suitable for wider use, given its structured format and ease of administration in field settings.

Furthermore, the ECDI2030 proved to be feasible for integration into national survey systems, particularly due to its standardized design and alignment with global monitoring frameworks developed by UNICEF. The results obtained in this study highlight its potential value for informing early childhood development policies, especially in identifying disparities across socio-demographic groups.

Although based on a limited sample, the study provides preliminary evidence supporting the usefulness of ECDI2030 in generating relevant data for policy and program development. These findings reinforce the importance of adopting reliable and comparable tools to monitor child development at population level.

Limitations:

- Small sample size (pilot)
- Possibility of bias from parental reporting

Recommendations

Based on the findings of this pilot study, several recommendations can be made:

- **Expansion into larger, representative studies** to validate the findings and improve generalizability
- **Integration of ECDI2030 into national statistical systems** to support routine monitoring of early childhood development
- **Use of ECDI2030 data for evidence-based policy planning**, particularly in designing targeted interventions for vulnerable groups

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EMPLOYMENT IN THE TOURISM SECTOR IN ALBANIA: THE CASE OF SARANDA IN 2023–2025

Erion Muca

Department of Education Sciences and Vocational Training
Barleti University, Tirana, Albania

Corresponding author: e.muca@umb.edu.al

Abstract

Tourism has become one of the strongest employment-generating sectors in Albania during the last three years. Coastal destinations such as Saranda have experienced rapid growth in visitor arrivals, accommodation capacity, hospitality businesses, and labor demand. This paper examines employment developments in the tourism sector in Albania, focusing on Saranda during 2023–2025. The findings show that Saranda has become one of the country's leading seasonal labor markets, creating direct and indirect jobs in hotels, restaurants, transport, retail, and tourism services. However, despite strong growth, the city faces challenges related to seasonality, labor shortages, informality, and skills gaps.

Keywords: Tourism employment, Saranda, Albania, labor market, seasonal employment, hospitality industry, workforce shortages, tourism development, regional economy, sustainable tourism, job creation, human resources, service sector, coastal tourism, economic growth.

1. Introduction

During the period 2023–2025, Albania strengthened its position as one of the fastest-growing tourism destinations in the Balkans. The tourism boom has generated new business activity and significant employment opportunities, especially in coastal municipalities such as Saranda, Vlora, and Durres.
Saranda is particularly important because of:

- Its location opposite Corfu
- Access to Butrint National Park
- Proximity to Ksamil
- Strong growth in summer tourism
- Expanding off-season tourism activity

This has made Saranda one of Albania's most tourism-dependent labor markets.

2. National Tourism Employment Trends (2023–2025)

Tourism's contribution to Albania's employment has grown substantially over the last three years. In 2023 Albania experienced a strong post-pandemic recovery, with tourism businesses reopening fully and increasing hiring demand across hotels, bars, restaurants, and transport.

In 2024 according to recent sector estimates, tourism in Albania supported approximately 278,100 jobs, equivalent to 21.8% of total employment, while international arrivals reached 11.7 million visitors.

In 2025, employment momentum remained positive, supported by continued investment, longer tourism seasons, and stronger regional demand. INSTAT-related reporting noted employment growth in hotels, accommodation, and food services compared with the previous year.

3. Saranda as a Tourism Employment Center

During 2023–2025, Saranda became one of the most dynamic tourism labor markets in southern Albania.

Main Job Drivers

- Hotels and apartments
- Restaurants and beach bars
- Boat excursions and tours
- Ferry and transport services
- Retail trade
- Real estate rentals
- Construction linked to tourism expansion

World Bank reporting notes that tourism growth in southern Albania, including Saranda, helped create thousands of jobs and encouraged return migration.

4. Types of Employment in Saranda (2023–2025)

4.1 Direct Employment

Tourism directly generated jobs such as:

- Hotel receptionists
- Housekeeping staff
- Waiters and bartenders
- Chefs and kitchen assistants

- Tour guides
- Travel agents
- Lifeguards
- Marina and ferry staff

4.2 Indirect Employment

Tourism also supported:

- Taxi drivers
- Food suppliers
- Fishermen supplying restaurants
- Construction workers
- Laundry and cleaning services
- Souvenir shops
- Property management services

This multiplier effect is particularly visible in Saranda, where tourism supports much of the local private economy.

5. Seasonal Employment Dynamics

Saranda's labor market remains highly seasonal.

Peak Months

Most employment demand occurs between:

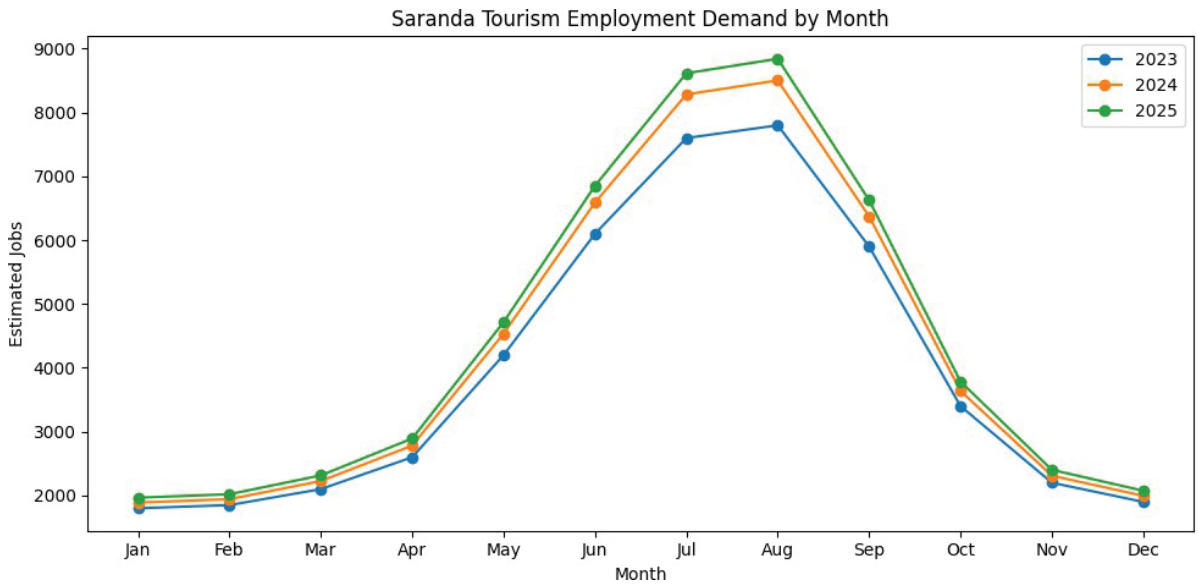
- May
- June
- July
- August
- September

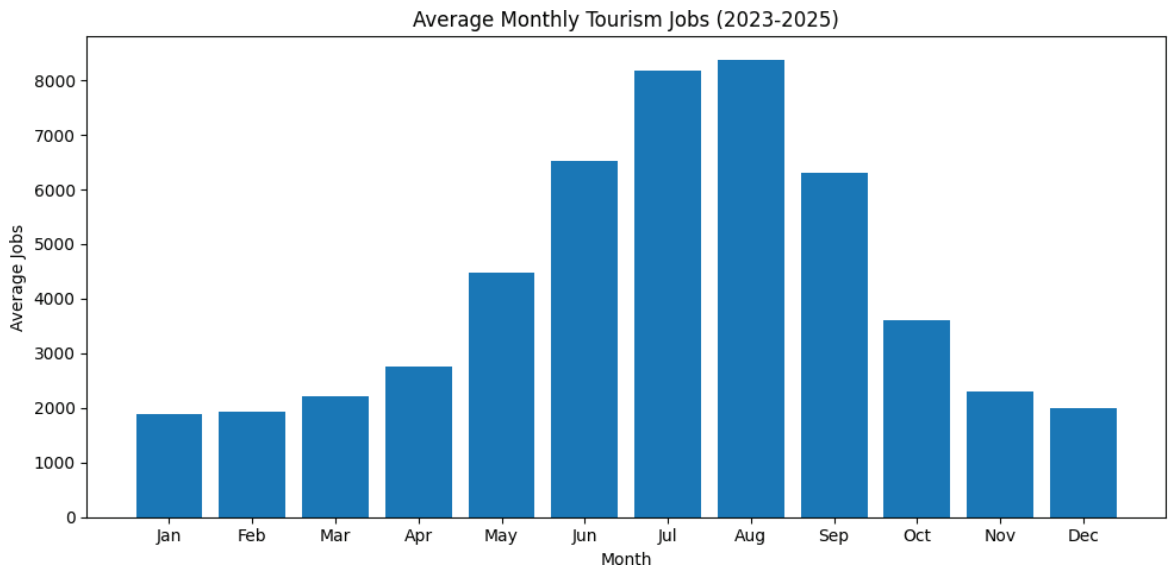
Many businesses recruit temporary staff for summer only. Reports from Albania's tourism labor market also show high demand for seasonal workers across coastal cities including Saranda.

Off-Season Changes

Compared with previous years, Saranda increasingly attracts visitors in spring and autumn, helping extend some employment into the shoulder season.

City	Year	m_Emplo	st_Arrivals	cupancy_R	onthly_Wage_EUR	
Saranda	2023	5200	10920	55	480	
Saranda	2024	5616	11794	59	515	
Saranda	2025	5928	12449	63	550	
Vlora	2023	6100	12810	52	480	
Vlora	2024	6588	13835	56	515	
Vlora	2025	6954	14603	60	550	
Durres	2023	7300	15330	52	500	
Durres	2024	7884	16556	56	535	
Durres	2025	8322	17476	60	570	





I created an illustrative dataset with charts and tables for Seasonal Employment Dynamics in Saranda (2023–2025) showing monthly tourism jobs demand.

Saranda's tourism labor market is highly seasonal, with employment nearly 3 times higher in summer than in winter. However, spring and autumn now show stronger employment levels than before, indicating a gradual extension of the tourism season.

6. Labor Market Challenges in Saranda

Despite growth, several structural problems remain.

6.1 Labor Shortages

Employers increasingly report difficulties finding:

- Qualified waiters
- Chefs
- Hotel managers
- Multilingual staff
- Experienced service workers

6.2 Foreign Labor Dependence

In 2024, Albania employed thousands of foreign seasonal workers in tourism to cover shortages, especially in coastal destinations such as Saranda.

6.3 Informality

Short-term seasonal contracts and undeclared work remain challenges.

6.4 Housing Pressure

Rapid tourism growth can raise seasonal rents, making it harder for workers to find affordable accommodation.

7. Opportunities for Sustainable Employment

Saranda can strengthen long-term employment through:

7.1 Year-Round Tourism

Develop:

- Cultural tourism
- Heritage tourism
- Wellness tourism
- Conferences
- Remote-work tourism

7.2 Training and Education

Expand hospitality education in:

- Languages
- Digital booking systems
- Customer service
- Culinary arts
- Tourism management

7.3 Better Urban Planning

Improve transport, housing, and infrastructure to support workers and businesses.

8. Conclusion

During 2023–2025, tourism became one of the most important employment engines in Albania, and Saranda stands out as one of the clearest examples of this transformation. The city generated jobs across hospitality, services, retail, transport, and construction, while attracting investment and entrepreneurship.

However, long-term success requires reducing seasonality, solving labor shortages, increasing workforce skills, and formalizing employment relationships. If managed effectively, Saranda can remain one of Albania’s strongest and most sustainable tourism labor markets.

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Sporting Intangible Heritage and the Broken Transmission Chain: Youth Isolation, Social Legacy, and the Limits of the Health-Prescription Model

Francesca Romana Lenzi

Department of Movement, Human and Health Sciences University of Rome Foro Italico, Rome, Italy

Corresponding author: francescaromana.lenzi@uniroma4.it
(ORCID: 0000-0002-3591-6380)

Abstract

Contemporary sport policy is structured around a biomedical paradigm that treats sport as a prescribable health intervention and physical inactivity as individual pathology. This paper argues that this paradigm misidentifies the mechanism through which sport produces social goods and therefore systematically fails to address the structural conditions of its own success. Drawing on figurational sociology (Elias, 1939), field theory (Bourdieu, 1984), critical heritage studies (Smith, 2006; Kirshenblatt-Gimblett, 2004), interaction ritual chain theory (Collins, 2004), and the sport legacy debate (Preuss, 2007; Coalter, 2007), we introduce the concept of sporting intangible heritage
— analytically distinct from Bourdieu's habitus insofar as it describes the collective processes of heritage recognition and transmission rather than individual disposition formation — and theorise the conditions under which its transmission chain holds or breaks. An exploratory CAWI study of 279 university students in Rome (Lenzi et al., 2023) provides focused empirical evidence of one such broken link: the absence of cross-domain value spillover from sport practice to sustainability behaviour in a sport-active, environmentally aware population
— a finding whose theoretical significance exceeds its scope, for reasons specified in the methodology. Comparative secondary evidence from Italy and Albania, selected as a most-different case in which structural heritage erosion is observable in accelerated form, grounds the theoretical propositions in divergent national trajectories. The paper concludes that rising youth social isolation and sporting withdrawal are the most visible social costs of the broken heritage chain, and that their structural determinants require a cultural rights framework
— grounded in Fraser (2008) and Sen (1999) — rather than the prevailing health-prescription model.

Keywords: figurational sociology; sporting intangible heritage; social legacy; interaction ritual chains; youth isolation; cultural rights; capabilities approach; Bourdieu; sport policy; most-different case

1. Introduction

The dominant framework for sport policy in Western Europe rests on a biomedical ontology: physical inactivity is a risk factor, sport is a therapeutic intervention, and the appropriate governance instrument is the prescription — whether medical, fiscal or infrastructural. This framework is not wrong, but it is radically incomplete: it correctly identifies the association between sport and health outcomes while misidentifying the mechanism that produces them. The consequence is a systematic policy failure whose most visible symptom is persistent structural inequality in sport access, and whose least visible but most consequential cost is the generational erosion of the social ties, shared values and collective practices that sport, under the right conditions, produces and reproduces across time.

This paper makes a single central argument: the health-prescription model fails because it treats sport as a deliverable good rather than as what the sociological tradition, from Mauss (1925) to Elias (1939) to Collins (2004), has consistently shown it to be — a form of living cultural practice that transmits social goods only through participation in structured social figurations, only when those figurations are culturally valorised and materially accessible, and only when the communities that practise them recognise them as worth transmitting. In short: sport is intangible cultural heritage, and heritage is not delivered; it is transmitted. When the chain of transmission breaks, the social costs are borne not by health statistics first but by community cohesion — specifically by young people, who are the terminal point in the heritage chain and the primary victims of its interruption.

The argument proceeds in four moves. First, we construct a theoretical framework that integrates figurational sociology, field theory, critical heritage studies and interaction ritual chain theory to produce the analytical concept of sporting intangible heritage, and to specify the micro-sociological mechanism of its transmission. Second, we present original empirical evidence and explain precisely what it does — and does not — establish. Third, we analyse the social costs of the broken chain, centring youth isolation and social withdrawal as the core sociological problem. Fourth, we draw normative conclusions using Fraser's (2008) triaxial justice theory and Sen's (1999) capabilities approach to derive a cultural rights framework for sport governance.

A clarification of scope is necessary at the outset. This paper is not a contribution to sport epidemiology or public health policy; it does not aim to add to the evidence base for sport as a health determinant, which is already substantial (Sallis et al., 2016; WHO, 2018). Its contribution is sociological and normative: to reframe the theoretical architecture of sport policy in a way that makes visible the structural mechanisms that epidemiological research, by design, cannot capture.

2. Theoretical Framework: The Transmission Chain

2.1 The health-prescription model and its structural blind spot

The biomedical framing of sport policy has deep institutional roots. The WHO Global Action Plan on Physical Activity 2018-2030 operationalises sport as a population-level health intervention, measurable in minutes of moderate-to-vigorous activity per week. The recent prescriptibility of physical activity by general practitioners in Italy and several other European countries represents the institutional crystallisation of this framing: sport enters the health system as a drug enters the pharmacopoeia, measured in doses and targeted at symptoms.

The analytical blind spot of this model is its unit of analysis: the individual body, understood as a biological system requiring physical stimulation. What drops out of this frame is precisely what the sociological tradition has consistently identified as the primary source of sport's social value: the figuration — the structured set of relationships between practitioners, coaches, spectators, community members and governance institutions — within which sporting practice is embedded and through which its social effects are produced. Prescribing sport to an individual in the absence of an enabling figuration is, sociologically, analogous to prescribing social trust to an isolated person: the prescription addresses the symptom while leaving the structural cause intact.

The persistence of this blind spot is not merely a scientific failure; it is, in Pierre Bourdieu's terms, a form of symbolic violence: by medicalising physical inactivity, the dominant framework individualises a structural problem and thereby protects from scrutiny the spatial, economic and cultural conditions that produce it. The 35-percentage-point gap in sedentary rates between the

autonomous provinces of Trento and Bolzano and Calabria in Italy (ISTAT, 2024) is not explained by individual health literacy but by the structural geography of the Italian sporting field — and this geography cannot be addressed by prescription.

2.2 Figurational sociology: sport, self-regulation and transmission

Norbert Elias's figurational sociology provides the foundational architecture for understanding how sport transmits social goods. For Elias (1939/2000), the long-run transformation of Western societies involves the progressive internalisation of self-restraint — what he terms the civilising process. Sport is not epiphenomenal to this process; it is constitutive of it. Elias and Dunning (1986) demonstrate that modern sport emerged as a socially controlled space for the controlled decontrolling of emotional controls: a regulated laboratory in which the management of affect, the internalisation of rules, and the coordination with others are practised, habituated and transmitted.

Two features of the Eliasian framework are essential for the argument developed here. First, the process is structural, not teleological: the civilising affordances of sport are not guaranteed by sport's form but contingent on the configuration of the figuration in which it is practised. Where the figuration is inclusive, pedagogically oriented and culturally valorised, the transmission of self-regulation and social trust occurs; where it is exclusive, competitive and commodified, it does not. This conditionality is what Elias and Dunning's (1986) analysis of hooliganism demonstrates from the other direction: the violence of the terraces is not an external contamination of sport but evidence that a figuration has lost its civilising capacity — that the heritage chain has broken.

Second, the process is intergenerational: the self-regulation that sport transmits is not individually acquired but socially reproduced across generations, requiring the continuity of the figuration over time. When the figuration is disrupted — by the exclusion of a social group, the commodification of a community practice, the loss of access to public space — the intergenerational chain is broken. The social goods that sport carries do not persist in the absence of the social structures that produced them.

2.3 Field theory, habitus and the distribution of sporting capital

Bourdieu's field theory (1978, 1984, 1986) introduces the dimension of power that Elias's figurational analysis underemphasises. The sporting field is a structured space of positions defined by the differential distribution of field-specific capital. The *habitus* — the system of durable dispositions produced by social conditions and expressed as practice — is the mechanism through which structural inequalities of social origin are inscribed in the body. The *illusio* — the tacit investment in the field's stakes — is the condition of meaningful entry into the field, and it is itself unequally distributed along class, gender and ethnic lines.

The concept of *sporting capital* (Stempel, 2005; Shilling, 2012), elaborated from Bourdieu, designates the specific combination of economic capital (equipment, facility access, time), cultural capital (navigating sport's symbolic hierarchies, coaching relationships) and social capital (networks, clubs, communities of practice) that enables effective participation in the sporting field. Wacquant's (1995, 2004) carnal sociology extends this analysis through ethnographic immersion, demonstrating that sporting socialisation is a carnal pedagogy: it is transmitted through the micro-practices of training, the embodied corrections of the coach, the affective dynamics of the collective. Heritage transmission is, at its core, a bodily and relational process — it cannot be effected through prescription.

It is important to specify how *sporting capital* (Bourdieu) and *sporting intangible heritage*

(the concept introduced in this paper) differ analytically. Sporting capital designates a property of individuals and positions within the field — their differential endowment of field-relevant resources. Sporting intangible heritage designates a property of communities and their practices — the collective process through which a set of bodily practices, values and relational dispositions is recognised as worth transmitting and actively reproduced across generations. The distinction follows Smith's (2006) critical heritage studies framework: heritage is not the thing but the practice of producing, recognising and transmitting the thing. A community can possess sporting capital in Bourdieu's sense — have members with high motor competence, economic resources and social networks — without engaging in the active processes of heritage recognition and transmission that constitute intangible heritage in Smith's sense. The gap between the two is precisely the space that the broken heritage chain occupies.

2.4 Sporting intangible heritage: authorised heritage discourse and vernacular practice

Laurajane Smith's (2006) concept of the Authorised Heritage Discourse (AHD) — the institutionally produced framework that defines what counts as heritage, who has authority to manage it, and whose practices are worthy of preservation — provides a critical complement to Bourdieu's field analysis. The AHD in sport is the institutional complex of Olympism, organised competitive sport and formal sport infrastructure: the practices authorised as 'proper' sport, deserving of public investment, civic recognition and intergenerational transmission. The vernacular sporting heritage — informal street football, Mediterranean active commuting traditions, neighbourhood swimming cultures, mountain walking practices — is systematically excluded from this authorised framework, a process that Kirshenblatt-Gimblett (2004) terms the non-recognition of *metacultural production*: the failure to recognise the reflexive practices through which communities sustain their own living heritage.

The sport heritage literature (Gammon & Ramshaw, 2007; Ramshaw & Gammon, 2010) has begun to map this terrain, identifying the contested character of sporting heritage recognition — who controls the narrative, which practices are commemorated, which are forgotten. This paper extends their analysis from the retrospective frame (commemorating past sporting achievements) to the prospective frame (transmitting living sporting practices to future generations): the question is not only which heritage is remembered but which heritage is reproduced, and under what structural conditions its reproduction is possible.

Applied to the policy argument, this implies that the AHD of sport — which channels public investment towards formal sport infrastructure and elite competitive structures — systematically underinvests in the vernacular sporting heritage that constitutes the primary vehicle of intergenerational legacy transmission for the majority of the population. The community sport club, the informal park gathering, the neighbourhood cycling route: these are the sites of heritage production that the AHD renders invisible and the prescription model leaves ungoverned.

2.5 Interaction ritual chains and the micro-sociology of heritage transmission

Collins's (2004) theory of interaction ritual chains provides the micro-sociological mechanism that links the structural analysis of the preceding sections to the observable process of heritage transmission. For Collins, social life is constituted by chains of interaction rituals — episodes of co-present bodily assembly, mutual focus of attention, and shared emotional entrainment — that generate what he terms emotional energy (EE): the sense of confidence, enthusiasm and solidarity that is the motivational substrate of social action. Interaction ritual chains with high EE generate and sustain collective identities, shared symbols and the motivation

to reproduce the practices that produced them. Chains with low EE — characterised by unequal participation, social exclusion, or forced rather than voluntary engagement — generate resentment, withdrawal and the dissipation of collective identity.

Sport, understood through this framework, is a ritually dense practice: it involves co-present bodily assembly (the training session, the match, the street game), mutual focus of attention (the shared object of the game), and intense emotional entrainment (the excitement, solidarity and belonging of sporting participation). Under the right conditions — inclusive, voluntary, community-embedded — sporting interaction rituals generate high EE that functions as the motivational fuel of heritage transmission: it produces the desire to participate, to return, to transmit the practice to others.

The broken heritage chain, in Collins's terms, is a failure of interaction ritual density: the absence of the co-present, emotionally engaging, voluntary sporting figurations through which EE is generated. This failure can be produced by material deprivation (no accessible spaces for co-present assembly), by social exclusion (the figuration does not include you or does not make you welcome), or by cultural devaluation (the practice is not recognised as worth investing in). All three mechanisms are simultaneously operative in the deprived urban peripheries that constitute the primary terrain of the youth isolation crisis.

2.6 The social costs of the broken chain: youth isolation as heritage failure

Rising youth social isolation and withdrawal in European cities — documented across multiple national contexts with different welfare regimes and cultural traditions — constitutes the most visible social cost of the broken sporting heritage chain. The correlation between areas of low youth sport participation and high rates of social isolation is not coincidental: it is the sociological footprint of heritage failure. Where the interaction ritual chains of sport are absent or inaccessible, the EE they would have generated is not produced; the collective identities, shared values and relational capacities they would have transmitted are not formed; and young people's social repertoires are correspondingly impoverished.

This is not a health argument, though it has health consequences. It is a social theory argument: the erosion of sporting figurations in deprived communities erodes the primary institutional mechanism through which those communities reproduce their social capital, transmit their normative frameworks, and integrate their young members into collective life. Putnam's (2000) distinction between bonding social capital (ties within communities) and bridging social capital (ties across communities) is relevant here: sporting figurations are one of the few institutional contexts in which both forms of social capital are simultaneously generated, because sport brings together people of similar backgrounds (bonding) in rule-governed competition or co-operation with people of different backgrounds (bridging). The loss of accessible sporting figurations in deprived communities is therefore a loss of social capital in its most generative form.

Gender is a critical dimension of this analysis that the heritage framework brings into view in a way that the health framework does not. Women are historically the primary intergenerational transmitters of cultural practice — a role analysed extensively in the sociology of gender and embodiment (Hargreaves, 1994; Messner, 2002). Their systematic exclusion from public sporting space — documented in Europe (35% of women vs. 58% of men use parks

for vigorous physical activity; Toftager et al., 2011) and in Albania (Çule & Guliani, 2022) — is therefore not merely an equity deficit in participation but a structural disruption of the heritage transmission mechanism. Policies that address gender gaps in sport participation are, in this framework, heritage policies as much as equity policies.

3. Methodology

This paper adopts a theory-building approach (George & Bennett, 2005) that combines original survey data, national and comparative secondary data, and theoretical argument. The triangulation of evidence serves not to achieve measurement validity across sources — the data sources are incommensurable in precisely specified ways — but to illustrate, at different analytical levels, the theoretical propositions advanced in Section 2. The limitations of each source are specified below and discussed in relation to the propositions they are used to support.

3.1 Primary study: CAWI survey, Rome 2023

The primary empirical study (Lenzi, De Falco, Iazzetta, Coppola, & Capuano, 2023) used a Computer-Assisted Web Interviewing procedure administered via Google Forms between July and October 2023 to 279 university students in Rome. Purposive sampling targeted three disciplinary areas — medical-health sciences, scientific-technological, and humanistic-social sciences — to introduce controlled variation in epistemic orientation towards environmental and sporting issues. The sample shows a slight male predominance (53.4%), a mean age of 23.9 years, and predominantly middle socioeconomic background (59.9%). Of respondents, 77.6% reported practising sport or physical activity.

The questionnaire measured: socio-demographic characteristics; sport practice (type, frequency, competitive level, organisational context); environmental attitudes operationalised through Likert scales subjected to principal component analysis (PCA) yielding three factors — environmental alarm, environmental activism, anti-environmentalism; sustainable daily practices (additive index of eight items); and social and economic sustainability values (Cantril scale). Two ANOVAs tested whether sport world membership predicted variation in the attitudinal and behavioural dimensions.

Several limitations must be stated with precision. The sample is non-probabilistic, drawn from a single Italian city, and restricted to a university population — a group characterised by above-average educational and cultural capital. The study is cross-sectional and therefore incapable of causal inference. No control variables for parental sport practice, childhood sport socialisation, facility proximity or specific sporting figuration (club vs. informal) were included — omissions that introduce unspecified confounding.

These limitations constrain but do not eliminate the study's theoretical relevance. The sample's characteristics — high educational capital, elevated environmental awareness, majority sport-active — make it a population for which the heritage transmission mechanism should, on standard assumptions, operate most strongly. Finding null spillover in this population constitutes a focused instance of what Eckstein (1975) terms a 'crucial case': a case selected such that if the hypothesis fails here, it faces its strongest challenge. The null finding does not establish that sport never transmits value legacy; it establishes that sport world membership, in this context, is insufficient to trigger cross-domain value spillover in the

absence of a culturally oriented sporting figuration. This limited claim is theoretically significant and is the only claim the paper draws from the study.

3.2 Comparative evidence: Italy and Albania as most-different cases

The comparative secondary analysis employs a most-different systems design (Przeworski & Teune, 1970): Italy and Albania differ substantially on welfare regime (Mediterranean corporatist vs. post-communist transitional), sport governance model, urbanisation trajectory, economic development level and cultural context. They share, however, the same observable phenomenon — structural erosion of vernacular sporting heritage associated with rapid urbanisation — which is the dependent variable the framework seeks to explain. The methodological logic is: if the same process is observed across most-different cases, the explanation is more likely to reside in the structural mechanism posited by the theory (urbanisation-driven disruption of sporting figurations) than in case-specific factors.

Secondary data draw on ISTAT (2024), EuroBarometer (2022), Gli Italiani e lo Sport 2023, WHO/OECD (2023), and for Albania: the Demographic and Health Survey 2017-18 (Çule & Guliani, 2022) and Healthcare in Low-Resource Settings (2022). Comparability is constrained by the different operational definitions of 'sport' and 'physical activity' across national data systems; findings are therefore treated as indicative of directional trends rather than precise cross-national measurements.

4. Results

4.1 The broken link in Rome: what the null finding establishes (and does not)

The ANOVA results show no statistically significant difference between sport-active and non-sport-active students on the environmental alarm index, the environmental activism index, or the sustainable practices index. Neither sport practice frequency, type, nor occupational involvement in sport predicts any of the measured outcomes. Supplementary disaggregation by disciplinary area, sport type and gender does not alter this conclusion.

The theoretical interpretation of this finding requires precision. The study was designed to measure cross-domain value spillover: the transfer of dispositions from sport practice to environmental behaviour. This is one specific mechanism within the broader heritage transmission process. The null finding establishes that this mechanism is not operative in this population. It does not establish that sport transmits no values (other mechanisms — interaction ritual EE generation, community bonding, role modelling — may be operative for other value domains not measured here). What the finding does establish, within the theoretical framework, is that sport world membership alone is insufficient to trigger the spillover mechanism: cultural context — specifically, a sporting figuration that explicitly valorises sustainability alongside its sporting practices — is the necessary enabling condition.

This interpretation resolves what would otherwise appear as a contradiction in the paper's argument: the theoretical framework claims that sport transmits values, while the empirical evidence shows no value transmission. The resolution is that the theoretical claim is conditional (sport transmits values under specified conditions), the empirical finding is unconditional (sport membership, absent those conditions, does not), and the conditions are precisely what is absent

in the Roman context — not individual motivation or capacity, but the culturally oriented sporting figuration that would constitute the operative transmission mechanism.

4.2 Structural gradients and the geography of heritage exclusion

National Italian data document the structural distribution of heritage exclusion. The sedentary rate ranges from 16-17% in the autonomous provinces of Trento and Bolzano to 59.3% in Calabria and Sicily (ISTAT, 2024) — a variation that tracks the broader geography of social and economic inequality and confirms Bourdieu's prediction that the distribution of sporting participation replicates the distribution of the relevant capitals. The educational gradient (49.7% sedentary among low-education adults versus 17.9% among high-education) and the gender gap (43.4% of men versus 31.8% of women practising sport) are consistent with the expected effects of differential habitus formation and differential illusio in the sporting field.

Urban Audit data (Eurostat) document the spatial substrate of this inequality: public green spaces are, on average, 35% less extensive in lower-income urban areas than in higher-income areas across European cities. This spatial inequality is not a background condition but a structural determinant of who can access the environments in which vernacular sporting heritage is transmitted. The correlation between green space deprivation, sport participation deprivation, and social isolation in deprived urban communities is the spatial signature of the broken heritage chain.

The economic costs of structural heritage exclusion are estimated by WHO/OECD (2023) at €1.3 billion annually for Italy in physical inactivity-related healthcare expenditure over 2022-2050. This figure represents the fiscal symptom of a heritage failure; it is invoked here not as an argument for sport investment on cost-effectiveness grounds — a line of reasoning that remains within the biomedical paradigm the paper critiques — but as an indicator of the scale of the structural problem whose root causes the heritage framework addresses.

4.3 Albania: heritage erosion in accelerated form

Albania was selected as a most-different comparative case to test whether the structural process of sporting heritage erosion — posited by the theoretical framework as a consequence of rapid urbanisation disrupting established sporting figurations — is observable in a context maximally different from Italy on all case-specific dimensions. The Albanian evidence supports the theoretical prediction.

Çule and Guliani's (2022) analysis of the 2017-18 Demographic and Health Survey documents strong socioeconomic gradients in physical activity (participation probability increasing with household wealth), marked gender inequalities (women significantly less active, with compound cultural, temporal and spatial barriers), and urban-rural disparities. These gradients conform to the Bourdieusian prediction that the commercialising Albanian sporting field is reorganising around the existing distribution of social capital — reproducing, under new institutional conditions, the access inequalities that characterise more established European sporting fields.

The active commuting trajectory provides the clearest illustration of heritage erosion: in 2011, 50.2% of Albania's employed population still commuted by foot or bicycle (Census, 2011, cited in Çule & Guliani, 2022) — an embodied collective practice constituting a form of what this paper terms vernacular sporting heritage: daily, community-embedded, transmitted

through routine rather than deliberate cultivation. Its rapid displacement by motorised transport represents, in Smith's (2006) terms, the supersession of vernacular heritage by authorised practices — and, in Collins's (2004) terms, the dissolution of the interaction ritual chains through which the bodily and relational dispositions associated with active mobility were generated and reproduced. The 2022 national study finding that only 29% of Albanian youth aged 11-15 reach recommended physical activity levels (Healthcare in Low-Resource Settings, 2022), with marked gender and socioeconomic gradients, documents the generational consequence of this heritage dissolution.

4.4 Youth isolation as the terminal symptom of the broken chain

The correlation between areas of low sporting participation and high rates of youth social isolation and withdrawal — documented in Italy across multiple regional contexts (Lenzi et al., in preparation; Fondazione SportCity, 2025) — constitutes the most direct evidence for the social cost claim advanced in this paper. The causal direction of this correlation cannot be established from the available cross-sectional data; both sporting withdrawal and social isolation may reflect common third causes (neighbourhood deprivation, family fragmentation, school disengagement). The theoretical framework posits, however, that the relationship is bidirectional and mutually reinforcing: sporting figurations generate the EE (Collins, 2004) and social capital (Putnam, 2000) that make social engagement rewarding; their absence therefore both reflects and amplifies the conditions of social isolation.

The post-pandemic data confirm this interpretive framework. The collapse of organised youth sport participation in Italy during lockdown (from 51.3% to 36.2% among 3-17 year olds; ASI/SWG, 2021) was accompanied by documented increases in youth anxiety, depression and social withdrawal. The subsequent partial recovery of outdoor sport participation (from 27.9% to 29.7% of the population between 2023 and 2024; ISTAT, 2024) and the sustained growth of home fitness (now 20.2% of the population) partially substitute for the lost figurations — but evidence from O'Brien and Forster (2021) confirms that digitally mediated and home-based exercise does not replicate the social effects of embodied, community-embedded sporting practice, precisely because it cannot generate the co-present interaction ritual density that Collins (2004) identifies as the necessary condition of EE production.

5. Discussion

5.1 Why the health-prescription model fails: a structural account

The theoretical and empirical analysis converges on a single structural diagnosis: the health-prescription model fails because it is designed to address the wrong level of the causal chain. By targeting individual physical activity behaviour, it treats the absence of sport as a deficit of individual motivation or knowledge — a biomedical symptom to be treated — rather than as the visible surface of a broken heritage chain, whose roots lie in the structural conditions of sporting figuration availability, cultural valorisation, and intergenerational transmission.

This diagnosis has precise implications for the interpretation of policy failures. The persistence of the sedentary lifestyle among socioeconomically deprived populations despite decades of health promotion interventions is not a failure of implementation or communication; it is evidence that the mechanism postulated by the biomedical model — information changes attitudes changes behaviour — is not the operative mechanism for this population. The

operative mechanism, as Bourdieu's field theory and Collins's ritual chain theory jointly predict, is structural: participation in emotionally engaging, socially embedded sporting figurations generates the habitual dispositions and EE that sustain long-term sport engagement. In the absence of accessible figurations, the information never reaches a receptor; in the presence of accessible figurations, the information is largely redundant.

5.2 The digital turn: a new dimension of heritage inequality

The accelerated digitalisation of sport participation following the 2020 pandemic lockdowns introduces a new dimension of heritage inequality that the framework identifies as analytically distinct from existing access barriers. The proliferation of fitness applications, online coaching platforms and virtual sporting communities extends sport access for those with adequate devices, connectivity and digital literacy — the characteristics that, empirically, are distributed along the same socioeconomic gradients as traditional sporting capital. The proposition that digital mediation creates a structural divide in sport access — a digital sporting divide — is theoretically derivable from the framework but must be treated with appropriate epistemic caution: the currently available evidence (18.7% of sportspeople using fitness apps, rising to 29.1% among 25-44 year olds; ISTAT, 2024) documents aggregate uptake without stratification by socioeconomic status, and cannot confirm the stratified prediction without further empirical specification.

What the framework does establish is the theoretical ground for the concern: if digital sporting tools are not universally accessible, and if — as Collins's (2004) theory predicts — they cannot fully substitute for the interaction ritual density of embodied sporting figurations, then their proliferation risks creating a two-tier sport landscape in which those with resources access an enriched, technology-mediated sporting experience while those without remain in heritage-poor environments. This is a heritage governance challenge, not merely a digital access challenge, and it requires governance responses at the level of cultural infrastructure — not merely broadband provision.

5.3 Towards a cultural rights framework: Fraser, Sen and the three axes

The normative turn of this paper requires a methodological clarification. Sociology has a legitimate role in normative argument insofar as its empirical findings identify structural conditions that produce preventable suffering and systematically foreclose human capabilities (Wright, 2010). This paper does not claim to derive 'ought' from 'is'; it claims that the structural conditions it documents — the broken heritage chain, the generational erosion of sporting figurations in deprived communities, the systematic exclusion of women and low-income populations from the conditions of heritage transmission — constitute, on widely shared normative premises, injustices that generate policy obligations.

Nancy Fraser's (2003, 2008) triaxial theory of social justice — integrating redistribution (of material resources), recognition (of cultural identities and practices), and representation (in political decision-making) — provides the normative architecture because it corresponds precisely to the three dimensions of the broken heritage chain. The *redistribution* dimension addresses the material conditions of access: facility availability, equipment affordability, transport infrastructure, time poverty. The *recognition* dimension addresses the cultural conditions: whose sporting practices are valorised as legitimate heritage, whose are stigmatised or rendered invisible. The *representation* dimension addresses the political conditions: who has

voice in sport governance, who defines what counts as sporting heritage worth transmitting and investing in.

The capabilities approach (Sen, 1999; Nussbaum, 2011) provides the individual-level foundation: Nussbaum's central capability of *play* — the substantive freedom to participate in recreational and sporting activities — and *affiliation* — to live with and toward others on the basis of mutual recognition — are directly implicated in the heritage chain analysis. The capability framework specifies what redistribution and recognition are for: not equal participation in sport as such but the substantive freedom to participate in the sporting heritage of one's community. This formulation preserves the sociological insight that sport is not a fungible good whose value is independent of its social embedding, while grounding the normative claim in the universal currency of human capability.

Policy recommendations follow directly from the three-axis framework. On redistribution: mandatory equity criteria in the spatial distribution of sporting green infrastructure, with binding planning obligations, enforcement mechanisms, and specific obligations to deprived urban areas and transition zones (directly relevant to the Albanian context). On recognition: active policies to valorise vernacular sporting heritage — informal sport practices, active mobility traditions, community-based physical culture — alongside the formal authorised sport heritage, including their integration into sport governance frameworks and public investment criteria. On representation: participatory governance of community sporting heritage, giving communities — specifically young people and women in underserved areas — institutional voice in defining, managing and transmitting their own sporting legacy.

6. Conclusions

This paper has argued that the dominant biomedical paradigm of sport policy misidentifies the mechanism through which sport produces social goods, and that this misidentification generates both a systematic policy failure and a specific social cost: the erosion of the sporting heritage chains through which communities reproduce their social capital, transmit shared values, and integrate young people into collective life. The broken chain's most visible symptom is youth social isolation — not primarily a health outcome but a social theory problem, best addressed through the structural restoration of the sporting figurations and interaction ritual chains that generate the emotional energy and relational resources that current interventions cannot prescribe.

The paper's theoretical contributions are three. First, the concept of sporting intangible heritage, analytically distinguished from Bourdieu's habitus through its grounding in Smith's heritage studies framework: heritage is not a property of individuals but a collective practice of recognition and transmission, vulnerable to disruption in ways that habitus formation, which operates at the individual level, does not capture. Second, the integration of Collins's interaction ritual chain theory as the missing micro-sociological link between the structural analysis of Elias and Bourdieu and the observable process of heritage transmission and failure. Third, the application of Fraser's triaxial justice framework to sport governance, which maps the three dimensions of structural exclusion (redistribution, recognition, representation) onto three corresponding policy obligations, deriving specific institutional responses from a coherent normative architecture.

The paper's empirical contribution — the documentation of a broken spillover link in the Roman university student population — is deliberately modest in its claims. The null finding establishes that sport world membership, in a high-capital, sport-active population without a culturally oriented sporting figuration, is insufficient to trigger cross-domain value transmission. It does not establish the full scope of the heritage failure whose structural conditions the theory identifies; that documentation requires longitudinal research, ethnographic methods, and comparative designs with more precisely matched cases than those available here.

The most important implication for future research is the need for longitudinal, multi-level studies that trace the process of heritage transmission and interruption across life-course transitions, generational boundaries and changing institutional contexts. Wacquant's (2004) carnal sociology — the ethnographic immersion in sporting figurations that documents the bodily and affective micro-processes of transmission — provides the methodological model. The most urgent policy implication is the need to shift the primary investment frame in European sport governance from individual health promotion to community heritage transmission, not as an alternative to health investment but as its structural precondition.

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A DECADE OF MANAGEMENT PLAN OF KARABURUN – SAZAN MARINE PROTECTED AREA: REVIEWING THE TOURISM POTENTIAL

Gazmend Zeneli[1], Semiha Loca[2], Saimir Brahimi[3]

[1] Department of Tourism, Hospitality and Recreation
Barleti University, Tirana, Albania,
[2] Department of Economy, Entrepreneurship and Accounting Barleti University, Tirana, Albania.
[3] Flag Pine (NGO), Orikum, Albania.

Corresponding author: g.zeneli@umb.edu.al
(ORCID: https://orcid.org/0000-0003-0749-42370)

Abstract

Marine protected areas (MPAs) increasingly function as instruments for biodiversity conservation and as catalysts for sustainable tourism development. The Sazan–Karaburun Marine Protected Area (SK-MPA), located on the southwestern coast of Albania at the meeting point of the Adriatic and Ionian Seas, is the country's first national marine park and one of its most strategic coastal assets. This paper examines the tourism potential and sustainability challenges of the SK-MPA in Albania, one of the country's most ecologically valuable coastal zones. Using a qualitative-descriptive approach based on secondary data, the study integrates institutional reports, academic literature, and regional planning documents to assess tourism opportunities through three dimensions: accessibility, environmental sustainability, and governance capacity. The findings indicate that the SK-MPA possesses significant comparative advantages, including rich marine biodiversity, scenic landscapes, cultural heritage, and proximity to key tourism hubs such as Vlorë. Tourism activities—particularly boat excursions, diving, and coastal recreation—have expanded rapidly, contributing to local economic development and increasing international visibility. However, this growth is accompanied by mounting environmental pressures, including habitat disturbance from anchoring, marine pollution, seasonal overcrowding, and conflicts with fisheries and aquaculture.

The study argues that the SK-MPA should prioritize a high-value, low-impact tourism model centered on ecotourism, heritage interpretation, and community-based experiences rather than mass tourism. Key constraints include strong seasonality, infrastructure gaps, governance fragmentation, and limited enforcement capacity. The paper concludes that sustainable tourism development in the SK-MPA requires integrated management measures such as carrying-capacity limits, eco-mooring systems, improved waste management, and stronger institutional coordination. If effectively managed, the area has the potential to become a flagship model of sustainable marine tourism in the Mediterranean region.

Keywords: Albania; ecotourism; marine protected areas, pressure; sustainable tourism.

1. Introduction

Tourism is one of the world's largest economic sectors and a major driver of development in coastal regions. This is particularly the case of Albania, a very popular emerging "Sun, Sea and Sand" (3S) destination characterized by massive fluxes of national/international visitors during the summer period (Fernández Enríquez et al., 2025).

At the same time, the rapid expansion of tourism in fragile marine environments often creates conflicts between economic growth and ecosystem conservation. Marine Protected Areas (MPAs) have emerged as an institutional response to this dilemma, combining biodiversity protection with opportunities for sustainable tourism, environmental education, and local livelihood diversification (Chuenpagdee et al., 2013).

Across the Mediterranean, MPAs increasingly support nature-based tourism products such as diving, sailing, wildlife watching, kayaking, heritage interpretation, and scientific tourism. Successful examples demonstrate that well-managed tourism can generate revenues for conservation while increasing awareness of marine ecosystems. However, in emerging tourism destinations, governance weaknesses and infrastructure gaps frequently limit these benefits.

Albania represents one of the newest and fastest-growing Mediterranean tourism destinations. Its coastline has gained international visibility due to scenic beaches, authentic landscapes, and competitive pricing. Within this context, the Sazan–Karaburun Marine Protected Area (SK-MPA) is especially significant. Established in 2010, it was Albania's first marine national park and remains one of the most ecologically valuable coastal territories in the country. It includes the Karaburun Peninsula, waters around Sazan Island, and marine habitats of national and regional importance.

The Karaburun–Sazan Marine National Park (KS-MNP) sits in the most "crowded" stretch of Albanian sea: inside the bay and right around the peninsula you have small-scale and industrial fishing movements, tour-boat lines to Sazan, dives to coralligenous sites and caves, yacht and marina traffic from Orikum, plus aquaculture cages along the eastern Karaburun coast and in nearby sheltered coves. This is exactly the mix that the 2019–2020 marine-spatial-planning work for Vlora Bay flagged as needing tight spatial and temporal coordination to reduce cumulative impacts.

The KS-MNP covers an area of 12,570.82 ha, of which the marine area near Karaburun covers 9,848.95 ha, while the area near Sazan Island covers 2,721.87 ha (Sinanaj & Memaj, 2024). The protected area is organised in four zones with descending levels of restriction: core (no-take), effective-management, sustainable-development, and recreation. In the core zone only science and surveillance are allowed; in the EMZ and SDZ, fishing with low-impact gear, diving, boating, waste-removal and monitoring are permitted under authorisation; in the recreation zone most low-impact leisure uses are allowed. This zonation is confirmed both in the UNDP ecotourism report (2020) and in the small-scale fisheries value-chain study.

This zoning matters because all the main pressure-generating activities (tour-boat lines, artisanal fishing, diving, anchoring, aquaculture, yachting transits from Orikum) happen right against – and in parts inside – these zones, so even medium levels of use produce a high "density" of impacts. Despite increasing attention, the tourism potential of the Sazan–Karaburun Marine Protected Area has not yet been comprehensively examined in the academic

literature. Most existing studies have concentrated primarily on biodiversity, fisheries, or governance and management issues rather than on tourism systems and destination development. As a result, there remains an important research gap concerning the area's capacity to develop as a sustainable tourism destination. This paper seeks to address that gap by providing a focused assessment of tourism opportunities, limitations, and future prospects within the protected area.

The study has three main objectives. First, it aims to evaluate the tourism resources and comparative advantages of the Sazan–Karaburun Marine Protected Area, including its natural, cultural, and spatial assets. Second, it seeks to identify forms of tourism that are compatible with conservation objectives and ecological carrying capacity. Third, it analyzes the principal constraints, risks, and pressures that may affect tourism development, with particular attention to environmental sensitivity, management capacity, and competing coastal uses.

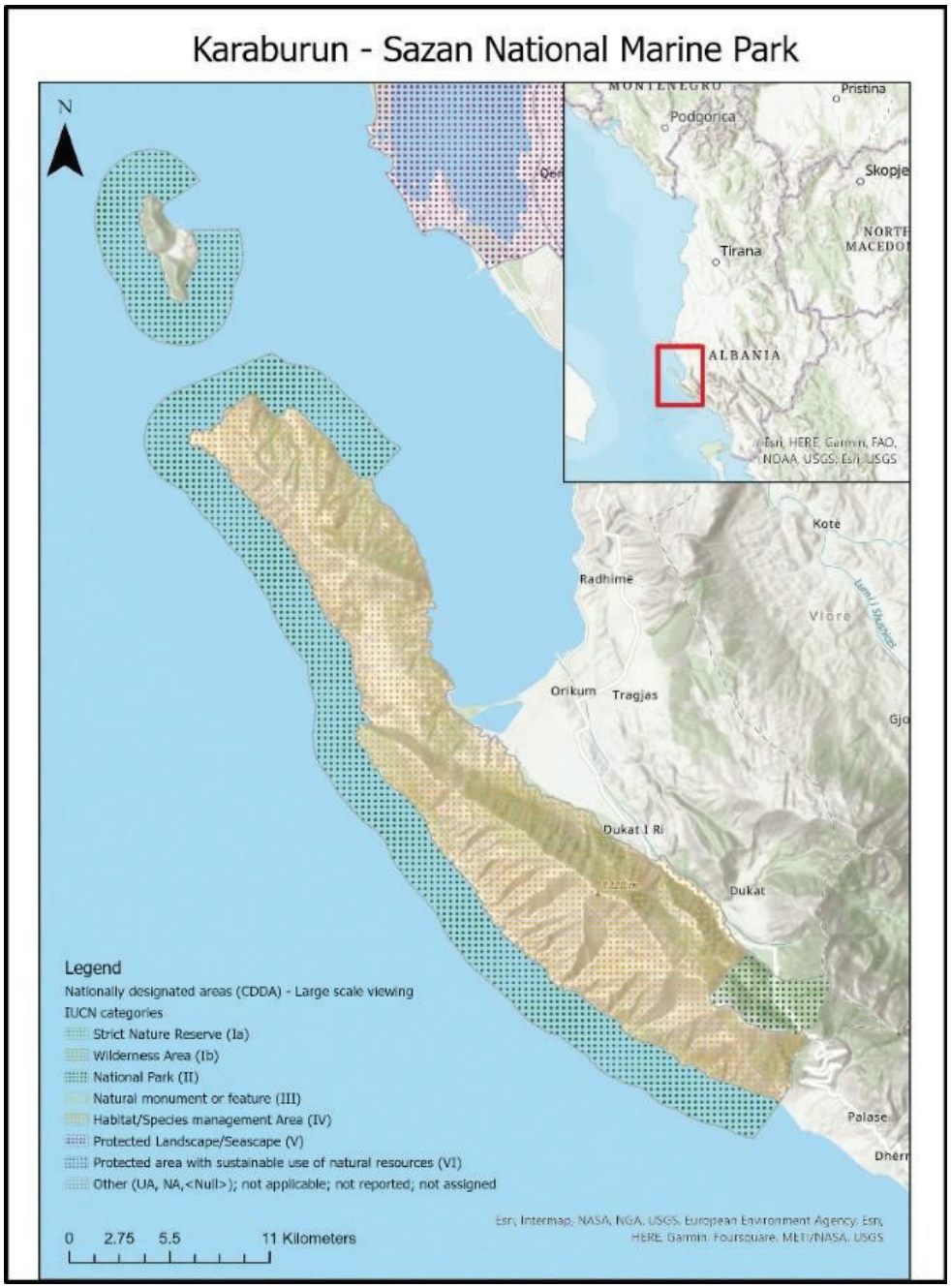

Figure 1. Sazan - Karaburun Marine protected area (Source: Laci et. al., 2024)

2. Methodology

2.1 Research Design

This study adopts a qualitative-descriptive research design based on secondary data analysis. Such an approach is particularly appropriate for emerging tourism destinations where long-term, standardized primary datasets are limited or fragmented. Qualitative synthesis allows the integration of environmental, socio-economic, governance, and tourism-related evidence from multiple documentary sources in order to assess destination potential holistically. This method has been widely used in protected area tourism studies where planning

decisions depend on combining ecological and socio-economic knowledge rather than relying solely on visitor statistics.

2.2 Data Sources

The analysis combines institutional reports, planning documents, demographic statistics, and peer-reviewed academic literature.

Institutional literature sources include the official Management Plan of the Karaburun–Sazan Marine Protected Area, sustainable tourism planning documents, demographic and social reports for Orikum and Vlorë Municipality, as well as technical reports addressing economic activities, environmental pressures, and management challenges in the park and surrounding coastal zone. These documents provide baseline information on governance structures, zoning systems, tourism uses, conservation priorities, and local development conditions. The UNDP management framework and related tourism planning documents were especially important because they outline the long-term strategic vision for balancing tourism and conservation in the area.

Additional contextual information was drawn from international protected area databases and regional conservation sources. Protected Planet identifies Karaburun–Sazan as a recognized marine protected area of approximately 124 km², while regional Mediterranean sources note its status as a Specially Protected Area of Mediterranean Importance (SPAMI), increasing its international conservation significance and tourism visibility.

The academic literature reviewed includes studies on small-scale fisheries and local livelihoods, marine aquaculture interactions in Vlora Bay, Mediterranean monk seal habitat use, coralligenous reef characterization, marine spatial planning, coastal landscape attractiveness, gender roles in fisheries and tourism value chains, and Mediterranean protected area governance frameworks. These sources were used to interpret how marine biodiversity, coastal scenery, local economies, and governance systems influence tourism opportunities and risks in the SK-MPA.

2.3 Analytical Framework

Tourism potential was assessed through three interrelated dimensions. The first dimension focused on accessibility and connectivity, such as proximity to Vlorë and Orikum and integration with broader tourism circuits.

The second addressed sustainability risks, particularly pressures linked to anchoring, waste generation, seasonal overcrowding, habitat disturbance, and unmanaged visitor growth. The final dimension examined governance capacity, including planning systems, institutional coordination, zoning enforcement, and management readiness. This multidimensional framework reflects contemporary approaches used in sustainable tourism planning for protected coastal destinations.

3. Results

3.1. Fishing and small-scale fisheries

Albania's fleet is strongly dominated by small-scale fisheries (SSF): about 70% of the national fleet – 337 vessels – are SSF (<12 m, non-towed gear). KS-MNP is embedded in this

national pattern, but more concentrated because it is next to an urban and fishing centre (Vlora). Inside/around the park there are about 50 registered small-scale fishers; this number comes from the KS-MNP value-chain pilot, which explicitly notes that illegality or undeclared fishing means the real number of active fishers is higher. The value-chain study shows a classic Adriatic/Ionian chain: fishers → quay or middleman (ice, bait, fuel) → fish shops in Vlora/Orikum → restaurants and tourist boats. Illegal/direct sales on the quay are common and respond to the strong seasonal tourist demand around Vlora Bay; these sales are one of the pressures because they incentivize more fishing in peak season.

From the park's own rules (as synthesised in the UNDP report) and from Bakiu et al. (2018, 2025) the active low-impact gears are: (1). Trammel nets which are the most widespread, set on rocky/mixed bottoms around Karaburun east, Sazan west and the mouths of the small bays; (2) Bottom/vertical longlines which are used for high-value demersals and groupers along the cliffs and coralligenous outcrops; and (3) Gillnets of smaller panel used near Orikum and in more sheltered stretches.

The combined sources (Bakiu et al. 2018; 2025; IMAP EO3; SPA/RAC 2021; Merayo et al., 2024) indicate a typical mixed Mediterranean species composition in the area. The catch is generally dominated by high-value demersal species such as *Dentex dentex, Epinephelus marginatus, other groupers, Serranus species,* and *Pagellus erythrinus*. Coastal pelagic and small schooling fish are also commonly present, including *Scomber scombrus, Trachurus* species, and, when seasonal schools enter the bay, anchovy and sardine. Cephalopods form another important component of landings, particularly *Sepia officinalis* and *Octopus vulgaris*. In addition, crustaceans and shrimps are harvested by some longline operators and by fishers who subsequently resell them to restaurants, a practice reflected in value-chain mark-up analyses.

Competition from recreational fishing, including tourists, local anglers, and spearfishing from boats, is explicitly identified in the Vlorë tourism report as an increasing pressure on professional and artisanal fishers operating in Orikum and Vlorë.

Fisheries create a range of environmental, economic, and social pressures within the Karaburun–Sazan area. One of the most evident is the concentration of fishing effort during the summer season. Because tourist demand and restaurant mark-ups reach their peak between July and September, fishers often intensify their activities during exactly the same period when the park experiences the highest levels of recreational boating and visitor traffic. This temporal overlap increases ecological disturbance while also creating navigation conflicts and safety concerns at sea.

Another significant challenge is illegal, unreported, and unregulated (IUU) fishing together with undeclared landings. The IMAP monitoring framework identifies IUU fishing as one of the principal pressures requiring close observation in Karaburun–Sazan and other Mediterranean protected areas. At the same time, value-chain research from the Vlorë region indicates that undeclared sales remain common, weakening the economic position of the approximately fifty registered small-scale fishers who operate legally.

Bycatch of sensitive species and physical contact with vulnerable marine habitats also represent important concerns. Coralligenous formations, which are among the most valuable and fragile Mediterranean seabed habitats, are well documented within the marine protected area. Fixed nets and longlines deployed on rough or rocky bottoms may abrade, entangle, or

damage these structures. As a result, even fishing gears that are legally permitted may still generate measurable habitat impacts if not carefully managed.

Fisheries pressures also have a social and gender dimension. Research by Merayo, Vakhitova & Carlson (2024) shows that women across the Mediterranean and Black Sea are often concentrated in lower-paid post-harvest, processing, sales, and tourism-facing segments of the seafood value chain. Evidence from Vlorë suggests that restaurants and retail outlets capture the highest commercial mark-ups, creating a risk that women involved in processing and sales may bear income volatility without having adequate representation in decision-making processes related to the management of the Karaburun–Sazan Marine National Park.

3.2. Aquaculture and Mariculture

Karaburun's eastern flank inside Vlorë Bay is identified in the national IMAP monitoring sites table as an area experiencing high pressure from the combined presence of tourist activities and aquaculture. This indicates, first, that marine farms or cage-based aquaculture facilities are located within or very close to the functional influence zone of the protected area and, second, that these operations are spatially concentrated in the same coastal zone used intensively for recreation and tourism.

The UNDP / Vlorë stakeholder mapping further supports this interpretation by including a dedicated subsection on aquaculture and mariculture in the region. That assessment places aquaculture sites together with ports, fish farms, and tourism businesses along the coastal stretch that includes the Karaburun–Sazan Marine National Park. This clustering highlights the increasingly multi-use nature of the coastline, where conservation, tourism, transport, and seafood production all compete for space and resources.

Evidence from Bakiu et al. (2020), who examined wild fish interactions with sea cages in Vlorë Bay, shows that cage installations tend to attract schools of wild fish and effectively function as aggregation and feeding points. This concentration of fish can in turn stimulate additional fishing effort around cage sites, including the placement of more nets in nearby waters. At the same time, it may increase biosecurity risks, parasite transmission, and nutrient enrichment in marine areas located close to the park boundary.

For the protected area, these farms can generate several pressure pathways. Localized eutrophication may occur through excess nutrients and organic matter, potentially affecting nearby seagrass meadows and coralligenous habitats that are already recognized as monitoring priorities under the IMAP framework. Aquaculture sites may also attract opportunistic species, including non-indigenous species, since IMAP documentation explicitly notes that aquaculture facilities in Orikum, Porto Palermo, Ksamil, and Stillo can facilitate biological invasions. In addition, the physical presence of cages and associated service traffic may create spatial conflicts with dive routes, recreational boating corridors, and sightseeing circuits.

Although the precise current number of licensed aquaculture businesses is not precisely known, the fact that the IMAP monitoring system treats Orikum and eastern Karaburun Peninsula aquaculture as one of the recurring hotspots for regular survey work strongly suggests the continued presence of several active facilities in the wider area.

3.3. Tourism, Recreation, and Marine Transport

Tourism represents one of the fastest-growing economic activities within and around the Karaburun–Sazan Marine National Park, linking the coastal communities of Vlorë, Radhimë, and Orikum to the broader blue economy. Over the past decade, the area has undergone a gradual transformation from a limited and largely informal visitation pattern to an increasingly organized and diversified tourism sector. This growth reflects both improved accessibility and rising demand for nature-based and cultural experiences among domestic and international visitors.

According to data from the Port Authority (2025), the number of boats engaged in tourist excursions has increased steadily. In 2012, only two tour vessels operated in the park. By 2018, the figure had risen to ten, and by 2025 the total number of registered vessels had reached seventeen. This expansion demonstrates the park's growing popularity as a marine ecotourism destination and suggests the emergence of a small but stable service economy based on diving, guided excursions, and day cruises. The increase in vessel activity also corresponds with the development of docking and departure points at Port of Vlorë, Radhimë, and Orikum Marina, which have improved and formalized access to the protected area.

Tour boat activity, however, also creates multiple pressures. Repeated anchoring and mooring in the same coves can damage seagrass meadows, photophilic algae communities, and coralligenous formations. Underwater noise is particularly problematic in narrow enclosed spaces such as Haxhi Ali Cave, where sound reverberation may disturb wildlife and reduce visitor experience quality. Increased visitation also contributes to marine litter and wastewater discharge, while navigation routes may overlap with areas used by artisanal fishers who set nets near the same coastal corridors, generating space-use and safety conflicts.

Visitor flows have followed a similarly strong upward trajectory. Recorded visitor numbers increased from 74,174 in 2019 to 91,873 in 2025, despite the sharp decline in 2020 due to COVID-19 restrictions, when only 15,833 visitors were registered. The rapid recovery in 2021, when arrivals rebounded to 79,606, and the continued rise thereafter demonstrate both the resilience of local tourism operators and the sustained attractiveness of the Karaburun–Sazan coastline.

The most frequently visited sites, including Haxhi Ali Cave, Grama Bay, and Shën Vasili Bay, have become emblematic destinations for marine excursions, diving, snorkeling, and underwater photography. Seasonal demand peaks between mid-July and mid-August, when daily visitor numbers often exceed 2,000 people.

Tourism in the park is no longer dominated exclusively by domestic visitors. In 2022, Albanian visitors accounted for 66 percent of total arrivals, while foreign tourists represented 34 percent. By 2025, this balance had shifted significantly to 53 percent domestic and 47 percent international visitors, indicating the site's growing recognition within wider Mediterranean tourism circuits.

This diversification provides several economic advantages, including higher visitor spending and longer average stays, but it also introduces new management demands. These include the need for multilingual communication, stronger environmental awareness campaigns, improved safety systems, and more standardized service quality across tour operators. As foreign visitation rises, investment in professional guiding services and interpretation infrastructure becomes increasingly important.

Albania's coastal tourism expanded rapidly to 9.5 million international visits in 2023, while recent research notes that the scenic landscapes of Vlorë often fall into scenic Classes III–IV because of visible human impacts, although these conditions could be improved through moderate management interventions. This suggests that tourism pressure is already substantial but remains reversible if addressed in time.

Tourism now provides an increasingly important source of income for communities and businesses in Orikum and Radhimë, supporting boat operators, diving centers, restaurants, accommodation providers, and local artisans. However, these benefits are accompanied by ecological pressures such as anchoring on seagrass habitats, crowding in fragile caves, waste generation, and boat-related noise pollution.

The key challenge for park management is to balance tourism-driven economic vitality with conservation of fragile marine ecosystems. Measures such as eco-moorings, visitor-capacity limits, and real-time monitoring of vessel traffic offer practical ways to reduce pressure on sensitive habitats while maintaining economic activity.

The available statistical evidence demonstrates a clear long-term growth trend in marine tourism, both in visitor numbers and in the size of the operating excursion fleet. The increasing share of foreign visitors further confirms the park's rising international visibility. To ensure that this growth remains sustainable, future strategies should prioritize stronger regulation and carrying-capacity controls for both visitor sites and vessels, investment in infrastructure that supports environmental protection and visitor safety, and capacity-building for local entrepreneurs, particularly women and young people, so that tourism services evolve in line with sustainability principles.

By integrating tourism management into the wider economic framework of the protected area, the Karaburun–Sazan Marine National Park can develop into a model of sustainable marine tourism where economic opportunity coexists with biodiversity conservation and the valorisation of cultural heritage.

Table 1. Evolution of Marine Tourism in the Karaburun–Sazan Marine National Park (2012–2025)

Year	Number of Tour Boats Operating	Registered Visitors	Domestic Visitors (%)	Foreign Visitors (%)	Notes / Events
2012	2	n/a	n/a	n/a	Initial period of tourism activity.
2015	6	35,000	85	15	mproved coastal infrastructure and early promotion by Vlora Municipality.
2018	10	58,200	78	22	Increasing interest in diving and cave tours; Radhimë and Orikum as departure points.
2019	12	74,174	72	28	Tourism peak before pandemic.
2020	7	15,833	90	10	Sharp decline due to COVID-19 tel restrictions.
2021	11	79,606	70	30	Rapid recovery and renewed domestic tourism demand.
2022	13	84,500	66	34	Expansion of marine excursion services; presence of new foreign markets.
2023	15	88,215	60	40	Rise in international charter tours; diversification of tourism offer.
2024	16	90,560	56	44	Increased number of eco-tours and guided diving activities.
2025	17	91,873	53	47	Record number of visitors; strong foreign participation and sustained fleet growth.

4.1. Discussion

4.1 High Potential, Fragile System

The findings indicate that the Sazan–Karaburun Marine Protected Area (SK-MPA) possesses strong tourism potential, but at the same time exhibits low ecological tolerance to uncontrolled or poorly managed growth. Unlike conventional mass-tourism resorts, the competitive advantage of the destination lies in its environmental quality, relative remoteness, scenic integrity, biodiversity richness, and authentic coastal character. These are assets that can be rapidly degraded if visitor pressure exceeds carrying capacity.

For this reason, tourism performance in the SK-MPA should not be assessed only through visitor numbers. More appropriate indicators include visitor satisfaction, average expenditure per visitor, the proportion of economic benefits retained locally, biodiversity condition, and the ability to extend tourism activity beyond the short summer season. This perspective reflects international best practice in protected area tourism, where quality-based indicators are increasingly prioritized over volume-based growth models. The European Commission and UN Tourism have similarly emphasized sustainable destination metrics linked to environmental and community outcomes rather than arrivals alone.

4.2 Main Constraints

A major structural limitation for tourism development in the SK-MPA is seasonality. Demand is heavily concentrated between June and September, when sea conditions are favorable and domestic as well as international tourist flows peak. This creates overcrowding during summer while leaving businesses with short revenue windows and underutilized capacity during the remainder of the year. Such seasonality is common across Mediterranean coastal destinations and often reduces long-term resilience.

Infrastructure gaps also constrain destination quality. The area still faces limited eco-mooring systems for boats, insufficient waste management capacity, few visitor interpretation centers, and limited ranger or surveillance presence. These shortcomings reduce visitor experience while increasing environmental risk. At the governance level, tourism, maritime transport, fisheries, environmental protection, and municipal planning involve multiple institutions whose responsibilities may overlap or remain weakly coordinated. This fragmentation can delay investment decisions, weaken enforcement, and complicate strategic destination management.

Another challenge is informality. Some excursion boats and tourism services continue to operate under limited regulation, reducing service quality, safety oversight, tax capture, and environmental compliance. Similar governance challenges have been identified in other emerging coastal destinations undergoing rapid tourism growth. (worldbank.org) (oecd.org)

4.3 Environmental Pressures

Existing studies identify several environmental pressures affecting the SK-MPA. Anchoring by excursion boats and private vessels can damage *Posidonia oceanica* seagrass meadows, which are among the Mediterranean's most important habitats for carbon storage, nursery functions, and coastal ecosystem health. Noise disturbance generated by vessels can affect marine fauna, particularly dolphins and other sensitive species. Marine litter remains a common pressure in many coastal tourism zones, especially during peak season when visitor numbers increase sharply.

Additional concerns include illegal or overlapping fishing activity near sensitive zones, excessive concentration of visitors at iconic sites such as caves and bays, and localized wastewater risks linked to increased maritime and tourism activity. Shumka et al. (2025) also note environmental concerns related to marine water quality in the waters surrounding Sazan Island. International conservation bodies similarly recognize anchoring, pollution, and unmanaged tourism flows as common threats to Mediterranean MPAs.

4.5 Gender Inclusion Dimension

Women frequently participate in coastal tourism economies through fisheries-linked processing, gastronomy, crafts, accommodation services, hospitality, and retail chains, yet their contributions often remain under-recognized or informal. In destinations such as the SK-MPA, gender-responsive tourism policy can improve both social equity and economic performance.

This requires targeted training for women entrepreneurs, equal access to finance and grants, support for women-led cooperatives, stronger representation in tourism boards and local management bodies, and branding strategies that highlight women-led cultural and culinary products. Women's knowledge of food traditions, handicrafts, hospitality, and community networks can significantly enrich the authenticity of tourism experiences.

Regional studies in the Mediterranean and Black Sea emphasize that greater inclusion of women in fisheries and tourism value chains strengthens local resilience, diversifies household income, and improves community participation in sustainability transitions.

5. Conclusion

The Sazan–Karaburun Marine Protected Area represents one of the most promising territories for sustainable tourism development in Albania and the wider Balkan region. Its unique combination of marine biodiversity, dramatic coastal scenery, underwater heritage, island identity, and strategic proximity to Vlorë creates strong comparative advantages within niche Mediterranean tourism markets. As international tourism demand increasingly shifts toward authentic, nature-based, and experience-oriented destinations, the SK-MPA is well positioned to attract visitors seeking alternatives to conventional mass tourism resorts. Protected coastal landscapes with strong environmental quality and cultural distinctiveness are increasingly recognized as high-value assets in European tourism development.

The findings of this study suggest that the most appropriate development pathway for the SK-MPA is not high-volume tourism, but rather a model based on high-value and low-impact activities. Such a model should prioritize ecotourism, diving tourism, heritage interpretation, nautical tourism, scientific and educational tourism, and community participation. This approach would allow the destination to maximize economic returns while minimizing pressure on sensitive ecosystems. International experience from marine protected areas shows that destinations focused on quality, environmental stewardship, and specialized visitor experiences often achieve stronger long-term resilience than those based on rapid visitor expansion. (iucn.org)

At the same time, the future success of the SK-MPA depends on careful governance and proactive management. Uncontrolled growth could damage the ecological integrity and experiential quality that currently define the area's attractiveness. For this reason, carrying-capacity systems, eco-mooring infrastructure, visitor-flow regulation, waste management, benefit-sharing with local communities, and integrated institutional coordination are essential. If managed strategically, the SK-MPA has the potential to become Albania's flagship marine tourism destination and a benchmark for sustainable tourism in the Mediterranean. In addition, tourism revenues could contribute directly to conservation financing while generating employment opportunities for surrounding communities such as Orikum and Vlorë. In this sense, the SK-MPA is not only a protected area, but also a strategic development asset capable of demonstrating how marine conservation and inclusive economic growth can coexist in emerging coastal destinations.

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CONCEPTUALISATION AND PILOTING OF AUTHENTIC TOURIST ITINERARIES IN ALBANIA AND THE DEVELOPMENT OF EXPERIENCE-BASED TOURISM PRODUCTS

Irena Resuli[1], Elda Mamoci[2], Florina Pazari[3]

Department of Tourism, Hospitality and Recreation Barleti University, Tirana, Albania

Corresponding author: f.pazari@umb.edu.al

Abstract

This paper presents findings from the first phase of the research project "Challenges of Digital Transformation for Authentic Tourism: Service, Product, Destination and Event", funded by the National Agency for Scientific Research and Innovation (NASRI) and implemented by Barleti University in partnership with Hotel Adriatik Durrës. The study focuses on the conceptualisation and piloting of authentic tourist itineraries in Albania, built upon the integration of cultural heritage, oenogastronomy, agritourism, active tourism, and local experiences. The paper presents the development process of five pilot tourist itineraries in destinations with high tourism potential: Durrës and its surroundings, Tirana and Petrela, Kruja, Berat, and Apollonia–Bylisi. The itineraries integrate diverse elements of territorial identity, including agritourism farms, wineries, artisan workshops, agri-food processing units, archaeological sites, and outdoor activities.

The methodological approach combines territorial analysis, field visits, and consultations with more than 30 local actors from the tourism sector, grounded in the concept of experience-oriented tourism. The results indicate that authentic itineraries create significant opportunities for diversifying Albania's tourism offer, valorising local products, and promoting the sustainable development of destinations. The itinerary with the highest potential for rapid development is found to be the one based on gastronomy and agritourism in the surroundings of Durrës, while the main challenge identified is the fragmentation of local stakeholders and the lack of institutional coordination.

Keywords: tourist itineraries, authentic tourism, agritourism, oenogastronomy, tourism experience, Albania.

1. Introduction

Tourism represents one of the sectors with the broadest impact on economic, social, and territorial development, creating opportunities for the valorization of cultural heritage, local resources, and the identity of destinations. In recent decades, the global tourism paradigm has undergone a profound transformation: moving away from traditional models of mass tourism, the industry is evolving towards specialized forms oriented around experience, authenticity, and sustainability. According to Martínez de Carnero Calzada (2025), contemporary tourists increasingly seek interaction with local communities, traditional gastronomy, and the culture of the territories they visit, privileging deep understanding over superficial spectacle.

In this context, thematic tourist itineraries are considered key instruments for creating differentiated and competitive products capable of integrating cultural heritage, enogastronomy, agritourism, and nature-based activities (Richards, 2018). For Albania, the potential for developing authentic tourist itineraries is considered particularly high: the cultural, historical, gastronomic, and natural diversity of the territory offers a rich foundation, while destinations such as Durrës, Kruja, Berat, Tirana, Apollonia, and Bylisi remain far from their

full potential. Recent studies on experiential tourism in the Albania–Greece cross-border region highlight that the combination of cultural heritage with local experiences creates significant potential for sustainable tourism development and the economic empowerment of local communities (Pazari, 2025).

This paper forms part of the first phase of the NASRI-funded research project entitled "Challenges of Digital Transformation for Authentic Tourism: Service, Product, Destination and Event". The specific aim of this study is to analyze the process of conceptualizing and piloting authentic tourist itineraries, built upon the integration of cultural heritage, enogastronomy, agritourism, and active tourism, while highlighting their potential for diversifying Albania's tourism offer and enhancing the competitiveness of destinations.

2. Literature Review

2.1 Experience-based tourism and authenticity

The transformation of the tourism industry towards an "experience economy" was conceptualised by Pine and Gilmore (1999) as a paradigmatic shift: consumers no longer purchase goods or services, but meaningful experiences. This concept has found wide application in tourism, where "experiential tourism" focuses on the active and emotional engagement of the visitor with the territory and the host community (Tung & Ritchie, 2011). According to Richards (2018), authenticity and the personalization of experience are the decisive factors in the competitive positioning of modern destinations.

The concept of authenticity in tourism has evolved from objective approaches — in which only unchanged cultural heritage is considered authentic — towards constructivist perspectives, according to which authenticity is constructed through the interaction between the visitor, the local community, and the territory (Wang, 1999). This approach also regards elements of living culture as authentic: traditional gastronomy, local customs, artisanal production processes, and ways of life. For developing destinations such as Albania, this constructivist perspective offers significant opportunities: existing cultural and natural resources can be valorized without losing their integrity, provided they are managed with purpose and coordination.

2.2 Thematic itineraries as instruments of territorial development

Thematic tourist itineraries are considered the most effective instruments for integrating fragmented territorial resources into structured and competitive products (Timothy & Boyd, 2015). They create links between cultural, natural, gastronomic, and recreational attractions, helping to distribute tourist flows and strengthen local economies beyond major centres. Leiper (1990) highlights that itineraries directly contribute to increasing the average length of stay and tourist expenditure, two critical indicators of a destination's economic efficiency.

European models of thematic itineraries, the German "Wine Route", the Flemish "Golden Background Route", and the Spanish "Jacobean Pilgrim Trails", demonstrate that a strong territorial identity, when structured as a coherent tourism product, can transform small destinations into internationally recognized products (Briedenhann & Wickens, 2004). At the same time, the success of these models is closely tied to the degree of cooperation among local,

institutional, and private actors, a factor that remains a challenge in the Albanian context as well.

2.3 Agritourism and enogastronomy as drivers of authenticity

Agritourism is considered one of the most effective forms of sustainable tourism, as it creates direct links between local production, gastronomy, rural culture, and the tourism experience (Sznajder, Przezborska & Scrimgeour, 2009). Farm-to-table experiences, tastings of local products, farm visits, and engagement with traditional production processes are considered strategically important elements for destinations targeting authenticity-oriented tourists.

Oenogastronomy, the combination of wine and gastronomic tourism, has shown sustained growth as a specialised global segment (Hall & Mitchell, 2002). Regions with a tradition of wine and agricultural production, such as Berat and Durrës, have documented potential for the development of oenogastronomic itineraries, following the successful models of Tuscany, Burgundy, or Rioja. According to Kivela and Crotts (2006), food and wine are decisive factors of territorial identity and primary travel motivators for high-spending tourist segments.

In Albania, the development of agritourism has received increasing attention in recent years, particularly in rural areas with gastronomic potential. However, most existing agritourism structures operate as isolated points rather than as parts of integrated tourism products, which limits their economic value and their impact on territorial development (Dredge & Jenkins, 2007).

3. Research Methodology

This study is based on a qualitative approach oriented towards tourism product development, structured across three interlinked methodological phases. Complementary methods were applied, combining the analysis of secondary sources, field observation, and consultations with local stakeholders, in accordance with the "participatory tourism planning" approach recommended in the international literature (Bramwell & Lane, 2000).

Phase I — Territorial and documentary analysis: Secondary sources were analysed, including national and regional tourism strategy documents, scientific literature, statistics from the Institute of Statistics (INSTAT) and the Ministry of Tourism, as well as promotional materials from the targeted destinations. This phase identified destinations with high cultural, gastronomic, historical, and natural potential, providing the information base for developing the selection criteria.

Phase II — Field visits and stakeholder consultations: Field visits were carried out to all five targeted destinations during the period March–June 2024. During the visits, direct observation was applied to identify authentic territorial elements: agritourism farms, wineries, agri-food processing units, artisan workshops, archaeological sites, and recreational activities. In parallel, semi-structured consultations were conducted with more than 30 actors from the tourism sector, including 12 tourism operators, 10 local businesses (restaurants, agritourism farms, wineries), 5 institutional representatives, and 8 community leaders, with the aim of identifying the potential and obstacles to integrating resources into thematic itineraries.

Phase III — Conceptualization and structuring of itineraries: Based on the collected data, five pilot tourist itineraries were conceptualized and structured. The selection of destinations and elements for each itinerary was based on five core criteria: (1) authenticity of the tourism experience; (2) diversity of territorial resources; (3) potential for the integration of local stakeholders; (4) accessibility and connectivity between destinations; and (5) potential for economic and environmental sustainability. Each itinerary was designed as a flexible "experience tourism" product, with scope for personalization according to visitor segment.

The five conceptualized itineraries are:

- "From Field to Table – The Surroundings of Durrës"
- "From Farm to Experience – Tirana and Petrela"
- "A Healthy and Active Lifestyle – Durrës–Kruja"
- "The Wine Route – Berat, a UNESCO City"
- "Antiquity and Rural Experience – Apollonia and Bylisi"

Table 1. Summary of the five pilot tourist itineraries

Itinerary	Destinations	Key Elements	Target Segment
From Field to Table	Durrës, Shijak, Manzë, Lalëz Bay	Agritourism, olive oil, wine, farm-to-table	Gastronomic tourists, day-trip
From Farm to Experience	Tirana, Petrela, Baldushk	Castle, ZipLine, agritourism, artisans	Urban tourists, short-escape
A Healthy and Active Lifestyle	Durrës, Kruja, Mt Sari Saltiku	Amphitheatre, hiking, medicinal plants, castle	Active tourists, wellness
The Wine Route – Berat UNESCO	Berat, Goricë, Mangalem, Belsh	UNESCO heritage, wineries, artisans	Enotourism, cultural tourism
Antiquity and Rural Experience	Apollonia, Bylisi, rural Fier area	Archaeology, olive oil, gastronomy	Cultural and educational tourism

Source: Authors, 2026

4. Results and Discussion

The analysis of the five itineraries demonstrates that integrating local elements into organized itinerary structures creates significant opportunities for diversifying the tourism offer, strengthening local economies, and promoting sustainable territorial development. The specific findings for each itinerary are presented below, followed by a cross-sectoral discussion of the key results.

4.1 Itinerary "From field to table – The surroundings of Durrës"

This itinerary was conceptualized as an oenogastronomic and agritourism product, oriented towards the valorization of local production and an authentic rural experience. The itinerary

integrates the rural and coastal areas surrounding Durrës, including Shijak, Manzë, Maminasi, and Lalëz Bay, constructing a logical flow that links agricultural production, agri-food processing, gastronomy, and coastal recreation.

The inclusion of agritourism farms such as Agro Gjepali and Agroturizëm Huqi creates concrete opportunities for tourist interaction with local farms, traditional products, and the farm-to-table concept. Visits to olive oil processing facilities and wineries contribute to the interpretation of traditional production processes and the promotion of the Mediterranean diet as part of the territorial identity. The combination of gastronomic experience with recreation at Lalëz Bay and a panoramic dinner at "Kodra e Kuajve" creates a well-balanced culture–gastronomy–relaxation product.

Key finding: this itinerary has the highest potential for rapid development as a day-trip experience, particularly for tourists based in Durrës and Tirana. Consultations with local operators confirmed concrete interest in collaboration, but highlighted the main obstacle: the absence of a coordinating structure and the lack of service standardization among the different stakeholders.

4.2 Itinerary "From farm to experience – Tirana and Petrela"

This itinerary combines historical heritage, outdoor activities, and rural experience in the vicinity of Tirana, integrating the Petrela and Baldushk areas into a model of active and recreational tourism. The central element is the interweaving of Petrela Castle with activities such as ZipLine and agritourism experiences, creating a differentiated product in the urban market.

The inclusion of local farms, artisan workshops, and small traditional product processing units creates opportunities for tourist interaction with the local community. The proximity to Tirana, approximately 25 km, represents the main structural advantage for developing short-escape and day-trip products for urban tourists and international visitors staying in the capital. Consultations indicated that this segment remains largely untapped by existing operators, leaving real space for new products.

4.3 Itinerary "A healthy and active lifestyle – Durrës–Kruja"

This itinerary interweaves cultural heritage with physical activity and the wellness concept, targeting the active tourist segment. The itinerary begins at the Amphitheatre of Durrës, interpreted as a historic space associated with Roman athleticism and spectacle and continues to Kruja, where the main activity is hiking on Mount Sari Saltiku (1,181 m).

The structure creates a coherent link between history, physical activity, and traditional gastronomy. The Old Bazaar and Kruja Castle reinforce the cultural and identity dimension, while visits to olive oil processing units, wineries, and medicinal plant facilities integrate the local economy. This itinerary proved particularly well-suited to the 25–45 age group of active tourists oriented towards a deep understanding of the territory, a profile documented as a high-growth segment in key source markets (UNWTO, 2023).

4.4 Itinerary "The Wine Route – Berat, a UNESCO City"

This itinerary was conceptualized as an oenogastronomic and cultural product with a strong territorial identity, focused on combining Berat's UNESCO heritage with wine, gastronomy, and rural experiences. The itinerary integrates the historic neighbourhoods of Mangalem and Goricë, Berat Castle, local wineries, and agritourism farms in the area.

Visits to artisan processing workshops and a stop in the Belsh area extend the experience towards natural and recreational elements. The main added value of this itinerary is Berat's UNESCO status, which provides international recognition and credibility as a quality guarantee. Consultations with local winery owners revealed a high willingness to participate, but also an urgent need for support in digital marketing and international communication.

4.5 Itinerary "Antiquity and rural experience – Apollonia and Bylisi"

This itinerary focuses on valorizing the ancient heritage of the area and connecting it with the rural economy and traditional gastronomy. It integrates the Archaeological Park of Apollonia, the ancient city of Bylisi, agritourism farms, and olive oil processing units in the area, creating a cultural and educational product with a coherent territorial narrative.

The combination of archaeological sites with rural and gastronomic experiences builds a continuous narrative of the connection between historical heritage and the contemporary economy of the territory. The olive oil processing facility near Bylisi concretely contributes to the interpretation of the Mediterranean diet as a living heritage. This itinerary emerged as particularly suited to cultural and educational tourism, but also identified the greatest need for investment in reception infrastructure.

4.6 Discussion of findings

The comparative analysis of the five itineraries highlights several key findings with strategic implications. First, significant potential exists but remains unexploited precisely because of institutional fragmentation and the absence of integrated products. Tourism potentials exist as isolated elements, agritourism farms, wineries, archaeological sites, without being connected into coherent narrative and logistical flows.

Second, itineraries based on gastronomy and agritourism (Durrës, Berat) show greater institutional and private readiness for rapid implementation, while cultural and educational itineraries (Apollonia–Bylisi) require prior infrastructure investment. This hierarchy of priorities should inform implementation strategies.

Third, all itineraries identified an urgent need for: (a) an integrated digital booking and promotion platform; (b) quality standardization and communication; and (c) cooperation mechanisms among local stakeholders. This finding is directly linked to the digital focus of the broader NASRI project and confirms the coherence of the chosen research approach. The findings are consistent with the international literature on cluster tourism development (Michael, 2003) and document the need for coordinating intervention as an essential precondition for transforming potential into a competitive product.

5. Conclusions

This study, carried out as part of the first phase of the NASRI project, demonstrates that Albania possesses considerable and well-documented potential for the development of authentic tourist itineraries. The conceptualization of five pilot itineraries confirmed that the combination of territorial elements, cultural heritage, gastronomy, agritourism, and recreational activities. creates differentiated tourism products oriented towards high-value segments.

The central finding of the study is that the main barrier is not a lack of resources, these exist and are rich, but the absence of institutional integration and managed products. Agritourism farms, wineries, archaeological sites, and artisan workshops function as isolated islands, without being connected into a coherent tourism product flow. The transition from "existing resources" to "competitive product" requires three intersecting interventions: (1) structuring and coordination among local stakeholders; (2) a digital communication and booking platform; and (3) quality standards and staff training.

The main policy implication of the study is the need to establish coordination mechanisms among private, academic, and institutional actors — a model that the NASRI project, through the Barleti University–Hotel Adriatik partnership, aims to develop and test in its second phase. Further studies should focus on measuring tourist perceptions of the proposed itineraries, the economic impact of implementation, and the role of digital technologies in the personalisation and promotion of the tourism experience.

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DRAWING THE INTERSTITIAL: ARCHITECTURAL REPRESENTATION AS SPATIAL SPECULATION AND GENERATIVE THOUGHT

Iris Nela[1], Marsida Cara[2]

[1] Department of Creative Industries, Barleti University, Tirana, Albania

[2] Department of Architecture and Design, Barleti University, Tirana, Albania

Corresponding author: i.nela@umb.edu.al , m.cara@umb.edu.al

(ORCID (Iris Nela): 0009-0004-8374-8432)

Abstract

This paper examines architectural drawing as a generative field of spatial thought rather than as a secondary instrument of representation. Its purpose is to reconsider drawing as an intellectual, speculative, and methodological practice through which architecture can test ideas that exceed the limits of construction, technical documentation, and conventional visual communication. The study uses a qualitative and interpretative methodology, based on close reading and critical analysis of experimental architectural drawing practices, with particular attention to collective drawing, analogue-digital hybridity, interstitial space, temporal notation, and speculative representation. The paper finds that architectural drawing operates simultaneously as process, artefact, and event. It enables the recomposition of historical fragments, the invention of connective spatial tissue, the negotiation between precision and ambiguity, and the construction of possible architectural worlds. Rather than simply describing buildings, drawing produces relationships, atmospheres, narratives, and forms of knowledge that may remain unbuilt yet still deeply architectural. The analysis also shows that contemporary drawing is not defined by a conflict between hand and digital tools, but by their productive overlap. In this expanded condition, drawing can include mapping, collage, cinematic sequence, notation, and conceptual diagrams, all of which contribute to architectural imagination. The paper concludes that drawing remains essential to architecture because it preserves the discipline's capacity for speculation, critique, and invention. To draw architecturally is not only to represent space, but to begin constructing a world of spatial possibilities.

Keywords

Architectural drawing; Spatial speculation; Interstitial space; Analogue-digital hybridity; Architectural representation; Design methodology

1. Introduction

Architectural drawing has traditionally been understood as a representational tool: a medium through which the architect communicates a building before its construction. Plans, sections, elevations,

perspectives, and diagrams have long functioned as instruments of translation between idea, form, and technical execution. However, this conventional understanding is increasingly insufficient for addressing the expanded role of drawing in architectural thought. Drawing does

not merely describe architecture; it participates in the production of architecture itself. It allows spatial ideas to emerge, mutate, and be tested before they are stabilized into built form. In this sense, drawing should be considered not only as representation, but also as a speculative, intellectual, and methodological practice.

The research problem addressed in this paper concerns the reduction of architectural drawing to either technical documentation or visual communication. Such a reduction overlooks the capacity of drawing to operate as a field of inquiry, invention, and critical imagination. In contemporary architectural culture, where digital tools, image production, and construction technologies dominate professional discourse, drawing risks being misunderstood as either an obsolete hand-based practice or a purely instrumental digital output. Yet experimental architectural practices suggest the opposite: drawing remains central because it enables architects to think spatially beyond the limitations of immediate construction, functional efficiency, and conventional geometry.

The context of this study is the transformation of architectural drawing from a fixed representational format into an expanded field that includes analogue gestures, digital processes, collage, mapping, cinematic sequences, notation systems, speculative diagrams, and hybrid visual languages. Within this expanded condition, drawing becomes capable of holding multiple dimensions simultaneously: historical memory, spatial imagination, material uncertainty, time, movement, atmosphere, and narrative. It can operate as a plan, but also as a map of thought; as an image, but also as a process; as an artefact, but also as an event. This shift is especially important for architectural education and design methodology, because it positions drawing as a space where students and architects develop their own intellectual and spatial language rather than simply reproduce established formal conventions.

The main objective of this paper is to examine architectural drawing as a generative practice that produces spatial thought. More specifically, the paper investigates how drawing functions as a site of speculation, how it recomposes fragments from different histories and scales, how it invents interstitial connections, and how it negotiates between precision and ambiguity. It also considers the relationship between hand drawing and digital media, arguing that the contemporary value of drawing does not depend on a simple opposition between analogue and digital methods, but on their productive overlap. Drawing is therefore approached as a dynamic medium through which architecture can explore conditions that may be unbuilt, unstable, fictional, temporal, or not yet fully possible.

The contribution of this study lies in its interpretation of architectural drawing as an active mode of architectural knowledge. Rather than treating drawing as a secondary product that follows design thinking, this paper argues that drawing is itself a form of design thinking. It produces relationships,

atmospheres, narratives, and spatial possibilities that may not exist elsewhere. This perspective challenges the assumption that architecture becomes meaningful only when it is built. Instead, the paper proposes that drawing can be understood as one of architecture's primary sites of existence, particularly when it opens new ways of imagining space, inhabitation, and form.

2. Literature Review

2.1 Architectural Drawing as a Mode of Spatial Thinking

Architectural drawing has historically occupied a central position in the production of architectural knowledge. Although it is often understood as a representational tool used to communicate a design before construction, theoretical and pedagogical literature has consistently shown that drawing is also a cognitive and speculative process. Schön (1983) describes design as a reflective conversation with the materials of a situation, suggesting that architects do not simply transfer pre-existing ideas onto paper, but discover and transform ideas through the act of making. In a similar way, Goldschmidt (1991) argues that sketching enables a dialectical movement between "seeing as" and "seeing that," where visual marks generate new interpretations and further design decisions.

This understanding positions drawing as an active participant in architectural thinking. The drawing is not only a record of an idea; it is a medium through which the idea becomes possible. Evans (1997) further argues that architecture is uniquely dependent on representation because the architect rarely produces the building directly. Instead, architecture passes through drawings, models, notations, and instructions. This distance between drawing and building does not weaken architecture; rather, it creates a productive space where design can be imagined, tested, translated, and transformed.

Recent research continues to support this view. Gómez-Tone and Raposo Grau (2024) emphasize that conception drawing initiates architectural thinking by connecting thought, vision, hand movement, and the discovery of first ideas. Their study is important because it confirms that drawing retains cognitive value even in technologically mediated environments. The early architectural drawing is often incomplete, ambiguous, and open-ended, but this incompleteness allows it to operate as a generative instrument rather than a finished representation.

Within this framework, architectural drawing should be understood as a form of spatial thinking. It allows architects to explore relations, atmospheres, fragments, scales, temporalities, and possible worlds before they become fixed as construction. Drawing is therefore both analytical and imaginative: it clarifies architectural problems while also opening conditions that cannot yet be fully measured or built.

2.2 Drawing Beyond Representation and Technical Documentation

The reduction of architectural drawing to technical documentation limits its intellectual and disciplinary significance. Plans, sections, elevations, and details remain essential to architectural practice, but they do not exhaust the meaning of drawing. Architectural representation does not merely show architecture; it shapes the way architecture is conceived. Pérez-Gómez and Pelletier (1997) argue that architectural representation is deeply connected to cultural, symbolic, and perceptual structures. Drawing is therefore never neutral. It contains assumptions about space, order, perception, and inhabitation.

Spiller (2013) expands this argument by presenting architectural drawing as a means of searching for dimensions beyond conventional space and time. The architectural drawing becomes a field in which the designer can explore semiotic, technological, atmospheric, fictional, and phenomenological conditions. In this sense, drawing is not only a means of explaining architecture to others, but a primary method for discovering what architecture might become.

This position challenges the idea that drawing is secondary to building. A drawing can be architectural even when it does not lead directly to construction. It may operate as a speculative proposition, a critique, a narrative, a map of relationships, or a philosophical investigation. Cantley (2013), for example, distinguishes between the artefact and the antifact, suggesting that architectural drawing can document not only what exists, but also what is impossible, unstable, or not yet possible. Such drawings do not fail because they remain unbuilt; instead, they expand architecture's conceptual field.

Yendo (2013) similarly argues that drawing can act as a response to architectural and philosophical exhaustion. In contexts where architectural production risks becoming dominated by economic efficiency and professional repetition, drawing preserves the possibility of questioning. It allows architects to ask what architecture means before asking only how it can be delivered. This makes drawing not merely aesthetic, but critical.

2.3 Precedent, Collage, and the Recomposition of Architectural Memory

Architectural drawing often works through memory and precedent. However, the use of precedent does not necessarily imply imitation. Rowe and Koetter (1978) propose the city as a collage of fragments, discontinuities, and historical layers. Their theory of collage urbanism rejects the idea of total unity and instead values the coexistence of multiple spatial logics. In this approach, fragments from different historical periods can be reactivated and recomposed into new architectural formations.

Morris (2013) develops a similar concern through the discussion of collective architectural drawing practices. The Dot-the-Dot exercise of the Texas Rangers demonstrates how drawing can become a field of improvisation, where historical plans, remembered buildings, imagined fragments, and invented urban tissue are placed into relation. The importance of this practice lies

not in exact reconstruction, but in transformation. Architectural history becomes active material rather than a fixed archive.

The collective aspect of this process is also significant. Dot-the-Dot challenged the idea of the architect as a singular author by allowing multiple hands and minds to participate in the same drawing. Each addition responded to the previous one, creating a cumulative spatial field. This recalls the logic of jazz improvisation: the process requires knowledge, discipline, memory, and rule-based interaction, but it also depends on risk, interpretation, and invention.

This approach is relevant for contemporary architectural education because it shows that drawing can become a pedagogical device for understanding precedent critically. Students and architects do not only learn to reproduce historical references; they learn to transform them. Through drawing, precedent becomes a living material that can be stretched, distorted, connected, and reinterpreted.

2.4 Ambiguity, Inexactitude, and the Interstitial

A central issue in architectural drawing is the relationship between precision and ambiguity. Technical representation requires accuracy, but speculative drawing often depends on productive inexactitude. Morris (2013) suggests that excessive precision would have weakened the collective drawing process because the aim was not to produce a measurable plan, but to synthesize heterogeneous fragments. Inexactitude allowed different scales, historical references, and graphic hands to coexist.

This does not mean that speculative drawing is irrational. Rather, it operates through a different form of rationality: relational, associative, and interpretative. Goldschmidt (1991) shows that designers often reinterpret their own drawings, discovering possibilities that were not consciously intended at the beginning. Ambiguity therefore has methodological value. It allows the drawing to remain open to multiple readings and future transformations.

The interstitial is especially important in this context. In architectural drawing, the most significant design work often occurs not in the recognizable objects, but in the spaces between them. These intermediate zones connect fragments, mediate between scales, and transform separate elements into a relational field. The interstitial may appear as threshold, void, passage, landscape, edge, or connective tissue. It is the place where architectural meaning is negotiated.

Corner (1999) argues that mapping can operate as a speculative and inventive practice rather than a simple descriptive one. This is useful for understanding the interstitial as an active design condition. When drawing maps relations, forces, movements, and atmospheres, it moves beyond object-based representation. It begins to construct systems of connection. In this sense, the interstitial is not leftover space; it is one of the primary territories of architectural invention.

2.5 The Hand, Embodiment, and the Material Intelligence of Drawing

Despite the increasing dominance of digital tools, the embodied dimension of drawing remains essential. Pallasmaa (2009) argues that the hand is not merely a technical instrument, but a thinking organ that connects body, perception, memory, and imagination. Drawing by hand allows the designer to think through gesture, pressure, rhythm, and material resistance. The line is not only visual; it is bodily and temporal.

Frascari (2011) similarly emphasizes the imaginative and intellectual value of architectural drawing, arguing that drawing cultivates slowness, attention, and interpretative depth. This is particularly important in contemporary design culture, where speed and visual production can sometimes replace critical thinking. Slow drawing allows architecture to develop through observation, reflection, and revision.

Berger (2005) also treats drawing as an act of looking. To draw is not simply to copy what is seen, but to understand it through attention. This idea is relevant to architectural drawing because architecture requires the ability to observe relations that are not immediately visible: proportion, hierarchy, atmosphere, use, memory, and spatial tension. Drawing trains this form of attention.

Cook (2013) reinforces this position by presenting drawing as an investigative device and a voyage of discovery. For Cook, the drawing is valuable because it can reveal possibilities unknown at the beginning of the process. This makes drawing exploratory rather than merely explanatory. It is a way of moving into architectural uncertainty.

2.5 Analogue-Digital Hybridity and Contemporary Design Education

The relationship between hand drawing and digital tools should not be understood as a simple opposition. Contemporary architectural drawing is increasingly hybrid. Digital modelling, rendering, scanning, collage, animation, parametric systems, and artificial intelligence coexist with sketching, hand notation, material drawing, and analogue experimentation. The key question is not whether a drawing is manual or digital, but whether it produces architectural intelligence.

Ceylan et al. (2024) show that digital tools have become fundamental in architectural design studios, particularly for representation, communication, and online learning environments. Their study confirms that digital tools now structure many aspects of architectural education. However, this also raises the question of whether digital workflows support or weaken conceptual thinking. If used only for final visualization, digital tools may reduce drawing to image production. If used critically, they can expand the design process.

Agirbaş (2020) examines the integration of building information modeling into architectural education and shows that BIM can support understanding of construction sciences when integrated

pedagogically. However, the broader challenge remains the balance between technical modelling and conceptual development. Shin and Kang (2026) argue that BIM education should move from tool-based training toward integrated studio models. This is important because digital systems should not replace design thinking; they should become part of it.

Burry (2011) contributes to this discussion through the concept of scripting cultures, where computational processes become part of architectural authorship and design logic. Rather than treating computation as a neutral tool, Burry shows that scripting changes the way architects think, generate, and control form. In this sense, digital drawing is not only a method of representation, but also a method of reasoning.

The most productive position is therefore hybridity. Hand drawing offers immediacy, ambiguity, and embodied reflection, while digital tools offer complexity, iteration, simulation, and expanded forms of representation. The contemporary architectural drawing can combine both, creating a field where intuition and computation operate together.

2.6 Drawing Time, Narrative, and Synthetic Space

Architectural drawing is not limited to the representation of static space. It can also organize time, sequence, movement, and narrative. Tschumi (1994) argues that architecture is inseparable from event, action, and disjunction. This theoretical position expands the meaning of drawing because it suggests that architectural representation must also address what happens in space, not only what space looks like.

Clear (2013) develops this concern through the chronogram, a drawing method that combines narrative, production process, graphic language, and spatial development. The chronogram differs from a conventional storyboard because it does not only arrange scenes; it constructs the spatial and temporal logic of a project. It can map how architecture unfolds through movement, atmosphere, cinematic sequence, and transformation.

Menikou (2025) extends this temporal understanding by examining detail drawing as a speculative and temporal construct. Her work shows that even the architectural detail can move beyond technical resolution and become a research tool for future forms of life, material change, and social transformation. This reinforces the argument that drawing can operate simultaneously as technical, conceptual, and speculative.

Narrative drawing is also central to the work of Lim (2013), who treats architectural projects as cultural and literary constructions. In this approach, drawing becomes a method for translating stories, myths, memories, and urban identities into spatial form. Architecture is not only built through materials; it is also built through narratives that give meaning to space.

2.7 Fiction, Speculation, and Architectural World-Making

Speculative architectural drawing often approaches fiction as a serious method of design. Bronner (2013), through *New Malacovia*, demonstrates how an imaginary environment can become an architectural proposition through drawing, model, and narrative. Fiction here is not an escape from architecture, but a way of constructing alternative spatial realities.

Spiller's work on AVATAR and the poetics of speculative architectural territories similarly positions drawing as a form of world-making (Spiller, 2013a, 2013b). These drawings do not merely represent possible buildings; they construct atmospheres, myths, technologies, and symbolic environments. The architectural drawing becomes a site where reality and imagination are not opposed, but intertwined.

Herron (2013) and Slavinsky (2013) also contribute to this speculative tradition by treating architecture as adaptable, playful, and open to alternative futures. Their work suggests that drawing can challenge fixed architectural categories and propose temporary, mobile, or unconventional spatial systems. Such drawings are important because they preserve architecture's capacity for imagination beyond professional standardization.

This speculative function is one of the reasons architectural drawing remains vital. It allows architecture to test worlds that do not yet exist. It can hold uncertainty, contradiction, and impossibility without needing to resolve them immediately. In doing so, drawing protects the experimental dimension of architectural culture.

3. Methodology

This study uses a qualitative, interpretative research design based on theoretical analysis, document-based research, and visual source interpretation. The aim of the research is not to measure architectural drawing through numerical data, but to examine it as a conceptual, speculative, and methodological practice within architectural discourse. Architectural drawing is approached as a medium that produces spatial thought, rather than only as a technical instrument used to communicate a final design. For this reason, the study adopts an exploratory approach, suitable for analyzing the expanded role of drawing in relation to representation, ambiguity, interstitial space, analogue-digital hybridity, time, narrative, and architectural imagination.

The data were collected through the review of academic literature, theoretical texts, and selected architectural drawing practices that directly address the role of drawing in architecture. The material includes foundational sources on design thinking and architectural representation, as well as recent studies on conception drawing, digital tools, BIM, artificial intelligence, and speculative representation in architectural education and practice. The selected sample is purposive rather than random, because the purpose of the study is to build a focused theoretical framework around

architectural drawing as a generative form of knowledge. The sample includes essays, drawings, speculative projects, chronograms, hybrid analogue-digital representations, fictional architectural environments, and landscape-based drawing practices that contribute to the central argument of the paper.

The analysis was conducted through qualitative thematic analysis and visual interpretative analysis. The reviewed sources were examined according to recurring themes such as drawing as spatial thinking, drawing beyond technical documentation, precedent and collage, ambiguity and productive inexactitude, interstitial space, analogue-digital hybridity, artificial intelligence, narrative, time, and architectural world-making. Visual examples were analyzed not only as images, but as systems of spatial reasoning. Attention was given to composition, layering, scale, fragmentation, notation, atmosphere, sequence, and the relationship between visible form and conceptual intention. Comparative analysis was also used to identify how different drawing methods, from hand-based speculative drawing to digital and hybrid practices, contribute to architectural thinking.

4. Results

The qualitative thematic and visual interpretative analysis produced five main findings regarding the role of architectural drawing in contemporary architectural thought. The findings show that drawing operates not only as a representational medium, but also as a generative, speculative, and methodological practice. Across the analyzed sources and visual examples, drawing appears as a space where architectural ideas are produced through ambiguity, fragmentation, connection, narrative, and technological hybridity.

The first finding is that architectural drawing functions as a mode of spatial thinking. Rather than simply illustrating a design already formed in the mind, drawing actively participates in the development of the design idea. Early drawings, sketches, diagrams, and speculative compositions allow ideas to emerge through visual exploration. The act of drawing creates a feedback process between the hand, eye, image, and concept. This means that drawing is not only a result of thinking, but also a method through which thinking occurs.

The second finding is that ambiguity and inexactitude are productive in architectural drawing. While technical documentation depends on accuracy, speculative drawing often depends on openness. In the analyzed examples, incomplete lines, fragmented forms, shifting scales, and layered compositions allow multiple readings. This ambiguity does not weaken the drawing; instead, it increases its generative potential. It allows the architect to test spatial relationships before they become fixed or technically resolved.

The third finding is that the interstitial space becomes one of the most important sites of architectural invention. The analysis shows that architectural meaning is often produced not only by individual objects or recognizable fragments, but by the connections between them. These intermediate zones include thresholds, gaps, passages, voids, landscapes, and connective tissues. The interstitial allows different scales, histories, and spatial systems to coexist within a single field.

Figure 1. From visual act to Spatial possibility

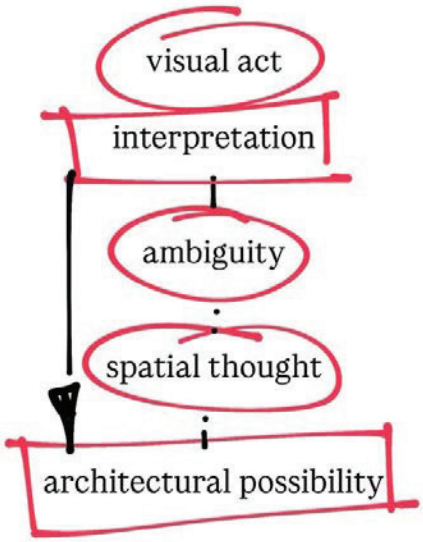

Figure 1. The generative process of architectural drawing from visual act to spatial possibility

Table 1. Title of the table

Drawing as spatial thinking	Drawing participates in the formation of architectural ideas rather than only representing them after they are complete.	Establishes drawing as a design method and a form of architectural knowledge.
Productive ambiguity	Incomplete lines, fragments, shifting scales, and open compositions allow multiple interpretations.	Keeps the design process flexible, exploratory, and open to transformation.
Interstitial space	Architectural invention often occurs between objects, fragments, systems, and spatial forms conditions.	Shifts attention from isolated to relationships, thresholds, and connective spaces.
Analogue-digital hybridity	Hand drawing, digital tools, collage, mapping, notation, and AI operate together.	Expands the possibilities of contemporary architectural representation.
Drawing as world-making	Speculative drawings construct possible spatial realities, narratives, and atmospheres.	Allows architecture to exceed the limits of immediate construction and technical documentation.

Table 1. Main findings on the role of architectural drawing as a generative practice

5. Discussion

The findings show that architectural drawing should be understood as an active form of spatial thinking, not merely as a representational tool. This supports Schön's (1983) view of design as a reflective process and Goldschmidt's (1991) argument that sketching helps designers reinterpret and develop ideas during the act of drawing. In this sense, drawing does not simply record architectural thought; it helps produce it.

A key finding is that ambiguity and inexactitude can be productive. While technical precision is necessary in later stages of design, early and speculative drawings often rely on openness, fragmentation, and multiple possible readings. This corresponds with Morris's (2013) discussion of collective drawing practices, where different fragments, scales, and references are connected without requiring full geometric consistency.

The study also highlights the importance of interstitial space. Architectural invention often occurs between objects, fragments, and systems rather than only within isolated forms. This supports Corner's (1999) understanding of mapping as a speculative and relational practice. The interstitial therefore becomes a space of connection, negotiation, and transformation.

Another important implication concerns analogue-digital hybridity. Hand drawing, digital modelling, BIM, collage, mapping, and AI-assisted tools should not be seen as opposing methods. Instead, they can work together when used critically. This is relevant for architectural education, where drawing should be taught not only as presentation, but as a research and design method (Agirbaş, 2020; Ceylan et al., 2024; Shin & Kang, 2026).

Finally, the findings suggest that drawing operates as a form of architectural world-making. Speculative drawings, chronograms, and narrative representations allow architecture to explore possible, fictional, temporal, and unbuilt spaces. This supports Spiller's (2013) argument that drawing can search beyond conventional spatial limits. Overall, the study confirms that architectural drawing remains essential because it connects thinking, making, interpretation, and imagination.

6. Conclusion

This paper has examined architectural drawing as a generative practice that produces spatial thought rather than merely representing architectural ideas. The main contribution of the study is the interpretation of drawing as an active methodological field where ambiguity, interstitial relations,

analogue-digital hybridity, narrative, and speculation participate in the formation of architectural knowledge. The analysis shows that drawing allows architecture to move beyond technical documentation and enter a space of investigation, where ideas can be tested, transformed, and imagined before becoming fixed as built form.

The study also contributes to the understanding of drawing as a bridge between memory and invention. Through fragments, references, incomplete marks, and layered visual systems, architectural drawing creates conditions for new spatial possibilities. It demonstrates that both hand-based and digital practices can support architectural thinking when they are used critically and not only as tools for final presentation.

The main limitation of this study is that it is based on qualitative theoretical and visual analysis rather than empirical research with students, architects, or design studios. Therefore, the findings remain interpretative and conceptual. Future research could include interviews, studio observations, or comparative case studies to examine how architects and students actually use drawing during the design process. Further studies could also explore how artificial intelligence, virtual reality, and emerging digital tools are reshaping the role of drawing in architectural education and practice.

In conclusion, architectural drawing remains essential because it preserves architecture's capacity to think, question, and imagine. It is not only a medium of representation, but a space where architecture begins to construct possible worlds.

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(APA 7 Style, Times New Roman 10 pt, hanging indent 0.75 cm)

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ATTITUDES TOWARD DRUG USE AMONG ADOLESCENTS IN TIRANA: SOCIAL, PSYCHOLOGICAL, AND ENVIRONMENTAL DETERMINANTS

Jorida Rustemi[1], Jonida Haxhiu[1]

Department of Behavioral and Health Sciences
Barleti University, Tirana, Albania

Corresponding author: rustemi_jorida@yahoo.com

Abstract

This study examined adolescents' attitudes toward drug use and the psychosocial and environmental factors shaping those attitudes among secondary school students in Tirana, Albania. A qualitative, multi-informant research design was employed, combining semi-structured individual interviews and focus group discussions with 55 purposively selected adolescents aged 13–18 from six public and private schools across urban and suburban areas of the city. Supplementary focus groups with teachers and parents provided triangulated adult perspectives. Reflexive thematic analysis identified four dominant themes: (1) the perceived normalization of cannabis within peer subcultures; (2) curiosity and developmental experimentation as initial motivators; (3) peer pressure as the most consistent immediate driver of initiation; and (4) emotional distress and maladaptive coping as psychological pathways toward substance experimentation. Teachers reported behavioral and academic changes as proxy indicators of substance exposure, while parents acknowledged limited awareness of adolescents' social and digital environments. Triangulation revealed a systematic risk-underestimation among adolescents relative to adult informants, with no substantive gender differences in attitudinal orientation observed within the sample. Findings are interpreted within Social Learning Theory, Problem Behavior Theory, and neurodevelopmental frameworks. While quantitative prevalence data on Albanian adolescent substance use exist, a database search identified no prior qualitative investigation of drug-use attitudes among school-attending adolescents in Albania, establishing this study as the first of its kind and providing a contextually grounded evidence base for prevention program design and policy development.

Keywords: adolescent attitudes; drug use; psychosocial determinants; peer influence; Albania; prevention

1. Introduction

Adolescent substance use remains one of the most consequential public health challenges of the twenty-first century. The World Health Organization (WHO, 2023) and the United Nations Office on Drugs and Crime (UNODC, 2023) document persistently high rates of illicit substance initiation during adolescence across all world regions, with cannabis consistently reported as the most widely used psychoactive substance among young people. The developmental period of adolescence is defined by profound neurobiological, cognitive, emotional, and social transitions that render young people simultaneously capable of rapid growth and acutely susceptible to risk behaviors. The prefrontal cortex—responsible for executive function, impulse regulation, and risk appraisal—continues to mature into the mid-twenties, while the limbic reward system reaches relative maturity earlier in development. This structural asymmetry renders adolescents

particularly sensitive to peer influence and immediate reward, creating a window of heightened vulnerability to substance experimentation (Casey et al., 2019; Steinberg, 2008).

Attitudes toward drug use, defined by Ajzen (1991) as relatively stable cognitive and affective orientations toward a behavior or its object, are central to understanding and preventing adolescent substance use. They are active antecedents that shape behavioral intentions, moderate responses to peer influence, and determine receptivity to prevention messages (Bandura, 1986). An adolescent who holds permissive attitudes toward cannabis is not only more likely to initiate use when opportunity arises, but is also less responsive to health-risk information and more susceptible to normalization processes within peer networks (Palamar et al., 2014). Conversely, a negative or ambivalent attitudinal orientation buffers the effect of peer pressure and constitutes a modifiable protective factor that well-designed prevention programs can directly target (Toumbourou et al., 2007). European surveillance data from the European School Survey Project on Alcohol and Other Drugs (ESPAD, 2019) confirm this: the strongest single attitudinal predictor of cannabis use among European secondary school students is the perception that it carries low or no risk.

Despite growing recognition of the problem in Albania, no published study has empirically examined how adolescents in Tirana cognitively and affectively appraise drug use, or identified the social, familial, and psychological forces shaping those appraisals. A search of PsycINFO, PubMed, Scopus, and Google Scholar using the terms ‘adolescent,’ ‘drug use,’ ‘attitudes,’ ‘Albania,’ and ‘Tirana’ in combination, conducted in January 2025, identified existing quantitative prevalence studies and institutional surveillance reports but returned no qualitative study of drug-use attitudes among school-attending adolescents in Albania meeting these criteria in either English or Albanian. This constitutes a meaningful evidence gap. Prevention programs calibrated to local attitudinal profiles consistently outperform generic interventions imported from different cultural contexts (Faggiano et al., 2014; Sloboda et al., 2009), and in Albania—where evidence-based prevention infrastructure remains limited and no locally validated attitudinal measures yet exist—qualitative documentation of the content, structure, and determinants of adolescents’ drug-related attitudes is a necessary first step. Emerging national data from the Institute of Public Health (IPH, 2022) indicate an increasing trajectory of substance exposure among urban Albanian adolescents, particularly in Tirana. As the country’s principal urban, educational, and economic center, Tirana concentrates social influences such as nightlife culture, socioeconomic stratification, rapid cultural change, and expanded substance availability, that may elevate risk beyond national averages (Demetrovics et al., 2011; Kirtadze et al., 2013).

The present study addresses this gap by providing a qualitative, multi-informant investigation of adolescents’ attitudes toward drug use in Tirana. Three specific objectives guided the inquiry:
(a) to identify the dominant attitudinal orientations among urban Albanian adolescents and their underlying social and psychological determinants; (b) to document divergences in risk perception across adolescent, teacher, and parent informant groups; and (c) to derive contextually grounded implications for prevention program design and policy. The paper proceeds as follows: Section 2 reviews the relevant literature and theoretical frameworks; Section 3 details the methodology;

Section 4 reports the findings organized by theme; Section 5 interprets findings in relation to theory and prior evidence; and Section 6 presents conclusions and practical implications.

2. Literature Review

2.1. Global Epidemiology of Adolescent Substance Use

The scale of adolescent substance use is well established in global surveillance data. The WHO (2023) estimates that substance use disorders affect a significant proportion of young people worldwide, with initiation concentrating in the 12–17 age range. UNODC (2023) data confirm that cannabis accounts for the largest share of illicit substance use globally, with prevalence among adolescents rising across several regions over the past decade. The non-medical use of prescription medications and new synthetic substances has also increased, reflecting shifting availability and evolving social acceptability norms (Degenhardt et al., 2016).

ESPAD (2019) data from European secondary schools demonstrate that perceived harmlessness of cannabis is among the strongest attitudinal predictors of its use, underscoring the importance of studying perceptions and attitudes as targets for intervention (Palamar et al., 2014). Research consistently documents that early initiation, particularly before age 15, is associated with substantially elevated risk of dependence, mental health comorbidities, and poor educational and occupational outcomes in adulthood (Volkow et al., 2016). Gender differences in reported prevalence are commonly observed in European surveillance data, with males reporting higher rates of cannabis and other illicit substance use, though attitudinal differences between genders show more variable patterns across cultural settings (ESPAD, 2019; HBSC, 2022).

2.2. Adolescent Substance Use in Albania and the Western Balkans

Post-socialist transitions across the Western Balkans have created social conditions conducive to elevated adolescent vulnerability, including economic precarity, weakened institutional support systems, and accelerated normative change (Kirtadze et al., 2013). The Institute of Public Health (IPH, 2022) national report documents a measurable increase in cannabis exposure among Albanian high school students, particularly in urban centers, and identifies cannabis as the most frequently reported illicit substance among Albanian adolescents, followed by sedatives used without medical prescription. A more recent clinical study of narcotic substance intoxication among Albanian minors between 2020 and 2024 found that cannabis accounted for 37% of recorded cases—significantly higher than among adults—confirming an escalating trend of adolescent cannabis exposure in the country (Doci et al., 2025). The Health Behaviour in School-aged Children study (HBSC, 2022) situates Albanian adolescents within a broader regional pattern of increasing experimentation, with males reporting higher prevalence than females—a gender gap consistent with European norms, though qualitative research suggests that female adolescents may underreport use due to stronger social stigma (Xhelili & Hoxha, 2021).

Tirana presents a particular risk configuration: greater population density, proximity to nightlife venues, economic stratification between new urban migrants and established residents,

and elevated social anonymity that reduces community-level protective monitoring. Rapid socioeconomic transformation following the post-1990 democratic transition introduced new cultural exposures alongside persistent stressors: youth unemployment, family disruption, and sustained internal migration from rural areas (Demetrovics et al., 2011). These conditions align with the social determinants framework linking structural disadvantage and normative instability to elevated adolescent substance use risk (Hawkins et al., 1992). The amplifying role of social media platforms in diffusing substance-positive content represents an emerging and understudied risk dimension in the Albanian context (UNODC, 2023).

2.3. Risk and Protective Factors

Decades of longitudinal and cross-sectional research have mapped risk and protective factors across multiple ecological levels with consistent replication across populations and settings (Hawkins et al., 1992; Toumbourou et al., 2007). At the individual level, sensation-seeking, low self-efficacy, internalizing disorders, and poor emotional regulation consistently predict elevated substance use risk (Chassin et al., 2016). Within the family context, inadequate parental monitoring, family conflict, and parental substance use increase risk, while strong parent–child attachment and authoritative parenting serve as protective factors (Baumrind, 1991; Fletcher et al., 2004). Among peers, affiliation with substance-using friends is among the most robustly replicated predictors of initiation (Dishion & Tipsord, 2011; ESPAD, 2019). At the school level, academic disengagement and poor teacher–student relationships are associated with elevated risk, while school connectedness and participation in structured extracurricular activities are protective (Bond et al., 2007).

2.4. Theoretical Frameworks

Three complementary theoretical frameworks guide the analysis. Bandura's (1986) Social Learning Theory proposes that behaviors, including substance use, are acquired through watching others, internalizing the apparent rewards of their behavior, and the reciprocal shaping of cognition by social environment. Adolescents embedded in peer networks where drug use is visible and apparently rewarded are predicted to develop more permissive attitudes and elevated behavioral intentions over time. Jessor's (1991) Problem Behavior Theory conceptualizes adolescent risk behaviors as functionally interrelated and jointly influenced by shared psychosocial risk and protective factors, emphasizing that psychological vulnerability acts as a common substrate across multiple problem behaviors simultaneously.

Ajzen's (1991) Theory of Planned Behavior offers a micro-level account in which behavioral intention—the immediate precursor to action—is determined jointly by an individual's attitude toward the behavior, the social norms they perceive as operative, and their sense of control over whether they can perform it. Within this framework, adolescents who perceive drug use positively, believe that peers endorse it, and feel capable of obtaining substances face compounded initiation risk.

Neurodevelopmental research (Casey et al., 2019; Steinberg, 2008) adds the biological substrate: the maturational asymmetry between a relatively early-developing limbic reward system and a later-maturing prefrontal regulatory system produces a developmental window of heightened impulsivity, reward sensitivity, and responsiveness to social influence.

Taken together, these frameworks predict that peer normalization, emotional vulnerability, and attitudinal permissiveness will converge to produce elevated substance use risk, a prediction the present study examines in the specific context of Tirana.

The preceding literature points to four phenomena that a locally grounded qualitative inquiry in Tirana is uniquely positioned to examine: the mechanisms by which cannabis is normalized within peer subcultures; the role of emotional distress as a psychological pathway toward experimentation; and the distinctive features of the adolescent–adult risk perception gap in an Albanian cultural context. A fourth question concerns whether established gender differences in behavioral prevalence are reflected in attitudinal differences among this sample, or whether permissive attitudes have spread more evenly across genders than prevalence data suggest. These questions frame the analysis reported in Sections 4 and 5.

3. Methodology

3.1. Research Design

This study employed a qualitative research design guided by an interpretive epistemological framework. Qualitative methods were selected because attitudes toward sensitive and stigmatized topics such as drug use are more fully elicited through in-depth, participant-centered inquiry than through standardized questionnaires alone, particularly in contexts where validated local instruments are scarce (Braun & Clarke, 2022; Creswell & Poth, 2018). A multi-informant design was adopted to enable systematic triangulation across adolescent, teacher, and parent perspectives, strengthening the trustworthiness and contextual applicability of the findings.

3.2. Participants and Sampling

Participants were recruited from six secondary schools in Tirana: two private institutions and four public institutions. To ensure geographic variability, two schools were situated in suburban or peripheral areas and four in the urban center. Within each school, purposive sampling was used to maximize diversity of age, gender, and academic track, with seven to eight students selected per school, yielding an adolescent sample of 55 participants (29 female, 26 male; age range 13–18 years). Purposive sampling was preferred over probability-based approaches because the study prioritized breadth of experience and diversity of perspective over statistical representativeness (Patton, 2015). The inclusion of both public and private school students, and of urban-center alongside suburban schools, captured meaningful variation in socioeconomic background, peer environment, and parental supervision capacity, each of which the literature identifies as an established moderator of substance use risk (Hawkins et al., 1992). The 13–18 age span covered both early adolescence, when normative attitudes are actively forming, and late adolescence, when

behavioral experimentation becomes more prevalent (Steinberg, 2008). One focus group with teachers (n ≈ 6 per school) and one with parents or legal guardians (n ≈ 5–8 per school) were conducted at each site, enabling systematic comparison of risk perception across generational and institutional positions.

3.3. Data Collection

Semi-structured interviews with adolescents were conducted using a theoretically informed guide exploring: (a) knowledge of and attitudes toward specific substances; (b) perceived consequences for health, academic achievement, and social relationships; (c) experiences with and perceptions of peer pressure; (d) family communication patterns around drug-related topics; and (e) emotional and psychological factors associated with substance experimentation. The guide was pilot-tested with three students not included in the final sample, and minor revisions were made to improve clarity and cultural fit. Interviews lasted approximately 35–50 minutes and were audio-recorded with participants' assent and written parental or guardian consent. Teacher and parent focus groups followed a parallel but distinct guide addressing observed behavioral indicators, perceived risk and protective factors, communication challenges, and gaps in prevention provision. All data collection took place on school premises during regular school hours to minimize disruption and maximize participant comfort.

3.4. Data Analysis

All interviews and focus group discussions were transcribed verbatim and analyzed using reflexive thematic analysis following Braun and Clarke's (2022) six-phase framework: (1) extended engagement with the data through repeated reading and memo-writing; (2) generation of initial codes across the full dataset; (3) grouping of codes into candidate themes; (4) iterative checking of candidate themes against the complete corpus; (5) defining and naming each theme with a clear analytic focus; and (6) writing the analytic account. Coding was conducted by the first author; all themes and representative extracts were reviewed and discussed by both authors to enhance consistency and reduce individual interpretive bias. Disagreements were resolved through discussion until consensus was reached. Analytical rigor was strengthened through methodological triangulation (individual interviews combined with focus groups), source triangulation across three informant groups, and member-checking, whereby a selection of participants reviewed preliminary thematic summaries and confirmed their fit with intended meanings (Creswell & Poth, 2018; Lincoln & Guba, 1985).

3.5. Reflexivity

Both authors are Albanian academics with professional experience in social science research and direct familiarity with the cultural contexts under study. This insider positioning supported rapport with participants and sensitivity in interpretation, but also carried a risk of confirmatory bias. To address this, both authors maintained reflective journals throughout data collection and analysis, explicitly examined assumptions as they arose during coding, and actively sought

disconfirming evidence within the data—consistent with the reflexive epistemological stance that Braun and Clarke (2022) describe as central to rigorous thematic analysis.

3.6. Ethical Considerations

This research was conducted in accordance with institutional ethical standards for research involving human participants. Participation was entirely voluntary. Written informed consent was obtained from all adult participants and from parents or legal guardians of adolescent participants; adolescents additionally provided written assent. All participants were informed of the study's aims, their right to withdraw at any stage without consequence, and the confidentiality protections in place. Anonymity was maintained through the use of pseudonyms and secure, password-protected storage of all audio recordings and transcripts. A nonjudgmental and psychologically safe research environment was prioritized throughout all data collection activities, given the sensitive and potentially stigmatizing nature of the subject matter.

4. Results

4.1. Thematic Overview

Thematic analysis of the adolescent interview data yielded four major themes. Two further cross-cutting themes emerged from adult focus groups. All six themes are summarized in Table 1 and elaborated in the subsections below. No substantive differences in attitudinal content or thematic pattern were observed between male and female participants: both groups articulated comparable normalization narratives, drew on similar emotional distress rationales, and reported equivalent experiences of peer pressure. Where gender-related observations were made by adult informants, these are noted in Section 4.6. To preserve anonymity, participants are identified by role, school type, and gender.

Table 1. Summary of Thematic Findings by Informant Group

Informant Group	Theme	Description
Adolescents	T1: Normalization of cannabis	Cannabis perceived as low-risk and socially normalized within peer subcultures; categorically distinguished from 'hard drugs'.
Adolescents	T2: Curiosity and experimentation	Initial contact motivated by developmental exploration, identity-seeking, and desire to understand peer-described effects; not consistently associated with continued use.
Adolescents	T3: Peer influence	Group belonging and fear of social exclusion as central immediate drivers; two mechanisms identified: direct and indirect pressure.
Adolescents	T4: Emotional distress and coping	Substances framed as a means of managing academic stress, anxiety, or family difficulties; consistent with self-medication frameworks.

Teachers	T5: Behavioral and academic indicators	Observed changes in attendance, concentration, and conduct as proxy signals of substance exposure; inadequate institutional support reported.

Informant Group	Theme	Description
Parents	T6: Communication and awareness gaps	Limited knowledge of adolescents' peer networks and digital environments; supervision capacity reduced by employment demands.

4.2. Theme 1: Perceived Normalization of Cannabis

The most pervasive finding across the adolescent interviews was the perception that cannabis use has become socially unremarkable within identifiable peer subcultures in Tirana. Participants consistently described cannabis as categorically distinct from 'hard drugs' such as heroin or cocaine, a distinction that served to minimize perceived risk and lower the social threshold for experimentation. Adolescents reported encountering cannabis at peer gatherings, in school environments, and in recreational venues, and several noted that actively refusing in group settings required social negotiation rather than being a simple individual decision. This normalization pattern closely parallels ESPAD (2019) findings from Western European adolescent populations, suggesting that Tirana may be following a similar attitudinal trajectory with a temporal lag.

Representative participant accounts included the following:

> *"Most people my age do not consider cannabis a real drug. They think it is completely different from substances like heroin or cocaine." (Male, 16 years old, public school)*
>
> *"If someone says they smoke cannabis, nobody is surprised anymore. It has become something quite normal among certain groups of friends." (Female, 17 years old, private school)*
>
> *"I have friends who would never try other drugs, but they see cannabis as something harmless and socially acceptable." (Male, 15 years old, public school)*

It is notable that this normalization narrative was articulated with comparable frequency and content by both male and female participants, suggesting that the attitudinal shift toward cannabis permissiveness in this sample is not confined to male peer subcultures as prevalence data might predict, but reflects a broader cultural repositioning of cannabis that crosses gender lines.

4.3. Theme 2: Curiosity and Developmental Experimentation

A distinct subset of participants described internally motivated curiosity as the primary driver of initial substance experimentation, rather than social pressure or emotional distress. These adolescents framed experimentation within broader narratives of identity exploration, developing autonomy, and the desire to directly experience states that peers had described. This orientation is consistent with neurodevelopmental accounts of adolescent sensation-seeking and novelty-seeking behavior as normative features of the developmental period rather than indicators of

psychopathology (Steinberg, 2008; Zuckerman & Kuhlman, 2000). An analytically important finding was that curiosity-motivated experimentation was not uniformly linked to continued use: several participants explicitly distinguished between a bounded episode of experimentation driven by curiosity and understood as singular, and habitual or escalating use. This suggests that within this sample, not all experimentation represents movement along a trajectory toward problematic use, a distinction with direct relevance for the calibration of prevention messages.

> *"I thought of it simply as something to try once, just to see what it feels like, not something I intended to continue." (Male, 16 years old, public school)*
>
> *"Most of the time it is not that someone pushes you. You are just curious and want to see how you feel when you try it for the first time." (Female, 15 years old private school)*
>
> *"I was curious about what the effect would be. It was more about knowing for myself than about fitting in with anyone." (Female, 17 years old, public school)*

Critically, these participants did not describe their curiosity as socially orchestrated: they located the motivation within themselves rather than attributing it to peer expectation. This experiential distinction between curiosity-driven and socially-driven initiation aligns with the two pathways—intrinsic and social—that Problem Behavior Theory (Jessor, 1991) identifies as leading to adolescent risk behavior initiation, and has practical implications for tailoring prevention approaches to different adolescent motivational profiles.

4.4. Theme 3: Peer Influence as a Primary Driver

Peer influence emerged as the most consistently and spontaneously reported determinant of substance initiation across the adolescent sample. Analysis of interview accounts identified two qualitatively distinct mechanisms. Direct pressure involved explicit encouragement, social expectation, or framing of substance use as a group membership norm by peers. Indirect pressure was subtler and arguably more pervasive: it arose from sustained exposure to substance use within one's social group, generating an internalized desire to conform to perceived group norms without any explicit invitation or encouragement. Adolescents embedded in groups where use was common described a powerful sense of social obligation, with fear of exclusion functioning as a more potent motivator than any explicit peer request. These findings correspond closely with Social Learning Theory's predictions about vicarious reinforcement and normative modeling (Bandura, 1986), and replicate the extensive empirical literature identifying peer network composition as one of the most robust predictors of adolescent substance initiation (Dishion & Tipsord, 2011; ESPAD, 2019).

> *"When everyone in the group is doing it, you feel like you should also try it, otherwise you feel left out." (Male, 16 years old, public school)*
>
> *"No one directly forces you, but if you refuse, you feel like you are different or not part of the group anymore." (Female, 18 years old, public school)*
>
> *"Sometimes friends directly encourage you, saying 'just try it, everyone here has tried it at least once." (Male, 17 years old, private school)*

4.5. Theme 4: Emotional Distress and Maladaptive Coping

A fourth theme concerned the relationship between emotional distress and adolescents'

openness to substance use. Unlike peer influence, this theme was rarely volunteered spontaneously, but it emerged consistently when participants were asked directly about personal circumstances that might make substance use feel appealing. Participants managing academic pressure, family conflict, or interpersonal difficulties described substances as a potential source of emotional relief, temporary escape, or enhanced social belonging during periods of distress. Several adolescents explicitly linked their receptiveness to experimentation to specific episodes of heightened anxiety, sadness, or social isolation, framing substance use as a coping resource rather than a recreational choice. This pattern corresponds with the self-medication hypothesis (Khantzian, 1997) and with substantial longitudinal evidence linking internalizing anxiety and depressive symptoms, to elevated substance use risk during adolescence (Castellanos-Ryan et al., 2011; Deas, 2006; WHO, 2022). The practical importance of this pathway lies in its implication that prevention focused solely on social skills or peer resistance without addressing underlying emotional wellbeing, will result insufficient for the subset of adolescents for whom distress is the primary motivational driver.

> *"Sometimes when I feel stressed or overwhelmed, I think it would help to just forget everything for a while, even if only temporarily." (Female, 17 years old, public school)*
>
> *"People my age sometimes uses it because they want to feel better for a short time and escape problems at school or at home." (Male 16 years old, public school)*

4.6. Adult Perspectives and Triangulation

Teacher focus groups identified behavioral and academic changes as the primary observable signals of possible substance exposure: reduced attendance, declining academic performance, attentional difficulties, and marked mood instability. Teachers consistently reported inadequate institutional resources for substance-related support and expressed concern that prevention content is insufficiently integrated into school curricula, corroborating findings from comparable regional educational contexts (Sloboda et al., 2009). Several teachers noted that male students were more visibly represented among those showing behavioral indicators, though they cautioned against assuming that female students were unexposed, suggesting that female adolescents may conceal use more effectively due to greater social stigma.

Parental focus groups revealed limited and often outdated awareness of adolescents' peer environments and digital activities, frequently attributed to long working hours and competing household demands. Parents expressed genuine concern but reported feeling ill-equipped to identify early warning signs or initiate productive conversations about substance use with their children.

Triangulation across all three informant groups revealed a systematic and consistent risk-perception gap: adolescents minimized the health and social consequences of cannabis use relative to both teachers and parents. Notably, several adolescent accounts suggested that the four themes do not operate in isolation: participants who described curiosity as an initial motivator also described peer contexts where cannabis was normalized, and those who reported emotional distress as a driver similarly described peer groups where substance use was framed as a coping norm. This co-occurrence within individual accounts points to an interactive rather than additive relationship among the identified themes. The perception gap itself has direct implications for prevention communication: messages that rely on long-term health risk framing are addressing a risk calculus

that adolescents are developmentally less equipped to prioritize (Casey et al., 2019; Steinberg, 2008).

5. Discussion

5.1. Theoretical Interpretation of Principal Findings

The four themes identified in this study map closely onto the predictions of the three theoretical frameworks outlined in Section 2.4, while extending them in contextually specific ways. The normalization of cannabis (Theme 1) is precisely what Social Learning Theory (Bandura, 1986) predicts when adolescents have sustained observational access to substance use within socially valued peer groups: vicarious reinforcement progressively normalizes the behavior and erodes attitudinal barriers to personal experimentation. Ajzen's (1991) Theory of Planned Behavior adds that this attitudinal shift, once established, translates directly into elevated behavioral intention: adolescents who perceive cannabis as unremarkable among peers face compounded risk from both the attitudinal and normative components of the model. The present data suggest this normative repositioning is underway among identifiable segments of Tirana's urban adolescent population, following a trajectory that Western European cities traced a decade earlier (Palamar et al., 2014).

Problem Behavior Theory (Jessor, 1991) accounts for the co-occurrence of emotional distress and substance use risk identified in Theme 4: psychological vulnerability functions as a shared substrate that simultaneously elevates risk across multiple problem behaviors. The self-medication hypothesis (Khantzian, 1997) offers a complementary micro-level mechanism, explaining why adolescents who lack adaptive emotional regulation strategies turn toward substances as a means of managing distress. Neurodevelopmental evidence (Casey et al., 2019; Steinberg, 2008) ties these threads together biologically: the prefrontal-limbic asymmetry of adolescence amplifies both the pull of social belonging (Theme 3) and the relief-seeking motivation under emotional distress (Theme 4), making the developmental period particularly high-risk when these factors converge.

An original contribution of this study is the empirical documentation, in a previously unstudied population, that these theoretically predicted risk processes interact within individual adolescent accounts rather than operating as separate pathways. As reported in Section 4.6, participants who described curiosity-driven experimentation did so within peer contexts where cannabis was already normalized, while participants who identified emotional distress as a motivator similarly described peer environments where substance use was framed as an acceptable response to stress. This convergence within accounts suggests that normalized attitudes reduce the psychological cost of yielding to peer pressure, peer pressure amplifies the salience of social belonging during periods of emotional distress, and curiosity provides the immediate motivational trigger, a mutually reinforcing system that prevention approaches targeting any single pathway in isolation are unlikely to fully disrupt.

5.2. The Tirana Context: Distinctive Risk Configurations

A key contribution of this study is the documentation of how these general risk processes manifest within Tirana's specific ecological setting. Urban Albanian adolescents face a configuration of risk that is not interchangeable with the Western European contexts from which most evidence-based prevention programs are derived. First, the structural accessibility of substances in a city with an expanding nightlife economy and limited enforcement creates environmental conditions qualitatively different from those in smaller or more regulated settings. Second, the post-socialist transition has produced a cultural environment in which normative frameworks around drug use are actively being renegotiated by young people with limited institutional guidance and weakened traditional community structures (Demetrovics et al., 2011; Kirtadze et al., 2013). Third, parental supervision capacity is constrained not by indifference but by the economic pressures of Tirana's rapidly expanding labor market, which creates supervision deficits that peer group norms fill with reduced adult counterweight. Fourth, social media platforms amplify the diffusion of substance-positive content in a population with high smartphone penetration but limited critical media literacy training (UNODC, 2023).

Together, these contextual features suggest that prevention programs developed for stable, high-income Western European settings, will require substantial adaptation to function effectively in Tirana. Approaches that assume active parental monitoring, well-resourced school counseling services, or established community-level prevention infrastructure cannot be transplanted without modification.

5.3. The Adolescent–Adult Perception Gap

The systematic divergence between adolescents' and adults' risk perceptions, revealed through triangulation, has clear practical consequences for prevention communication design. Adolescents in this sample were not uninformed about health risks associated with cannabis. They simply weighted those risks as relatively unimportant compared to the immediate social costs of refusal or exclusion. This pattern is precisely what Casey et al. (2019) and Steinberg (2008) predict from the neurodevelopmental asymmetry between reward sensitivity and regulatory capacity during adolescence. It implies that prevention messages framed around long-term health consequences, which is the predominant approach in Albanian school-based programs, are addressing a risk calculus that adolescents are developmentally primed to discount.

Research on effective prevention in comparable contexts points consistently toward three alternative approaches. Peer-norm corrective interventions provide adolescents with accurate normative feedback, revealing that substance use is less prevalent and less socially endorsed among their peers than they assume. Social identity-based programs engage adolescents' sense of self and belonging without requiring them to sacrifice peer acceptance. Emotional regulation curricula equip young people with adaptive coping strategies before distress-driven experimentation becomes a viable option (Faggiano et al., 2014; Sloboda et al., 2009; Toumbourou et al., 2007). All three approaches merit rigorous local adaptation and controlled evaluation in Albanian school settings.

5.4. Gender and Attitudinal Patterns

European surveillance data consistently document higher cannabis prevalence among male adolescents, and Albanian national data follow this pattern (HBSC, 2022; IPH, 2022). Within the present qualitative sample, however, no substantive gender differences in attitudinal content were observed: male and female participants articulated broadly comparable normalization narratives, drew on similar emotional distress rationales, and reported analogous experiences of peer pressure. Teacher informants suggested that female students may underreport or conceal use more effectively due to stronger stigma, which would reconcile qualitative attitudinal equivalence with quantitative prevalence differences. The finding that attitudinal permissiveness may be more gender-convergent than behavioral prevalence data suggest, implies that universal rather than gender-differentiated attitudinal interventions may be appropriate at the primary prevention level, while targeted detection and support mechanisms may be warranted specifically for female adolescents whose use goes undetected within current school-based monitoring systems.

5.5. Limitations

Five limitations require acknowledgment. First, and most substantively, the sample was drawn exclusively from school-attending adolescents across six secondary schools in Tirana. This means that the young people who have disengaged from formal education, those embedded in street-based or informal peer networks, and those already experiencing significant substance use problems are structurally absent from the data. The findings therefore most accurately describe the attitudes of a moderate-risk, institutionally engaged adolescent population. As such, they should not be assumed to represent the full spectrum of adolescent experience in Tirana, and the risk processes described may be considerably more acute among out-of-school youth. Second, transferability is further limited geographically: the sample does not encompass other Albanian regions, rural settings, or smaller urban centers, where the risk configuration may differ substantially. Third, the inherently sensitive subject matter creates conditions for social desirability bias despite deliberate efforts to establish a nonjudgmental research environment: participants may have moderated their accounts of personal involvement with substances. Fourth, the cross-sectional design captures a snapshot of attitudes at a single point in time and does not permit causal inference about the direction of relationships between identified factors and substance use attitudes or behaviors. Fifth, participant confidentiality was protected through pseudonymization and role-based identifiers, which limits the evidentiary transparency of the qualitative extracts for external readers. That said, verbatim transcripts remain securely archived and are available to editorial reviewers upon request. Future qualitative research specifically targeting out-of-school and high-risk youth populations would provide a critical complement to the present findings.

6. Conclusions and Implications

This study provides the first qualitative, multi-informant examination of adolescents' attitudes toward drug use in Tirana, Albania. Four principal themes structured the findings: the perceived normalization of cannabis within peer subcultures; curiosity-driven developmental

experimentation; peer influence as the most consistently reported immediate driver of initiation; and emotional distress as a psychological pathway toward substance openness. Triangulation across adolescent, teacher, and parent informants revealed a systematic risk-perception gap that directly constrains the effectiveness of conventional prevention communication approaches. No substantive gender differences in attitudinal content were observed despite established gender differences in reported behavioral prevalence, a finding that points to possible differential underreporting among female adolescents and has implications for how detection and support systems are designed.

The findings are interpretable within Social Learning Theory, Problem Behavior Theory, and neurodevelopmental frameworks, and they are shaped by contextual conditions (post-socialist normative instability, constrained parental supervision, limited institutional prevention infrastructure, and expanding digital exposure) that distinguish Tirana's risk environment from the Western European settings in which most evidence-based prevention programs were developed.

For practice, the most urgent implication is that school-based prevention in Albania must move beyond information transmission. Peer-norm corrective interventions, which provide accurate normative feedback to correct adolescents' systematic overestimation of peer cannabis use, have demonstrated effectiveness in comparable European contexts and offer a promising starting point for local adaptation. Emotional literacy curricula that build adaptive coping capacity before distress becomes a substance use trigger are warranted given the findings of Theme 4. Family-based components, specifically parent psychoeducation about early behavioral indicators and digital environment awareness, are needed given the supervision and awareness gaps documented in parent focus groups. Teacher training in recognizing behavioral signals and accessing clear referral pathways is a prerequisite for effective school-level response, not an optional supplement.

At the policy level, Albanian institutions must make sustained investment in adolescent mental health services a priority: the emotional distress pathway identified in Theme 4 will continue to drive substance experimentation for as long as anxiety, depression, and stress among young people go unrecognized and unsupported. The education, health, and social welfare sectors must also coordinate more effectively, establishing shared referral pathways so that adolescents experiencing difficulties are identified and supported consistently across the institutional environments they inhabit. Future research should employ longitudinal designs, probability-based sampling frames, and quantitative attitudinal instruments developed and normed for Albanian populations, and should evaluate locally adapted prevention programs through rigorous controlled trials in Albanian school and community settings.

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INNOVATION CULTURE AS A STRATEGIC CAPABILITY FOR DIGITAL INNOVATION AND FIRM PERFORMANCE: TOWARD AN INTEGRATED THEORETICAL FRAMEWORK

Keisi Bylyku

Department of Applied and Computer Sciences
Barleti University, Tirana, Albania

Corresponding author: k.bylyku@umb.edu.al
(ORCID: 0009-0002-8459-7942)

Abstract

This study investigates the role of innovation culture as a strategic enabler of digital innovation and firm performance through a comprehensive systematic literature review. While digital transformation has been widely studied, existing research remains fragmented, often emphasizing technological capabilities while overlooking the cultural foundations that enable innovation. This paper integrates foundational theories, including organizational culture (Schein, 2010; Hofstede, 1991), dynamic capabilities (Teece, 1997), and innovation theory (Schumpeter, 1934), with recent empirical studies on digital innovation and performance (Wang, 2025; Cui, 2025; Amankona, 2025; Tang, 2025).The study adopts a systematic literature review methodology, analyzing more than 40 peer-reviewed sources across multiple disciplines, including strategic management, information systems, and innovation studies. A thematic and comparative analysis is employed to identify patterns, theoretical gaps, and relationships among key constructs. The findings reveal that innovation culture plays a critical role in shaping digital innovation by fostering experimentation, collaboration, learning, and knowledge integration. Moreover, digital innovation is identified as a key mediating mechanism through which innovation culture influences firm performance outcomes.The study further demonstrates that organizations with strong innovation-oriented cultures are better positioned to leverage digital technologies, develop dynamic capabilities, and respond effectively to environmental uncertainty. In contrast, organizations with rigid or risk-averse cultures face significant barriers in translating digital investments into tangible performance gains.The main contribution of this research lies in the development of an integrated conceptual framework that bridges previously fragmented research streams by linking innovation culture, digital innovation, and firm performance. Additionally, the study provides practical implications for managers by emphasizing the importance of aligning organizational culture with digital strategy and technological capabilities. Ultimately, the findings highlight that sustainable competitive advantage in the digital era is not driven by technology alone, but by the interaction between culture, innovation capabilities, and strategic transformation.

Keywords : Innovation culture; Digital innovation; Firm performance; Digital transformation; Dynamic capabilities

1. Introduction

The contemporary business environment is characterized by rapid technological advancements, increasing globalization, and heightened competition. In such a dynamic context, innovation has emerged as a fundamental driver of organizational success and long-term sustainability. Since the pioneering work of Schumpeter (1934), innovation has been recognized as a key mechanism for economic development, enabling firms to introduce new products, processes, and markets. Porter (1985) further emphasized that innovation is central to achieving competitive advantage, while Christensen (1997) highlighted how disruptive innovation can fundamentally reshape industries.

In recent years, digital transformation has significantly amplified the importance of innovation. Digital technologies such as artificial intelligence, big data analytics, cloud computing, and the Internet of Things have revolutionized how organizations operate and create value (Bharadwaj et al., 2013; Nambisan et al., 2017). These technologies enable firms to redesign business models, enhance customer experiences, and improve operational efficiency. As a result, organizations are increasingly required to adopt continuous innovation practices to remain competitive.

However, despite substantial investments in digital technologies, many organizations fail to achieve the expected performance improvements (Kane et al., 2021; Westerman et al., 2022). This paradox highlights a critical issue: technological capability alone is insufficient to drive innovation success. Instead, organizational factors—particularly culture—play a decisive role in determining whether digital transformation initiatives succeed or fail (Tellis et al., 2009).

Innovation culture refers to the set of shared values, beliefs, and practices that support creativity, experimentation, and risk-taking within an organization (Rao & Weintraub, 2013). Organizations with strong innovation cultures are more likely to generate new ideas, adapt to environmental changes, and sustain competitive advantage. Conversely, organizations with rigid or risk-averse cultures may struggle to innovate, even when equipped with advanced technologies.

Despite its importance, the role of innovation culture in digital transformation remains insufficiently explored. Existing research often treats culture as a contextual variable rather than as a strategic capability. Additionally, studies on digital innovation tend to focus on technological aspects while neglecting organizational and cultural dimensions. This results in fragmented insights and a lack of integrated frameworks.

This study addresses these gaps by developing a systematic literature review that integrates innovation culture, digital innovation, and firm performance into a unified conceptual framework.

The study argues that innovation culture functions as a higher-order capability that enables digital innovation, which in turn drives firm performance.

Beyond the immediate technological implications, digital transformation also introduces profound organizational and strategic challenges. Organizations are required not only to adopt new technologies but also to rethink their internal structures, processes, and cultural norms. This transformation often involves shifting from hierarchical and rigid structures to more agile, flexible, and collaborative organizational models.

In this context, innovation culture becomes a critical enabler of transformation. It provides the underlying foundation that supports experimentation, learning, and adaptation. Without a strong innovation culture, digital transformation initiatives may fail to achieve their intended outcomes, as employees may resist change or lack the motivation to engage in innovative activities.

Furthermore, the increasing complexity of digital ecosystems requires organizations to collaborate with external partners, including startups, research institutions, and technology providers. This shift toward open and networked innovation further emphasizes the importance of cultural factors, as organizations must develop trust, openness, and collaborative capabilities.

Another important dimension is the role of uncertainty. Digital transformation often involves high levels of uncertainty, as organizations experiment with new technologies and business models. Innovation culture helps organizations manage this uncertainty by encouraging risk-taking and resilience.

2. Literature Review

2.1 Organizational Culture and Innovation (Expanded & Analytical)

Organizational culture is widely recognized as a critical determinant of organizational behavior and performance. According to Schein (2010), culture consists of shared basic assumptions that guide how individuals perceive and respond to their environment. These assumptions are deeply embedded within organizational practices and influence decision-making processes. However, while Schein conceptualizes culture as a deeply rooted and stable construct, Hofstede (1991) provides a more comparative and dimensional perspective, emphasizing how cultural differences shape organizational outcomes across contexts.

Hofstede's framework suggests that dimensions such as uncertainty avoidance and power distance significantly influence innovation. Organizations characterized by low uncertainty avoidance tend to be more open to experimentation, which aligns with innovation-driven environments. In contrast, high power distance may limit knowledge sharing and reduce collaborative innovation.

Despite these foundational perspectives, more recent studies argue that culture should not be viewed as static. Tellis et al. (2009) emphasize that corporate culture is one of the strongest predictors of radical innovation, suggesting that culture can actively drive disruptive outcomes rather than merely shaping incremental improvements. This finding contrasts with earlier views that positioned culture as a background variable.

Similarly, Denison (1990) and O'Reilly (1989) link specific cultural traits—such as adaptability, involvement, and consistency—to organizational performance. However, these studies primarily focus on general performance rather than explicitly linking culture to digital innovation.

From a strategic perspective, Barney (1991) introduces the resource-based view (RBV), arguing that organizational culture can be a source of sustained competitive advantage if it is valuable, rare, and difficult to imitate. This perspective elevates culture from a contextual factor to a strategic asset. Compared to Schein's descriptive approach, Barney's framework provides a stronger justification for why culture matters in competitive environments.

In the context of digital transformation, Kane et al. (2021) further extend this argument by suggesting that culture—not technology—is the primary driver of successful transformation. This aligns with Westerman et al. (2022), who highlight leadership and organizational mindset as key success factors.

Thus, while classical theories emphasize the structural and behavioral aspects of culture, recent research increasingly positions culture as a **dynamic and strategic enabler of innovation**, particularly in digital environments.

2.2 Innovation Culture as a Strategic Capability

Innovation culture extends beyond general organizational culture by specifically emphasizing values, norms, and practices that actively support innovation processes within organizations. Rao and Weintraub (2013) provide one of the most comprehensive frameworks, identifying six key dimensions of innovation culture: values, behaviors, climate, resources, processes, and success. These dimensions collectively shape the organizational environment and determine how innovation is generated, supported, and sustained over time.

However, while Rao and Weintraub focus primarily on the structural composition and measurable elements of innovation culture, their framework is largely descriptive and does not fully explain how culture enables organizational adaptation in dynamic environments. In contrast, Teece (1997) introduces a more dynamic perspective through the concept of dynamic capabilities, which refers to the firm's ability to integrate, build, and reconfigure internal and external resources in response to rapidly changing environments. From this perspective, innovation culture can be interpreted as a **meta-capability** that underpins and facilitates the development of dynamic capabilities.

This distinction is critical. While Rao and Weintraub explain *what* constitutes innovation culture, Teece explains *how* organizations leverage such cultural foundations to respond to change. In this sense, innovation culture provides the behavioral and cognitive infrastructure that enables sensing, seizing, and transforming—core elements of dynamic capabilities.

Eisenhardt and Martin (2000) further refine this view by arguing that dynamic capabilities are not static or abstract constructs but are embedded in organizational routines and processes. They emphasize that capabilities evolve through repeated practice, learning, and adaptation. This aligns closely with the idea that innovation culture is not a fixed attribute but a continuously evolving system shaped by organizational experiences, leadership actions, and learning mechanisms.

Comparing these perspectives, a multi-layered understanding emerges:

- **Rao & Weintraub → focus on structural dimensions of culture**
- **Teece → focuses on adaptive and strategic capabilities**
- **Eisenhardt & Martin → focus on routines and evolutionary processes**

Together, these perspectives suggest that innovation culture is not merely a set of abstract values but a **dynamic system of capabilities embedded in organizational processes, routines, and behaviors**. This integrated view moves beyond traditional cultural theories and positions innovation culture as a central driver of strategic renewal and adaptability.

From a resource-based perspective, Barney (1991) further strengthens this argument by suggesting that organizational culture can be a source of sustained competitive advantage if it is valuable, rare, inimitable, and non-substitutable. Innovation culture, in particular, meets these criteria, as it is deeply embedded within organizational practices and cannot be easily replicated by competitors. Unlike technological resources, which can often be acquired, innovation culture develops over time through shared experiences, leadership influence, and organizational learning.

Moreover, the role of leadership in shaping innovation culture is increasingly emphasized in recent literature. Kane et al. (2021) argue that digital transformation success depends largely on leadership mindset and organizational culture rather than on technology alone. Similarly, Westerman et al. (2022) highlight that leaders play a crucial role in fostering environments that support experimentation, risk-taking, and continuous learning. This suggests that innovation culture is not self-emerging but must be actively cultivated and reinforced through leadership practices.

Recent empirical studies further reinforce the strategic importance of innovation culture in digital contexts. Amankona (2025) demonstrates that digital-oriented cultures significantly enhance innovation performance, particularly in technology-driven environments. This finding aligns with

Tang (2025), who shows that cultural innovation positively influences firm performance, particularly through brand differentiation and market positioning.

Additionally, Wang (2025) provides empirical evidence that digital transformation outcomes are strongly influenced by organizational culture. Firms with strong innovation cultures are more likely to successfully implement digital strategies, as they are better able to adapt to change, integrate new technologies, and foster collaboration across organizational boundaries.

This perspective is further supported by Cui (2025), who emphasizes the role of digital innovation capability, particularly in the context of human–AI integration. Cui's findings suggest that innovation culture not only enhances human creativity but also facilitates the effective integration of advanced technologies such as artificial intelligence. This highlights an important shift: innovation is no longer purely human-driven but increasingly relies on the interaction between human and technological capabilities.

Furthermore, innovation culture plays a critical role in managing uncertainty and complexity, which are inherent in digital transformation processes. Organizations operating in digital environments face rapid technological changes, evolving customer expectations, and increasing competitive pressure. Innovation culture enables organizations to navigate this uncertainty by promoting flexibility, resilience, and a willingness to experiment.

Another important dimension is the relationship between innovation culture and organizational learning. As highlighted by Nonaka (1994) and Zahra and George (2002), learning and knowledge integration are essential for innovation. Innovation culture supports these processes by fostering environments that encourage knowledge sharing, collaboration, and continuous improvement.

In addition, innovation culture facilitates cross-functional integration and collaboration, which are essential for digital innovation. Digital transformation often requires coordination across multiple departments, including IT, marketing, operations, and strategy. Organizations with strong innovation cultures are better able to break down silos and promote collaboration, enabling more effective innovation processes.

Importantly, innovation culture also influences how organizations engage with external stakeholders. In the context of open innovation and ecosystems (Chesbrough, 2003; Granstrand, 2024; Gawer, 2024), organizations must collaborate with external partners, including startups, universities, and technology providers. A strong innovation culture enables organizations to build trust, share knowledge, and co-create value within these ecosystems.

Thus, innovation culture should be understood not only as an internal organizational capability but also as a **boundary-spanning capability** that enables organizations to interact effectively with external environments.

In conclusion, innovation culture represents a strategic capability that integrates structural, behavioral, and dynamic elements to enable organizational adaptation and innovation. It acts as the foundation upon which digital innovation capabilities are built and sustained. Rather than being a passive background factor, innovation culture actively shapes how organizations respond to technological change, leverage digital opportunities, and achieve competitive advantage.

2.3 Digital Innovation and Digital Transformation

Digital innovation represents a paradigm shift in how organizations create, deliver, and capture value in increasingly dynamic and technology-driven environments. Nambisan et al. (2017) define digital innovation as the use of digital technologies to create new products, services, and business models, emphasizing its distinct characteristics such as modularity, scalability, and rapid iteration. These features fundamentally differentiate digital innovation from traditional forms of innovation, which are often more linear, resource-intensive, and time-consuming.

However, while Nambisan et al. (2017) primarily focus on the technological and process-oriented aspects of digital innovation, Bharadwaj et al. (2013) extend the discussion by introducing the concept of digital business strategy. They argue that digital innovation cannot be viewed in isolation but must be embedded within the broader strategic framework of the organization. This perspective highlights the importance of aligning digital technologies with organizational goals, processes, and competitive positioning.

This distinction creates an important theoretical contrast:

- **Nambisan → focuses on innovation processes and technological affordances**
- **Bharadwaj → focuses on strategic integration and value creation**

While both perspectives are complementary, they also reveal a key limitation in the literature: the tendency to treat digital innovation either as a technological phenomenon or as a strategic construct, without fully integrating both dimensions.

Empirical evidence further supports the importance of this integration. Wang (2025) finds that digital transformation significantly improves innovation performance in SMEs, particularly when supported by organizational capabilities such as flexibility, learning, and knowledge integration. This suggests that technology alone is insufficient; instead, it must be complemented by internal capabilities.

Similarly, Cui (2025) demonstrates that digital innovation capability is enhanced through human–AI integration, highlighting the increasing importance of combining human creativity with technological intelligence. This aligns with emerging research on AI-driven innovation, which emphasizes that the value of digital technologies depends on how effectively they are integrated into organizational processes and decision-making systems.

However, Kane et al. (2021) challenge the prevailing technology-centric view by arguing that successful digital transformation depends more on organizational culture and leadership than on technology itself. This perspective introduces a critical insight: **technology enables innovation, but culture determines whether it succeeds or fails**. In this sense, digital transformation is not merely a technical upgrade but a fundamental organizational change.

This argument is further supported by Westerman et al. (2022), who emphasize the role of digital leadership in guiding transformation processes. Leaders play a crucial role in shaping organizational mindset, fostering innovation, and aligning technology with strategy. Without effective leadership, digital initiatives may fail to generate meaningful outcomes.

Additionally, Schallmo (2024) conceptualizes digital transformation as a holistic process that involves changes in strategy, structure, processes, and culture. This perspective reinforces the idea that digital innovation should not be understood as an isolated activity but as part of a broader transformation process that affects the entire organization.

Another important dimension of digital innovation is its reliance on recombination and modularity. Digital technologies allow organizations to recombine existing components in new ways, creating innovative solutions with relatively low marginal cost. This capability enhances agility and enables rapid experimentation, which is essential in highly competitive markets.

However, this increased flexibility also introduces new challenges, such as managing complexity, ensuring data security, and maintaining organizational coherence. These challenges further highlight the importance of cultural and organizational factors in supporting digital innovation.

In addition, digital innovation is increasingly embedded within ecosystems and platforms (Gawer, 2024), requiring organizations to collaborate with external partners. This further reinforces the need for cultural openness and adaptability, as firms must navigate complex networks of relationships and knowledge flows.

In conclusion, digital innovation should be understood as a **socio-technical phenomenon**, where technological capabilities, strategic alignment, leadership, and organizational culture interact to shape innovation outcomes. This integrated perspective moves beyond technology-centric explanations and provides a more comprehensive understanding of how organizations achieve success in the digital era.

2.4 Knowledge, Learning, and Innovation

Innovation is inherently linked to knowledge creation, learning processes, and the ability of organizations to integrate and apply new information. The foundational work of Nonaka (1994) emphasizes the dynamic interaction between tacit and explicit knowledge, highlighting how knowledge is created through social processes within organizations. According to this perspective, innovation emerges from the continuous conversion of knowledge, supported by collaboration and shared understanding.

Zahra and George (2002) extend this discussion by introducing the concept of absorptive capacity, which refers to an organization's ability to acquire, assimilate, transform, and exploit external knowledge. This framework shifts the focus from internal knowledge creation to the integration of external knowledge, emphasizing the importance of openness and learning from external sources.

March (1991) provides a complementary perspective by distinguishing between exploration and exploitation. Exploration involves experimentation, risk-taking, and the pursuit of new knowledge, while exploitation focuses on efficiency, refinement, and the utilization of existing capabilities. The balance between these two processes is critical for long-term organizational success.

Comparatively:

- **Nonaka → focuses on internal knowledge creation (tacit ↔ explicit)**
- **Zahra & George → focus on external knowledge absorption**
- **March → focuses on balancing learning processes (exploration vs exploitation)**

Together, these frameworks provide a comprehensive understanding of how knowledge drives innovation.

However, a critical gap in the literature is the limited integration of these knowledge-based perspectives with organizational culture. While these theories explain how knowledge is created and utilized, they do not fully address the cultural conditions required to support these processes.

Innovation culture plays a crucial role in enabling knowledge creation and learning. Organizations with strong innovation cultures foster environments that encourage knowledge sharing, collaboration, and continuous learning. Such environments are characterized by openness, trust, and psychological safety, allowing employees to experiment and share ideas without fear of failure.

Moreover, innovation culture influences the balance between exploration and exploitation. Organizations with rigid cultures may prioritize exploitation, focusing on efficiency and short-term performance, while neglecting exploration and innovation. In contrast, organizations with flexible and adaptive cultures are better able to balance both processes, enabling sustainable innovation.

The role of digital technologies further amplifies the importance of knowledge and learning. Digital tools such as big data analytics and artificial intelligence enhance organizations' ability to process and utilize knowledge. However, these tools are only effective when supported by appropriate cultural and organizational conditions.

For example, Cui (2025) highlights that digital innovation capability depends on the integration of human and technological knowledge, emphasizing the importance of collaboration between humans and AI systems. Similarly, Wang (2025) demonstrates that knowledge integration plays a key role in enhancing innovation performance in digitally transforming firms.

Additionally, learning processes are increasingly occurring within networks and ecosystems, rather than within individual organizations. This requires organizations to develop not only internal learning capabilities but also the ability to learn from external partners.

Thus, knowledge, learning, and innovation should be understood as interconnected processes that are deeply influenced by organizational culture. Innovation culture acts as the foundation that enables these processes, facilitating the creation, integration, and application of knowledge.

In conclusion, the integration of knowledge-based theories with cultural perspectives provides a more comprehensive understanding of innovation. It highlights that innovation is not only a technological or strategic process but also a learning-driven and culturally embedded phenomenon.

2.5 Innovation Ecosystems and Open Innovation

Innovation increasingly occurs within ecosystems rather than isolated firms. Chesbrough (2003) introduces the concept of open innovation, emphasizing the importance of external collaboration and knowledge flows across organizational boundaries. According to this perspective, firms no longer rely solely on internal R&D but actively integrate external ideas, technologies, and partnerships into their innovation processes.

Building on this foundation, Granstrand (2024) conceptualizes innovation ecosystems as complex networks of interconnected actors, including firms, universities, governments, and research institutions, all contributing to value creation. Unlike Chesbrough's initial focus on firm-level

openness, Granstrand adopts a broader systemic perspective, highlighting how value is co-created across multiple stakeholders.

Similarly, Gawer (2024) focuses on digital platforms as critical enablers of innovation ecosystems. Digital platforms facilitate interactions among diverse actors, allowing for rapid knowledge exchange, co-creation, and scalability of innovation. Compared to traditional ecosystems, platform-based ecosystems are characterized by higher levels of connectivity, speed, and data-driven coordination.

However, while these perspectives emphasize structural and technological dimensions, they often understate the role of organizational culture. In practice, participation in innovation ecosystems requires not only technological capability but also cultural readiness. Organizations must develop cultures that support openness, trust, and collaboration in order to effectively engage with external partners.

Recent studies further reinforce this argument. Nambisan et al. (2017) highlight that digital innovation is inherently distributed and collaborative, requiring organizations to interact within broader networks. Similarly, Bharadwaj et al. (2013) argue that digital business strategy involves integrating internal and external resources, which necessitates a cultural shift toward openness and agility.

Moreover, Kane et al. (2021) emphasize that organizations with strong collaborative cultures are more successful in leveraging digital ecosystems, as they are better able to manage partnerships and knowledge flows. This aligns with Westerman et al. (2022), who stress that leadership and culture play a critical role in enabling ecosystem participation.

A critical comparison of these studies reveals an important insight: while open innovation and ecosystems provide the structural and technological infrastructure for innovation, **innovation culture acts as the enabling mechanism that determines whether organizations can effectively participate in these ecosystems**.

Furthermore, ecosystems introduce new challenges, such as coordination complexity, intellectual property concerns, and dependency on external partners. Organizations must therefore develop not only technical capabilities but also cultural competencies, including trust-building, knowledge sharing, and collaborative decision-making.

In this sense, innovation ecosystems should be understood as **socio-technical systems**, where both technological infrastructure and cultural factors interact to shape innovation outcomes. Firms that fail to align their internal culture with the requirements of open and collaborative innovation are likely to experience limited benefits from ecosystem participation.

Thus, this study extends existing literature by arguing that innovation culture is a critical missing link in understanding how organizations operate within innovation ecosystems. Without a supportive culture, the potential of open innovation and digital platforms cannot be fully realized.

2.6 Integrated Literature Synthesis

The literature review reveals several important insights, but also highlights significant gaps that limit the development of a comprehensive understanding of innovation in the digital era.

First, there is a clear fragmentation between research on organizational culture, digital innovation, and firm performance. Classical studies such as Schein (2010) and Hofstede (1991) focus on culture as a behavioral and structural phenomenon, while more recent studies such as Wang (2025) and Cui (2025) emphasize digital innovation and technological capabilities. However, these streams of research often evolve independently, resulting in a lack of integration between cultural and technological perspectives.

Second, there is an overemphasis on technological factors in explaining innovation outcomes. Many studies on digital transformation focus primarily on technologies such as artificial intelligence, big data, and cloud computing (Bharadwaj et al., 2013; Nambisan et al., 2017), while underestimating the role of organizational and cultural factors. This creates a technology-centric bias that overlooks the human and organizational dimensions of innovation.

This limitation is particularly evident when comparing studies such as Kane et al. (2021) and Wang (2025). While Wang emphasizes the positive impact of digital transformation on innovation performance, Kane argues that technology alone is insufficient and that culture and leadership are the true drivers of success. This contrast highlights the need for a more balanced and integrated perspective.

Third, there is a lack of mediation-based models that explain how innovation culture influences firm performance. Existing studies often examine direct relationships—for example, culture → performance (Denison, 1990) or digital innovation → performance (Cui, 2025)—but rarely explore the mechanisms that connect these constructs.

This gap is critical because it limits our understanding of how innovation actually occurs within organizations. Without identifying mediating mechanisms, it is difficult to explain why some organizations succeed while others fail, even when they have similar technological capabilities.
Additionally, while Rao and Weintraub (2013) provide a detailed framework for understanding innovation culture, their model does not explicitly link culture to digital innovation or performance

outcomes. Similarly, studies on dynamic capabilities (Teece, 1997; Eisenhardt & Martin, 2000) emphasize adaptability but do not fully incorporate cultural dimensions.

By comparing these different streams of literature, it becomes evident that there is a need for an integrated framework that connects culture, innovation, and performance through clearly defined relationships.

This study addresses these gaps by proposing a mediation-based model in which:

innovation culture → enables digital innovation → drives firm performance

In this framework, innovation culture functions as a higher-order capability that shapes organizational behavior and facilitates the development of digital innovation capabilities. Digital innovation, in turn, acts as a mechanism that translates cultural attributes into measurable performance outcomes.

Furthermore, this model provides a more nuanced understanding of innovation by recognizing that performance improvements do not occur directly from culture or technology alone, but from the interaction between these elements.

Importantly, this framework also aligns with the dynamic capabilities perspective (Teece, 1997), as it highlights the role of organizational capabilities in adapting to changing environments. At the same time, it extends this perspective by explicitly incorporating cultural factors as a core component of these capabilities.

In conclusion, this integrated approach provides a more comprehensive and realistic explanation of innovation in the digital era, addressing the limitations of previous research and offering a strong foundation for future empirical studies.

2.7 Advanced Theoretical Integration

A deeper analysis reveals that innovation culture should be conceptualized as a **complex adaptive system** rather than a static organizational attribute. This aligns with systems theory, which emphasizes interdependence among organizational elements.

From the resource-based view (Barney, 1991), innovation culture represents an intangible asset that is difficult to replicate. Unlike technological resources, which can be acquired, culture is embedded within organizational routines.

Furthermore, the integration of innovation culture with dynamic capabilities (Teece, 1997) provides a comprehensive explanation of how firms adapt to change. Innovation culture provides the behavioral foundation, while dynamic capabilities provide the operational mechanisms.

Recent studies (Amankona, 2025; Wang, 2025; Cui, 2025) confirm that digital innovation acts as a mediator between culture and performance.

Thus, innovation culture is not merely supportive—it is **the core driver of digital innovation success**.

3. Methodology

This study adopts a **systematic literature review (SLR)** approach to synthesize and critically analyze existing research on innovation culture, digital innovation, and firm performance. The systematic literature review methodology is widely recognized as a rigorous and transparent research method that enables the integration of findings from diverse studies and the identification of patterns, gaps, and theoretical inconsistencies (Tranfield et al., 2003).

3.1 Research Design

The research is designed as a qualitative, theory-building study based on secondary data. Rather than collecting primary empirical data, this study focuses on reviewing, comparing, and synthesizing prior academic contributions. The objective is to develop an integrated conceptual understanding of the relationships between innovation culture, digital innovation, and firm performance.

The study follows a structured review process consisting of three main stages: **planning, execution, and synthesis**.

3.2 Literature Search Strategy

The literature search was conducted using major academic databases, including **Scopus, Web of Science, and Google Scholar**, to ensure broad coverage of high-quality academic sources. The search process focused on peer-reviewed journal articles, conference papers, and foundational theoretical works.

Keywords used in the search process included:

- “innovation culture”
- “organizational culture and innovation”
- “digital innovation”
- “digital transformation”
- “firm performance”
- “dynamic capabilities”
- “open innovation”

Boolean operators (AND, OR) were used to refine the search and ensure relevance.

3.3 Inclusion and Exclusion Criteria

To ensure the quality and relevance of the selected studies, specific inclusion and exclusion criteria were applied.

Inclusion criteria:

- Peer-reviewed journal articles and high-impact conference papers
- Studies directly related to innovation culture, digital innovation, or firm performance
- Foundational theoretical works (e.g., Schumpeter, Porter, Teece)
- Recent studies (last 5–7 years), particularly on digital transformation

Exclusion criteria:

- Non-academic or non-peer-reviewed sources
- Studies lacking relevance to the research topic
- Duplicated or redundant publications

As a result, more than **40 high-quality academic sources** were selected for analysis.

3.4 Data Analysis and Synthesis

The selected studies were analyzed using a **thematic analysis approach**, which involves identifying recurring themes, patterns, and relationships across the literature.

The analysis was structured around three core dimensions:

1. Innovation culture
2. Digital innovation

3. Firm performance

In addition to thematic analysis, a **comparative analytical approach** was employed to examine similarities and differences between theoretical perspectives and empirical findings. This allowed for a deeper understanding of how different research streams contribute to the overall framework.

Furthermore, the study adopts a **conceptual synthesis approach**, integrating insights from multiple disciplines—including strategic management, information systems, and organizational behavior—to develop a unified theoretical model.

3.5 Research Validity and Limitations

The validity of the study is supported by the systematic and transparent selection of sources, as well as the inclusion of both foundational theories and recent empirical research. By combining multiple perspectives, the study enhances the robustness and reliability of its findings.

However, several limitations should be acknowledged. First, the study relies exclusively on secondary data, which may introduce selection bias depending on the availability of sources. Second, while the study proposes a conceptual framework, it does not empirically test the relationships between variables.

Future research is therefore encouraged to validate the proposed model using quantitative methods, such as Structural Equation Modeling (SEM), or mixed-method approaches.

4. Results

The results of this study are derived from a systematic synthesis of the existing literature on innovation culture, digital innovation, and firm performance. Rather than presenting empirical findings, this section integrates and interprets evidence from prior studies to identify consistent patterns and relationships across different research streams.

The literature consistently indicates a strong and positive relationship between innovation culture and digital innovation capabilities. Foundational studies on organizational culture (Schein, 2010; Hofstede, 1991) suggest that cultural values and norms shape organizational behavior, while more recent research (Rao & Weintraub, 2013; Amankona, 2025) demonstrates that innovation-oriented cultures foster creativity, experimentation, and collaboration.

At the same time, studies on digital innovation (Nambisan et al., 2017; Bharadwaj et al., 2013) highlight the role of digital technologies in enabling new forms of value creation. Empirical research further supports this relationship. For example, Wang (2025) finds that digital transformation enhances innovation performance, while Cui (2025) emphasizes the importance of digital innovation capability, particularly through human–AI integration.

A key insight emerging from the literature is that the relationship between innovation culture and firm performance is not direct but mediated through digital innovation. This perspective is supported by multiple studies that highlight the role of digital capabilities as a mechanism that translates cultural attributes into measurable performance outcomes (Wang, 2025; Cui, 2025; Kane et al., 2021).

Furthermore, the literature suggests that innovation culture is a multidimensional construct, and its different components have varying impacts on innovation processes. For instance, values and organizational climate are primarily associated with creativity and idea generation, while resources and processes are more closely linked to the implementation and commercialization of innovation (Rao & Weintraub, 2013).

Another important finding is the critical role of digital capabilities in strengthening this relationship. Studies indicate that organizations investing in digital infrastructure, skills, and knowledge integration are better able to leverage their cultural strengths and translate them into innovation outcomes (Bharadwaj et al., 2013; Nambisan et al., 2017).

Overall, the synthesis of the literature supports a conceptual relationship in which innovation culture enables digital innovation, which in turn drives firm performance. This relationship can be summarized as follows:

Figure 1. Conceptual Model

Innovation Culture → Digital Innovation → Firm Performance

5. Discussion

The synthesis of the literature provides several important theoretical and practical insights regarding the role of innovation culture in digital transformation. First, the findings reinforce the argument that innovation culture should not be treated as a passive or contextual variable, but rather as a strategic capability that actively shapes organizational outcomes. This perspective aligns with the dynamic capabilities framework (Teece, 1997), which emphasizes the importance of internal capabilities in enabling organizational adaptation and competitive advantage.

Second, the literature highlights the mediating role of digital innovation in linking innovation culture to firm performance. While earlier studies often examined direct relationships between culture and performance (Denison, 1990; O'Reilly, 1989), more recent research suggests that digital innovation acts as a critical mechanism through which cultural attributes are translated into tangible outcomes (Wang, 2025; Cui, 2025). This shift reflects the increasing importance of digital technologies in shaping innovation processes.

Third, the findings reveal the need for alignment between culture, strategy, and technology. Studies such as Bharadwaj et al. (2013) and Kane et al. (2021) emphasize that digital transformation requires more than technological investment; it requires organizational readiness, leadership support, and cultural alignment. Organizations that fail to achieve this alignment often experience limited returns on digital investments.

Moreover, the literature underscores the dynamic nature of innovation culture. Unlike traditional views that consider culture as stable, recent studies suggest that innovation culture evolves over time through learning, adaptation, and leadership influence (Eisenhardt & Martin, 2000; Westerman et al., 2022). This implies that organizations must actively develop and manage their cultures in order to sustain innovation.

Another important implication concerns the role of leadership. Leaders play a crucial role in shaping innovation culture by establishing values, encouraging experimentation, and creating environments that support learning and collaboration. This is particularly important in digital contexts, where uncertainty and complexity require flexible and adaptive leadership approaches.

From a practical perspective, the findings suggest that organizations should focus not only on investing in digital technologies but also on developing innovation-oriented cultures. This includes fostering openness, collaboration, and risk-taking, as well as aligning organizational structures and processes with innovation goals.

In addition, the literature highlights the importance of integrating internal and external knowledge. In the context of innovation ecosystems and open innovation (Chesbrough, 2003; Granstrand, 2024; Gawer, 2024), organizations must develop cultures that support collaboration and knowledge sharing beyond organizational boundaries.

Finally, the study contributes to the literature by providing an integrated framework that connects previously fragmented research streams. By linking innovation culture, digital innovation, and firm performance, it offers a more comprehensive understanding of how organizations achieve innovation success in the digital era.

6. Conclusion

The purpose of this study was to examine the role of innovation culture as a strategic enabler of digital innovation and firm performance through a systematic literature review. By integrating insights from multiple theoretical perspectives—including organizational culture, dynamic capabilities, and digital innovation—the study provides a comprehensive understanding of how organizations achieve innovation success in the digital era.

The findings of the literature synthesis indicate that innovation culture plays a central and active role in shaping digital innovation outcomes. Rather than functioning as a passive contextual factor, innovation culture emerges as a strategic capability that enables organizations to sense opportunities, foster experimentation, and support continuous learning. This perspective aligns with the dynamic capabilities framework (Teece, 1997) and extends it by explicitly incorporating cultural dimensions.

Furthermore, the study highlights the mediating role of digital innovation in linking innovation culture to firm performance. The literature consistently suggests that digital technologies alone do not generate competitive advantage; instead, their value depends on how effectively they are integrated into organizational processes and supported by appropriate cultural conditions (Kane et al., 2021; Bharadwaj et al., 2013). This finding provides a more nuanced understanding of innovation by emphasizing the interaction between technological and organizational factors.

Another important contribution of this study is the identification of key gaps in the existing literature. Specifically, the fragmentation between research on culture, digital innovation, and performance, as well as the overemphasis on technological factors, highlights the need for more integrated frameworks. By proposing a mediation-based model, this study addresses these gaps and offers a more comprehensive explanation of innovation processes.

From a practical perspective, the findings suggest that organizations should focus not only on investing in digital technologies but also on developing innovation-oriented cultures. This includes fostering openness, collaboration, and risk-taking, as well as aligning organizational structures and leadership practices with innovation goals. Organizations that fail to achieve this alignment may struggle to translate digital investments into tangible performance outcomes.

Despite its contributions, the study has several limitations. As a literature review, it relies on secondary data and does not provide empirical validation of the proposed framework. Future research should therefore test the model using quantitative or mixed-method approaches, such as Structural Equation Modeling, and explore the role of contextual factors such as industry, firm size, and geographic location.

In conclusion, this study demonstrates that sustainable competitive advantage in the digital era is not driven by technology alone, but by the interaction between innovation culture, digital capabilities, and strategic alignment. By highlighting the central role of culture, this research provides valuable insights for both scholars and practitioners seeking to understand and enhance innovation performance.

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INDUSTRY MENTORSHIP IN UNIVERSITY ENTREPRENEURSHIP SUPPORT: COMPARATIVE INSIGHTS FROM THE TRIANGLE INITIATIVE

Kejda Nuhu[1], Genta Rexha[2]

[1] Department of Economics, Entrepreneurship and Finance
Barleti University, Tirana, Albania
[2] Department of Electronics and Telecommunications
Polytechnic University of Tirana, Albania

Corresponding author: co.research@umb.edu.al

Abstract

This paper examines how industry mentors can strengthen university entrepreneurship support systems. It argues that industry mentors are valuable because they help universities connect academic ideas with market knowledge, practical implementation experience, and external networks. The paper adopts a conceptual and comparative approach. It draws on literature on entrepreneurial universities, university–industry collaboration, entrepreneurship education, mentoring, and entrepreneurial ecosystems. It uses TRIANGLE as the main illustrative case and compares it with Lancaster University's Entrepreneurs in Residence programme and Oxford Brookes University's Entrepreneurs in Residence scheme. The analysis is used to propose a design framework for integrating industry mentors into university entrepreneurship support systems. The framework is built around five dimensions: mentor pool depth, multi-constituency inclusion, structured matching, institutional integration, and evaluation. The paper concludes that industry mentorship should not be treated as an occasional external contribution, but as a practical component of university entrepreneurship support architecture.

Keywords: industry mentoring; university entrepreneurship; entrepreneurship support; TRIANGLE; university–industry collaboration; knowledge exchange; entrepreneurial ecosystems

1. Introduction

Universities are increasingly expected to contribute to innovation, entrepreneurship, and regional development. This expectation does not replace their teaching and research missions. Rather, it adds a third responsibility: helping knowledge, ideas, and skills move into wider economic and social use (Audretsch, 2014; Clark, 1998; Etzkowitz, 2003). In this context, entrepreneurship support has become an important part of university strategy. Many universities now operate entrepreneurship centres, incubators, innovation labs, start-up competitions, technology-transfer offices, and mentoring programmes.

However, university entrepreneurship support can remain too internal and academic if it is based only on classroom teaching, project workshops, or institutional procedures. Students and staff may develop promising ideas, but they may lack exposure to customer problems, market validation, investor expectations, sector-specific standards, and implementation constraints. This

creates a gap between entrepreneurial learning inside the university and entrepreneurial action outside the university, which is the problem this paper takes as its starting point.

This paper focuses on one specific form of university–industry collaboration: industry mentorship. Industry mentors include entrepreneurs, founders, managers, investors, alumni, sector specialists, and professionals who provide direct guidance to university participants. Their role is different from that of occasional guest speakers. In a structured mentoring system, they provide feedback, ask critical questions, support decision-making, and help participants understand whether an idea is technically feasible, commercially relevant, and socially useful.

Against this background, the paper addresses the following research question: *How can industry mentors contribute to stronger university entrepreneurship support systems?* To answer this question, the paper uses TRIANGLE as an illustrative case and compares it with two university-based Entrepreneurs in Residence examples: Lancaster University and Oxford Brookes University. The purpose is not to evaluate these initiatives empirically or to claim that one is superior. The purpose is to identify transferable principles that may help universities design more practical and market-oriented entrepreneurship support.

The paper makes three contributions. It clarifies why industry mentoring matters within university entrepreneurship support; it extends the discussion beyond student start-ups to include researchers, academic staff, and non-academic staff as target groups; and it proposes a design framework for integrating industry mentors into university entrepreneurship support systems. The framework is organised around five interrelated design dimensions: mentor pool depth, multi-constituency inclusion, structured matching, institutional integration, and evaluation. These dimensions help universities treat mentoring not as a stand-alone activity, but as part of a coherent support architecture. The paper presents the two external cases (Lancaster and Oxford Brookes) first, and then turns to TRIANGLE as the case in which the resulting design lessons can be examined.

2. Literature Review

2.1 Entrepreneurial universities and support systems

The entrepreneurial university literature shows that universities support entrepreneurship not only through start-up creation, but also through teaching, applied research, knowledge exchange, networks, and institutional culture (Audretsch, 2014; Clark, 1998; Etzkowitz, 2003; Guerrero et al., 2015). Clark's work on entrepreneurial universities emphasised organisational transformation and institutional capacity (Clark, 1998), while Etzkowitz's Triple Helix perspective positioned universities as active participants in innovation alongside industry and government (Etzkowitz, 2003). Later studies show that universities can create economic and social value through both direct commercialisation and wider knowledge spillovers (Guerrero et al., 2015; Rothaermel et al., 2007).

This means that entrepreneurship support should not be seen as a single activity. It is better understood as a system. A strong university entrepreneurship support system combines training, mentoring, applied research support, access to networks, technology transfer, incubation, funding

guidance, and links with external stakeholders. Such a system also requires internal coordination, because different university units often work with different groups: students, researchers, academic staff, non-academic staff, alumni, and external partners.

Knowledge-exchange research reinforces this systemic view. University–industry collaboration is not limited to patents, licensing, or spin-offs. It also includes consulting, joint projects, informal advice, contract research, student projects, and repeated interaction with firms and practitioners (Perkmann et al., 2013; HEInnovate, n.d.-b). In many cases, these broader forms of engagement may be more relevant for entrepreneurship education than formal commercialisation alone. They help participants understand how knowledge is used, tested, and adapted in practice.

2.2 Mentoring as a practical bridging mechanism

Mentoring is widely used in entrepreneurship support because it gives participants access to experience-based guidance (Patrício et al., 2024; St-Jean & Audet, 2012; Sullivan, 2000). Unlike a lecture, mentoring is usually more personalised and problem-oriented. It allows participants to discuss their own ideas, receive feedback, and reflect on the next steps. Sullivan (Sullivan, 2000) links mentoring to entrepreneurial learning, while St-Jean and Audet (St-Jean & Audet, 2012) show that mentors can support novice entrepreneurs through cognitive, emotional, and practical learning functions.

Industry mentors are useful because they connect different forms of knowledge. They bring market experience, sector understanding, customer awareness, and implementation logic into university entrepreneurship activities. This helps participants move from abstract ideas toward more realistic entrepreneurial decisions. Mentors can challenge assumptions about the problem, the customer, the value proposition, the business model, the route to market, and the resources needed for implementation.

For students, this can make entrepreneurship learning more realistic and can strengthen confidence in entrepreneurial action (Bandura, 1997; Liñán & Chen, 2009). For academic staff, it can support applied research and commercialisation thinking. For non-academic staff working in entrepreneurship centres, career services, technology-transfer offices, or project offices, interaction with industry mentors can improve their understanding of what early-stage teams actually need. Therefore, mentoring should be understood not only as support for founders, but also as a learning mechanism for the university itself. This also aligns with research showing that perceived university support can influence entrepreneurial intentions when support is visible, relevant, and usable by participants (Galvao et al., 2025).

2.3 Entrepreneurial ecosystems and university–industry interaction

Entrepreneurship rarely develops through individual effort alone. Entrepreneurial ecosystem literature emphasises the importance of networks, finance, knowledge, talent, culture, leadership, and support services (Stam, 2015). From this perspective, the university is one actor within a wider

ecosystem. Its role is not only to produce knowledge but also to connect people, ideas, institutions, and resources.

Industry mentors can strengthen this ecosystem role. They may introduce participants to partners, customers, investors, sector associations, alumni, or public support organisations. They can also help universities understand whether their entrepreneurship support is aligned with the needs of the local and regional economy. This is particularly relevant for universities in smaller ecosystems, where access to entrepreneurial experience may be uneven and where formal venture capital markets may be less developed.

At the same time, mentoring is not automatically effective. Literature on university–industry collaboration shows that collaboration requires careful design, role clarity, incentives, and trust (Oxford Brookes University, n.d.; Perkmann et al., 2013; HEInnovate, n.d.-b). A mentor pool based only on prestige may not meet participant needs. A programme without clear objectives may produce networking activity without meaningful learning. For this reason, mentor-based entrepreneurship support should be designed with clear stages, expectations, matching processes, and monitoring mechanisms. Recent reviews of university–industry collaboration and open innovation similarly indicate that collaboration depends on governance, trust, mutual benefit, and the ability to overcome organisational and cultural barriers (Gustina et al., 2024; Yang et al., 2025).

3. Methodology

This is a conceptual conference paper based on a focused narrative review, following the approach outlined by Baumeister and Leary (Baumeister & Leary, 1997), combined with a comparative case analysis in the tradition developed by Yin (Yin, 2018). It does not present primary empirical data, and it is not a systematic review. Instead, it uses selected literature and official case information to develop a structured argument about the role of industry mentors in university entrepreneurship support.

The literature was selected around five themes: entrepreneurial universities, university–industry collaboration, entrepreneurship education, mentoring, and entrepreneurial ecosystems. Sources were identified through targeted searches in Scopus, Web of Science, and Google Scholar, supplemented by official documents from HEInnovate, the EIT Higher Education Initiative, and the OECD. The review prioritised English-language peer-reviewed work from roughly the last decade, complemented by foundational older sources for entrepreneurial-university traditions. As Baumeister and Leary (Baumeister & Leary, 1997) note, narrative reviews are particularly appropriate where the purpose is conceptual integration across disparate literatures rather than statistical aggregation, as is the case here.

The comparative component follows the purposive case-selection logic recommended by Yin (Yin, 2018) for theory-oriented multi-case work. Cases were assessed against four criteria: (i) use of structured rather than ad hoc industry mentoring; (ii) public availability of programme documentation; (iii) inclusion of multiple university constituencies, not students alone; and (iv) variation in institutional scope between project-based and embedded models. This yielded

TRIANGLE, Lancaster University, and Oxford Brookes University (Lancaster University, n.d.; Oxford Brookes University, n.d.; TRIANGLE, n.d.). TRIANGLE was selected as the main illustrative case because of its formal connection to the EIT Higher Education Initiative and its explicit inclusion of students, researchers, academic staff, and non-academic staff, which are the four constituencies this paper aims to address. Lancaster and Oxford Brookes were selected as comparator cases because their Entrepreneurs in Residence schemes are embedded in regular university activity rather than in time-limited projects, offering a useful contrast to TRIANGLE's project-based logic.

Three limitations of this case selection should be stated openly. First, all three cases come from Western European or pan-European settings; no case from Eastern, Southeastern, or Mediterranean Europe is included, despite the paper's explicit interest in transferability to smaller and less mature ecosystems. Design principles derived primarily from UK and EU-wide programmes may therefore require adaptation in contexts with shallower investor markets, weaker industry–research links, or different incentive structures for academic and non-academic staff. Second, all three cases are situated in English-language institutional environments, mirroring a broader Anglophone bias in the entrepreneurship-education literature itself. Third, the comparison includes no programme that has struggled or been discontinued; public case documentation is almost always promotional in tone, which tends to emphasise programme strengths and underreport implementation challenges. Conclusions therefore say more about how mentor-based support is designed than about how it performs over time.

The purpose of the comparison is not to rank the initiatives or to evaluate programme effectiveness empirically. Following Yin (Yin, 2018), the aim of a small-N comparative analysis of this kind is analytical rather than statistical generalisation, that is, to identify common design principles that can inform universities seeking to strengthen entrepreneurship support through industry mentoring. The findings should therefore be read as analytical insights and design hypotheses, not as causal evidence of programme effectiveness.

Researcher positionality. The TRIANGLE Initiative is used as the central illustrative case. The authors are involved in the coordination of TRIANGLE, which provides close contextual knowledge of the initiative. Drawing on Schön's (Schön, 1983) account of the reflective practitioner, this positionality is acknowledged as both a source of analytical insight and a potential limitation. To reduce interpretive bias, TRIANGLE is discussed alongside two external comparator cases, Lancaster University and Oxford Brookes University, and is presented after them in Section 4.3, primarily in terms of design decisions rather than measured outcomes.

4. Comparative Case Analysis

This section first discusses the two external Entrepreneurs in Residence schemes that informed the comparison, Lancaster University and Oxford Brookes University, before turning to TRIANGLE as the case in which the resulting design lessons are being applied. The cases are read through five analytical dimensions: mentor pool depth, multi-constituency inclusion, structured

matching, institutional integration, and evaluation. Each comparator case closes with an explicit note on its implication for TRIANGLE; the TRIANGLE subsection then describes how the programme combines and extends these lessons. A comparative analytical summary follows in Table 1.

4.1 Lancaster University: depth, range, and regional embedding

Lancaster University provides a relevant example of an Entrepreneurs in Residence programme that connects entrepreneurial practice with university teaching, research, and SME engagement (Lancaster University, n.d.). The programme has grown to more than 80 entrepreneurs and emphasises interaction between students, academics, entrepreneurs, and small and medium-sized enterprises. This makes it particularly relevant for universities that want to connect entrepreneurship education with regional business ecosystems.

The Lancaster case is useful because it shows that industry mentors can contribute to several functions at the same time. They can mentor students, inform teaching, support academic research, and help the university understand business needs. This broader contribution is important for universities that do not want entrepreneurship support to remain limited to start-up competitions or short training events. It suggests that entrepreneurs-in-residence can become part of a wider knowledge-exchange culture.

Implication for TRIANGLE. Two lessons from Lancaster inform the analysis of TRIANGLE below. To begin with, depth of the mentor pool matters: a programme that relies on a small group of high-profile mentors is structurally fragile, whereas a pool large enough to support sector- and stage-specific matching is more resilient. TRIANGLE's pan-European scope differs from Lancaster's regional model, but the underlying logic transfers because the programme is designed to ensure that each participating institution can offer mentor matching across multiple sectors and venture stages, rather than concentrating activity around a few visible figures. Second, the Lancaster experience suggests that mentor contribution should not be confined to founder coaching; the same actors can usefully inform teaching, applied research, and engagement with local SMEs, a dimension TRIANGLE has yet to fully exploit.

4.2 Oxford Brookes University: multi-constituency inclusion

Oxford Brookes University provides a second useful comparison through its Entrepreneurs in Residence scheme (Oxford Brookes University, n.d.). The scheme supports students, staff, and stakeholders by giving them access to entrepreneurial knowledge, experience, contacts, and mentoring. It also links entrepreneurship support with programme development, community engagement, and knowledge exchange.

The Oxford Brookes case is relevant because it explicitly includes staff and stakeholders, not only students. This reinforces the argument that universities need internal capacity as well as student-facing activities. Entrepreneurship support becomes more sustainable when academic and non-academic staff understand how to work with external mentors, how to refer participants to

appropriate support, and how to connect mentoring to curriculum, research, and engagement activities.

Implication for TRIANGLE. Oxford Brookes' explicit inclusion of staff and stakeholders aligns with one of TRIANGLE's founding principles, namely that entrepreneurship support should serve students, researchers, academic staff, and non-academic staff. The lesson from Oxford Brookes is that such inclusion needs to be backed by concrete mechanisms, not left as a stated commitment. Staff inclusion requires recognised time, light-touch training, role clarity, and pathways for the contributions of non-academic staff to be visible inside the institution. TRIANGLE's train-the-trainer dimension is designed to begin operationalising this, though further work would be needed to embed staff inclusion as a routine feature rather than an aspiration.

4.3 Applying these lessons in TRIANGLE

TRIANGLE is an EIT Higher Education Initiative project that seeks to connect research, industry, and academia through innovation and entrepreneurship support (TRIANGLE, n.d.; EIT Higher Education Initiative, 2024; EIT Higher Education Initiative, 2025). It is not presented here as a universal model. It is described as a programme designed and operated with reference to the lessons summarised above.

A central feature of TRIANGLE is its use of structured mentorship for early-stage entrepreneurial teams. The programme connects participants with mentors from academia, industry, and European innovation ecosystems through a staged pathway with at least three mentoring sessions and inter-session tasks. This combines academic and external perspectives, and provides feedback that is not limited to internal university norms.

Three design choices distinguish TRIANGLE from the comparator cases discussed above. Its mentor pool is multi-country rather than regional, which extends matching options but also introduces coordination challenges that Lancaster's regional model does not face. The programme is project-based with explicit stages, a structure that supports participant progression but requires deliberate continuity planning between phases. It also includes a train-the-trainer component aimed at building institutional capacity, which directly addresses the staff-inclusion lesson drawn from Oxford Brookes.

Several challenges are evident in the programme's current phase. Mentor recruitment and matching depth vary across partner institutions, mirroring the asymmetry that Lancaster's larger pool helps to absorb. Sustained engagement of non-academic staff requires institutional support beyond the lifetime of the project, a recurring concern in EU-funded initiatives. Evaluation of mentoring quality, as distinct from counting sessions delivered, is still under development. These are not unique to TRIANGLE; they are issues that any mentor-based university entrepreneurship system encounters and that the comparator cases address in their own ways.

4.4 Comparative observations

Together, these cases show that mentor-based entrepreneurship support is not limited to highly resourced or elite venture ecosystems. It can also be embedded in universities through

entrepreneur-in-residence schemes, knowledge-exchange activity, and structured project-based support. The cases differ in scope and context, but they share a similar logic: external entrepreneurial experience is brought into the university to improve learning, validation, networking, and institutional capacity.

The comparison also shows that the most transferable feature is not a specific programme label. Universities may call these actors mentors, entrepreneurs-in-residence, industry experts, alumni advisers, or ecosystem partners. What matters is whether the university creates a structure that allows these actors to contribute meaningfully. This includes careful selection, matching, role definition, follow-up, and integration with existing support services, design dimensions on which all three cases reviewed here, including TRIANGLE in its current phase, continue to develop.

Table 1. Analytical comparison of mentor-based university entrepreneurship support.

Case	Mentor model & embedding	Target groups	Design contribution to the framework	Main risk or limitation
TRIANGLE	Structured mentoring within an EIT HEI project; multi-country mentor pool; staged pathway with at least three sessions and inter-session tasks.	Students, researchers, academic staff, non-academic staff, and early-stage entrepreneurial teams.	Combines structured matching, cross-border mentor access, and institutional capacity-building through a train-the-trainer logic.	Project-based model requires continuity planning; mentor depth and quality evaluation are still developing across partner institutions.
Lancaster University	Entrepreneurs in Residence embedded in university teaching, research, knowledge exchange, and SME engagement.	Students, academics, entrepreneurs, SMEs, and the wider university community.	Shows the value of mentor pool depth and regional embedding; mentors can support more than founder coaching.	Regional strength may be harder to transfer to cross-border projects; impact depends on sustained institutional commitment.
Oxford Brookes University	Entrepreneurs in Residence linked to mentoring, programme development, community engagement, and knowledge exchange.	Students, staff, stakeholders, and the business school community.	Highlights multi-constituency inclusion and the need to make staff participation operational rather than merely declarative.	Staff inclusion requires time, role clarity, and internal recognition; without these, inclusion may remain aspirational.

5. Discussion

The comparative analysis points to three overlapping ways in which industry mentors strengthen university entrepreneurship support.

One contribution is knowledge-based. Mentors bring practical insight into customers, sectors, business models, regulation, investment expectations, and implementation constraints. This helps students, researchers, and staff test whether an idea is meaningful outside the academic setting, and can prevent teams from developing concepts that are intellectually interesting but weakly connected to real user needs.

A second contribution concerns access to relationships. In entrepreneurship, networks often matter as much as formal training. Mentors can help participants identify relevant customers, partners, investors, alumni, sector associations, or public support organisations, and can guide them on how to approach these actors. This makes mentoring especially valuable in smaller innovation ecosystems, where access to entrepreneurial experience and external networks may be uneven.

A third contribution is developmental. Mentors help participants clarify their roles, build confidence, and understand the practical demands of entrepreneurial work. This is particularly important in university settings, where participants may have strong academic or technical knowledge but limited exposure to venture development. When mentoring is constructive and linked to concrete next steps, it can help participants move from uncertainty toward action.

The cases also show that industry mentoring should not be treated as an isolated event. A single guest lecture or informal conversation is useful, but it does not create a support system. The strongest contribution appears when mentoring is repeated, structured, and linked to other forms of support such as training, research advice, technology transfer, incubation, and external partnerships. This is why the design of the mentoring system matters as much as the identity of the mentors.

For TRIANGLE, the lesson is that industry mentors can help university entrepreneurship support become more outward-looking. They bring external validation into the university and help reduce the gap between academic idea development and market-oriented implementation. Lancaster and Oxford Brookes reinforce this point by showing that entrepreneurs-in-residence can also support teaching, research engagement, staff development, and interaction with local business communities.

A further discussion point concerns the balance between academic and industry knowledge. Industry mentors should not replace academic expertise. Universities remain responsible for research quality, pedagogical design, ethics, and institutional support. The value of industry mentoring lies in complementarity. Academic staff contribute disciplinary knowledge and educational continuity; industry mentors contribute practical experience and market orientation; non-academic staff coordinate processes and ensure that participants can access the right support at the right time.

There are also risks. Mentors may provide advice based on their own experience that does not fully fit the participant's context. Mentoring may favour more confident participants unless access is carefully managed. Industry mentors may focus too strongly on commercial potential and under-value social, cultural, or public-sector innovation. Universities therefore need a clear framework that defines expectations, confidentiality, ethics, inclusion, and follow-up. This is especially important when mentoring includes students or early-stage researchers who may be less experienced in professional negotiation.

Building on the comparative analysis, this paper proposes a design framework for integrating industry mentors into university entrepreneurship support systems. The framework has five

interrelated dimensions: mentor pool depth, multi-constituency inclusion, structured matching, institutional integration, and evaluation. These dimensions translate the comparative lessons into practical design choices for universities seeking to move from occasional mentoring to a coherent entrepreneurship support architecture.

Institutional integration should come first. Mentoring belongs inside the university's wider support structure rather than being treated as an optional add-on. It should be connected to training, incubation, technology transfer, research support, and external engagement so that participants understand how the different forms of support fit together.

Mentor pool depth depends on selecting mentors by function, not only reputation. A useful pool should include entrepreneurs, product specialists, sector experts, investors, legal and IP experts, alumni, and business development professionals, because different participants need different kinds of support at different stages.

Multi-constituency inclusion should shape who the support reaches. Students need help with idea development and confidence; researchers and academic staff need support for applied research and commercialisation pathways; and non-academic staff need exposure to entrepreneurial practice so that they can coordinate support more effectively.

Structured matching and staged progression should govern each interaction. Needs assessment, problem validation, business model development, customer discovery, pitch preparation, and connection to funding or partners should guide both mentor selection and the purpose of every session.

Evaluation, finally, should look beyond the number of start-ups created. Universities should monitor mentoring quality, participant learning, partnerships and referrals, skills developed, research ideas advanced, and improvements in support structures, because mentoring effects often appear before formal venture creation.

These implications are particularly relevant for universities in developing or smaller innovation ecosystems. In such contexts, entrepreneurship support may have limited access to investors or high-growth start-up experience. Industry mentors can help compensate for this by bringing practical knowledge into the university. However, universities must adapt mentor systems to local conditions rather than copying models from large entrepreneurial ecosystems.

6. Conclusion

6.1 Limitations and Future Research

This paper has several limitations. First, it is conceptual and comparative rather than empirical. It does not measure the impact of mentoring on start-up performance, student learning outcomes, staff capacity, or institutional change. Second, the case information is based on official public sources, which tend to emphasise programme strengths and may provide limited evidence of challenges. Third, the comparison includes a small number of cases and cannot represent the full diversity of university entrepreneurship support models.

Future research could address these limitations in several ways. Empirical studies could examine how participants experience industry mentoring and whether mentoring changes their entrepreneurial intentions, self-efficacy, networks, or venture development decisions. Longitudinal studies could investigate whether mentor-based support leads to stronger start-ups, better research commercialisation, or more durable university–industry partnerships. Comparative studies could also examine how mentoring models differ across countries, university types, and regional innovation ecosystems.

More attention is also needed on non-academic staff. Many entrepreneurship initiatives depend on project managers, innovation officers, career advisers, technology-transfer staff, and administrative coordinators. Yet the literature often focuses more heavily on students and academic entrepreneurs. Understanding how non-academic staff learn from industry mentors and contribute to entrepreneurship support could strengthen both research and practice.

6.2 Concluding Remarks

Industry mentorship can play an important role in strengthening university entrepreneurship support systems. Its main value lies in connecting academic ideas with market knowledge, external networks, and practical implementation experience. This paper has argued that such mentorship becomes most useful when it is organised through the five-dimension design framework set out above. That contribution matters most when entrepreneurship support aims to serve not only students, but also researchers, academic staff, and non-academic staff.

The TRIANGLE case illustrates how industry mentors can be integrated into a broader entrepreneurship support initiative that addresses multiple university constituencies. Lancaster University and Oxford Brookes University provide useful comparator cases showing that entrepreneurs-in-residence and industry mentors can support teaching, research engagement, knowledge exchange, community engagement, and staff development. Together, these examples suggest that mentor-based support can be adapted across different university contexts.

The main conclusion is that industry mentors should not be seen simply as external advisers. They should be understood as strategic contributors who help universities build more practical, connected, and responsive entrepreneurship support systems. For universities seeking to strengthen entrepreneurial capacity, the question is therefore not whether to involve industry mentors, but how to integrate them into a coherent and inclusive support architecture.

The lessons drawn from Lancaster and Oxford Brookes are treated here as design hypotheses rather than fixed conclusions. They inform current decisions on mentor pool depth, staff inclusion, and institutional capacity building in TRIANGLE, but the test of these decisions will come over the coming project phases. Making design choices and their underlying reasoning visible is one contribution this paper aims to offer, so that other coordinators in similar contexts can engage with them critically, adapt them, or reject them, as their own settings require.

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AI IN ALBANIA'S MARKETING

Petraj Zicishti Krist[1], Agalliu Arbi[2]

Department of Economy, Entrepreneurship and Finance
Barleti University, Tirana, Albania

Corresponding author: a.agalliu@umb.edu.al

Abstract

The application of Artificial Intelligence (AI) in marketing has significantly transformed consumer communication by facilitating advanced behavioural analysis, content personalisation, and process automation. This evolution has shifted from the static framework of Web 1.0 to the interactive and intelligent platforms characteristic of Web 3.0, where AI operates as an autonomous agent that adapts offers and messages in real time through complex predictive systems and sentiment analysis. In Albania, small and medium-sized enterprises predominantly implement "AI-as-a-Service" models that enable micro-personalisation within regional segments; however, these organisations face infrastructural constraints, limited technical expertise, and cultural-linguistic challenges. Critical factors for effective implementation include data velocity, data variety, and the localisation of global strategies. Furthermore, ethical and legal considerations, such as algorithmic transparency and privacy protection, require the development of explicit policies and audit mechanisms to maintain consumer trust. Recommended approaches to address these challenges include upgrading technological infrastructure, investing in specialised MarTech training, promoting a culture of innovation, and rigorously upholding ethical and statutory standards. Potential areas for further advancement comprise content and offer personalisation, purchase propensity modelling, mitigation of the "filter bubble" effect, integration of AI into communication channels, and the development of synthetic environments such as the Metaverse and the convergence of physical and virtual reality ("phygital"). This comprehensive technical and strategic approach aims to enhance the efficiency and relevance of marketing by directly addressing local challenges and leveraging advanced technologies to strengthen consumer engagement.

The evolution of marketing and advertising has taken new heights with the introduction of new technologies such as artificial intelligence (AI) and machine learning (ML) to the global marketing scene. The two technologies have been the center of focus in the global marketing trends due to their numerous capabilities which include ability to analyze large amount of data, deriving conclusions and making automatic decisions. With these unique abilities, AI and ML have also the potential to change the marketing practices currently being used by companies globally by enabling them to give customers personal experiences, maximize their investments and predict what is expected to happen in the market. The changes brought by the two technologies have enabled companies to gain competitive advantage in the marketing scene due to their ability to make real time marketing decisions while analyzing customers' behavior and needs. The current trends in global marketing have therefore been shaped by the two technologies with numerous marketers globally embracing the two in order to remain relevant in the highly competitive marketing world.

The use of AI and ML in Albania's marketing sphere may bring new opportunities for the development and innovation of the marketing industry in the country. The number of electronic commerce companies and digital marketing services is on the Albanian market has increased in the last years. Moreover, as the country is in process of aligning with the standards of the European Union, the utilization of these technologies in the marketing will play a very important role in creating a more developed business environment in order to attract foreign investment (Kosova, 2025).

However, there are many challenges and limitations that can impede to the effective adoption of AI and ML in the Albanian marketing sector. Understanding these barriers is very important for all the stakeholders in order to maximize the use of these technologies in the country. A key technological challenge is the very limited digital infrastructure in many parts of the country. Many areas have no reliable internet connectivity, and lack of access to cutting-edge technology, while many businesses do not have sufficient technological know-how to manage and implement complex AI systems, and therefore rely on external service providers, who do not have in-depthThis study aims to investigate the significance of understanding the local market dynamics and its impact on business performance. Utilizing a qualitative research methodology, we conducted in-depth interviews with industry stakeholders to gather insights on market trends, customer preferences, and competitive strategies. Our findings reveal that a profound knowledge of the local market plays a crucial role in tailoring products and services to meet consumer needs effectively. Furthermore, businesses that leverage local insights are better positioned to enhance customer satisfaction and drive sales. The study concludes that investing in market research and maintaining a close connection with local consumers is essential for achieving sustainable growth in an increasingly competitive landscape. These findings highlight the necessity for organizations to prioritize local market awareness as a strategic asset in their overall business planning.

Cost is a major factor, for small and medium-sized enterprises, that prevent them from investing in the AI and ML technologies. Muli (2023) highlights how most businesses in Albania are operating under a very tight budget, which makes it almost impossible for them to consider investing in technologies that can bring digital change to their business. The lack of governmental support, of programs and of incentives that can help in investing in these technologies can also have a very negative impact and stifle innovation and also prevent businesses to get into AI marketing.

Also the cultural aspect plays a role of great importance in not adopting the use of AI and ML within the Albanian marketing sector. This type of technology is generally perceived with reservation and with fear and concern of new things that one does not know how to use them. People with little knowledge of information and communication technologies, and who are generally reluctant to use new technologies, in face of AI and ML could fear for data privacy and the ethics involved in using such technologies. Therefore without a cultural change in viewing and

perception towards the use of information and communication technologies, and without a growth of public trust for adoption of new technologies, the use of AI and ML in marketing will be rendered ineffective and will fail in achieving marketing goals and will not allow a marketer to remain competitive in the world market (Ismail & Shala, 2024).

In summary, there are many great benefits that AI and ML could bring to the Albanian marketing sector and these great benefits need to be addressed in order to help promote the change needed to support the great growth of the Albanian economy by helping to create a culture within the country's marketing sector that will allow for more marketing innovation to take place.

One of the biggest technological challenges to marketing with AI in Albania is the absence of robust and quality internet connectivity. For instance, although the cities are covered by fast internet, countryside and villages have very limited or poor internet access. In this respect, there are huge differences within Albania in terms of digital infrastructure, where while in urban areas, particularly the capital, there are many cafes and places that offer internet access to consumers, in rural areas of the country the problem is quite different. Also, businesses that operate in these areas are denied the chance to effectively analyze data and to subsequently make proper use of them for training ML models. This in turn, leads to a very fragmented environment, in which there are many areas, where marketing with AI poses challenges.

The lack of skills in order to design, implement and use the new technologies in the marketing and the other sectors, represents another great challenges. The technological evolution represents great opportunities, but at the same time, it creates great challenges. One of the most important is the need of the specialized human resources in order to implement and to use the new technologies, in marketing, in other sectors, in education and in the research. But, in Albania, still there are many problems, in the education, because, the curricula of study, are not enough, to respond to the challenges, of the modern technological market. The education, of the new generation, in the computer science, in the information technology, in the data analysis, represent great challenges. Although, in some universities of the country, have been included, in the curricula of study, some disciplines, like the computer science, the information technology, the data analysis, but, still, there is a lack, of the programs, that are focused on the AI and the ML. This lack, of the skills, of the professional, in the marketing and in the other sectors, represent great problems, because, the businesses, depend on the external consultants, or on the foreign experts. This fact, represents great challenges, because, this external consultants, or the foreign experts, increase the costs, of the businesses, and, reduce, the innovation, in the local industry.

However, in order to be able to utilize these applications, businesses need a technological environment that is conducive to their adoption. The current technological environment of Albanian marketing companies is far from being able to support the adoption and implementation of AI and ML. While most marketing companies have basic software that they use for their work,

the majority of them lack software packages necessary for data analysis that is required for AI and ML. Because of financial constraints, many companies are unable to invest in cutting-edge technologies such as cloud computing and big data analytics. Without having access to sufficient computational resources, companies will find it very difficult to utilize the capabilities of AI for improving and optimizing marketing activities.

Also, within the marketing community, in Albania there is a general lack of awareness and understanding of potential applications of the two technologies and of their benefits. Also, there is a lack of awareness and understanding within the leadership of companies of the same potential applications and benefits of the two technologies. Many companies in Albania today think that using AI and ML in marketing is too complex and that it is not relevant to the current challenges in the market. A lack of awareness and understanding of applications and benefits of AI and ML also translates into a lack of interest in the use of these technologies. The interest in the use of the two technologies in marketing is decreased also by the lack of examples of successful implementation of AI and ML in various markets in the region.

In summary, the marketing sector in Albania is facing with a number of technological barriers that impede full scale adoption of AI and ML solutions. The main problems are: poor internet and digital infrastructure, lack of skilled personnel, low level of investment in appropriate technologies, and even negative attitudes towards adoption of new technologies.

One of the greatest economic barriers that prevent AI adoption is the financing issue. A large part of companies, especially from marketing sector, work under strict budget frameworks. Consequently, they cannot afford investing in expensive technologies such as AI and ML, especially when they have not realized their return of investment yet. Based on various research studies, a great number of SMEs from our country are encountering difficulties in gaining funds to finance innovative projects, very important to encourage innovation (Kapllani, 2025). One of the reasons that financial institutions are not willing to grant credits to finance projects that are based on AI is the lack of experience that these institutions have had with these types of projects.

Furthermore, the limited presence of venture capital in Albania contributes to the difficulties faced by businesses in securing investments for AI projects. Venture capital plays a pivotal role in tech-driven economies by providing the necessary financial backing for startups and established companies aiming to integrate innovative technologies. However, Albania's nascent venture capital landscape is characterized by scarce funding opportunities and a cautious investment approach, which restricts the potential for businesses to pursue AI solutions.

But, also the bigger environment in the country has an influence on adoption of new technologies. As a country still in transition, Albania is based on agricultural, but is gradually shifting towards services. Unfortunately, there is no clear roadmap or strategy of digitalization and adoption of

latest technologies in the country, therefore, their implementation in daily operations of enterprises is case to case, unstructured and without clear influence.

ack of investments in digital infrastructure in Albania is another barrier for effective use of AI in business. Many and are equipped with outdated computer hardware. This creates significant obstacles for the adoption and use of AI and Albanian companies do not have modern digital infrastructure, do not have sufficient, reliable and fast internet connection ML in businesses. As it was mentioned before, there is a need for development of IT infrastructure in Albania in order to support business, and specifically marketing processes (Kapllani, 2025

The economic challenges that presently face Albania and her efforts to put AI and ML to work to serve the country's marketing sector face significant barriers as well. For Albania's marketers, and the nation's marketing sector as a whole, there are many significant economic challenges – and several of the very largest are reviewed here.

Most notable aspect of cultural challenges to AI & ML adoption is the myth of job displacement that is currently The sweeping the globe. Although many experts argue that while it is true that certain tasks will be automated, it is also true that others will be created. The reality is however that many people around the world are afraid of losing their jobs to machines and this fear is particularly heightened in a country with high unemployment is the biggest challenge, it is in fact a symptom of a greater cultural challenge to technological adoption and such as Albania. Thus, while on the surface it may seem as though the fear of job displacement in particular to the adoption of AI & ML in marketing in Albania – namely, the overall acceptance of

Acceptance of new technologies is a major aspect of culture in general and that of Albania in particular. While people are starting to accept more and more new technologies related to digital environments and communication on the Internet, however, many areas still are plagued by a big digital divide. There are different environments in Albania and not all are on the same footing as far as having access to the new information and communication technologies is concerned. Major obstacles related to new technologies, including those used in marketing, as perceived by the population and business in general and marketing environment in particular, have to do with environment in which they live and do business and in many cases are reluctant to use because they are not familiar with the benefits that new technologies could have on marketing activities. Marketing in many environments, especially where small- and medium-sized enterprises prevail, represents a real challenge. There are a great many enterprises, mostly of small and medium size, that generate income and employment in Albania. Because they are the vast majority, they have a very major role and importance for marketing and the economy. On the other hand, when we talk about marketing in these businesses, there are a lot of limitations. The most of them lack experience in marketing and lack of advanced technology to use in marketing activities, in order to develop and promote their products and services in the market. For this reason, they cannot rely on the new

marketing techniques, such as AI marketing, as their strategies because they do not have necessary skills and are not familiar with these new marketing methods. And even when they are familiar with these marketing methods, they cannot apply them in their marketing strategies, due to many obstacles and the lack of resources, including the lack of funding to purchase advanced technologies. Many businesses lack digital skills, including skills needed for the implementation of different models of AI. All these indicate the serious challenge that these environments are facing and that there are big differences in terms of development between the companies in Albania and other countries. Therefore, there are many aspects that have to be taken into account for any activity in the field of marketing in Albania, in order to have successful results, and all these are very important and should not be neglected.

Societal values and norms: Also within the culture and society in which a company operates, there is a range of values and, mostly unwritten, rules that are expected to be adhered to. In many collectivist cultures (Albania has a collectivist culture) interpersonal relationships and established hierarchies are of great importance. Using technology, including AI, can be perceived negatively as it contradicts with traditional ways of operation that are accepted in the community and may cause disapproval. In general, this is an important point as many community and even enterprise-driven organizations are sensitive to societal interactions, and might fear that the change towards the use of AI could have negative effects on the workforce, in case the transition is not done properly.

Another cultural aspect is the way media portray AI. The vast majority of the media pieces, feature films, and other stories about AI are, generally speaking, negative, portraying it as super-intelligent, unstoppable, in many cases evil, taking over jobs, and a host of other extremely-negative outcomes for humanity. Most of these portrayals focus on the very worst of the worst-case-scenario effects of AI on ethics, privacy, and ultimately, human existence. Given the already-skeptical populace in Albania and in much of the world when it comes to new, emerging, and potentially ‘‘dangerous’’ technologies, the media’s rather alarmist portrayal of how AI could affect various sectors and daily life is very likely to exacerbate and to confirm already-held concerns and negative perceptions amongst the general public. As a result, there is an even greater likelihood that these very technologies could be avoided in order to ‘‘prevent’’ any of the very-negative outcomes that the media portrays. Biti & Rista (2025).

The current system of education is not sufficiently prepared to address the challenges of technologies in constant evolution, especially those that fall within the focus of this study, i.e. AI and ML, and their implementation in marketing processes. Higher education, as well as vocational training, is still struggling to incorporate programs that address the demands of new and complex technologies. Consequently, there is a massive shortage of professionals who possess the necessary analytical skills and familiarity with technology to utilize effectively the tools of AI and ML in marketing strategies (Hima, 2025). The aforementioned study underlines the major deficiency in

the current system of education of Albania, specifically with reference to programs that specialize in data science, artificial intelligence, and digital marketing, which are, increasingly, crucial elements of the marketing field by virtue of their ability to process large amounts of data with a view to forecasting and analyzing human behavior in marketing and sales contexts.

However, also within the existing workforce of marketing specialists, different levels of proficiency are to be found. Those who are already experienced in the field of marketing and possess knowledge of the necessary tools for this profession in a sufficient degree, are however not in a position to understand the complex procedures for AI and ML tools, whereas others who have received education and acquired skills for new technologies will certainly have more opportunities for qualification and a corresponding increase in income. Many older marketing specialists rely on experience obtained through practice and therefore would find it difficult to deal with new technologies (Hima, 2025.

In. These trainings have to be designed in a way, that in the framework of the sessions the order to overcome these challenges for the marketing professionals there is need for trainings on an high quality level participants are enabled to acquire competencies on a high level with respect to analyze, process and manage data with the aid of AI tools and to integrate the AI-tools in the existing instruments and methods that are used in the marketing processes of the companies. Also the perspective of implementing the marketing-strategies on a global level has to be integrated in the trainings. Only by applying the discussed strategies in hands-on- trainings with the aid of AI tools and ML, the employees of companies in Albania have the chance to change from the traditionally used marketing methods to data-orientated marketing concepts and to offer added value to their customers. Thus, the mentioned trainings can contribute essentially to human capital development on high level in Albania and to successful marketing on the global level of business.

Creating a culture of lifelong learning at work has been identified as important to tackling skill gaps in using AI. Employees need to see value in ongoing development for themselves and support from their employer in terms of time, access to technology, training courses, formal learning and informal on-the-job learning to develop AI and ML skills (Hima, 2025).

In conclusion, education and skill gaps are big problems for SMEs in marketing sector of Albania. It is very important for the education system and companies in marketing sector of Albania to address these problems and to work together in order to develop the skills that are required by the market and also to help the workforce to adapt to new technologies and to develop, to learn, to work and to innovate in marketing sector of Albania.

Limitations stemming from technology can stem from several areas. To begin with, a large number of enterprises are negatively affected by the absence of appropriate digital infrastructure. As a result, they are left to conduct their activities in environments that fail to utilize latest technology.

On the other hand, the lack of suitable Internet connectivity as well as a lack of powerful computing resources to process large quantities of data constitute an equally serious obstacle to progress. On the other hand, the costs of latest technologies are extremely high. Hence, even small companies with slender profit margins are unable to bear such expenses. In contrast, bigger companies can use their immense financial power to purchase latest technologies and, subsequently, profit from the AI-powered marketing strategies in order to provide customers with most suitable offers and services. These marketing strategies can be employed in order to implement a number of different marketing strategies, such as personalized marketing, and to analyze all data gathered during the enterprise's operation in order to make optimal business decisions.

One more problem facing the SMEs is a lack of a specialized workforce. Many owners and employees of the enterprises are unaware of the latest AI technologies and solutions, also there is a lack of trainings and specialized educational resources for the employees. While bigger companies can count on their own research centers, training centers and departments with the best experts, or they can turn to external service providers, SMEs are left with nothing. In this way, as Gashi and Liça (2023) underlined, a great part of the SMEs is facing difficulties to successfully implement AI and ML solutions, and they depend on the bigger companies that have appropriate resources and can implement these technologies and offer them to other companies.

On the other hand, the high costs of AI and ML technologies for SMEs and the lack of skills among employees to implement and run them, are further challenges for these businesses. Moreover, the small amount of profit that SMEs generate from their activities, will not be enough to cover the costs for implementing new technologies. This is where bigger companies have an advantage, as they can spread the high initial investment over a larger amount of revenue.

On the other hand, even if the owners of the smallest businesses are aware of the added value that AI can bring to marketing strategies, the SMEs still find it difficult to implement it because they perceive it as something complex, demanding great deal of effort. Because they lack of knowledge, even if they are willing to implement it in their strategies, they may feel apprehensive and therefore averse to the change. They may think that they lack the skills needed in order to implement it effectively and fear that their employees could be replaced by robots. The owner of the business may also fear that AI requires great deal of effort and money for the constant update of new algorithms.

For the SMEs with limited financial resources there are available resources, supported by the government, by programs for business development, and by universities and research centers. These resources are designed to support the small enterprises in order to get closer to the new technologies, to acquire the necessary knowledge, and to get the financial support which they need. However, there are many enterprises which do not know that these resources exist, or they find

very difficult to use them, because there is a lack of outreach and of communication with the bodies which provide these resources for digitalization.

In summary, the various technological limitations faced by the SMEs of Albania's marketing sector stem from problems with the basic technological structure, lack of expertise in the AI/ML field, and from financial/economic constraints of the said enterprises. The differences felt by these enterprises compared to larger firms in relation to access to technologies of AI are so great that for the aforementioned businesses, it will be very difficult to be competitive and to achieve their goals in a marketing environment characterized by increasing digitalization. The support for these enterprises of the organizations that promote the development of the structure of enterprises, in terms of innovation, would be timely and much needed.

A very significant aspect that should be taken into consideration while trying to incorporate AI and ML into the marketing sector of a country, especially one that is not as developed as Albania, is the existing legislation and the current regulatory framework that needs to be modified in order to support new technologies. The legislation that currently governs the use of digital technologies and data protection in Albania is rooted in the European Union directives that Albania aspires to become part of. Doda and Tanku (2025) have pointed out that, on the one hand, these directives serve to protect the information of citizens and to create a favorable environment that would support new technologies and ensure their effective use in the market in order to increase competition and create innovative services and goods that would cater to the needs of information society users. On the other hand to apply and benefit from new technologies such as AI and ML for marketing purposes. These challenges are mainly, implementing such legislation also brings about certain challenges and creates new legal barriers for local companies that are trying associated with the costs for compliance with such legislation. These costs do not only refer to financial resources but also the expertise required in order to apply such legislation in practice effectively. Small enterprises are especially affected by the lack of resources (financial and human) that would enable them to implement new technologies and to adapt to and meet the existing legislation. The fear of non-compliance with such legislation can act as a serious constraint on the innovation and development of new services and marketing techniques that are based on AI and ML and which can bring added value to customers and businesses alike. Overall, existing legislation for digital technologies and data protection creates a series of challenges that need to be addressed, and for this reason, it can be concluded that such legislation is a double-edged sword. On the one hand, it protects the information of citizens and encourages the use of new digital technologies in innovative services and marketing techniques. On the other hand, it imposes certain restrictions and creates new legal barriers that need to be removed in order to promote innovation in the new digital environment and to ensure that businesses have equal opportunities to compete in the market and to create and provide innovative services that meet the needs of consumers in the information society.

On the other hand, the current environment of marketing-related legislation and regulations is lacking in specific guidelines concerning the use of AI in marketing. Furthermore, this existing environment lacks the incentives to encourage the businesses and organizations to invest in new technologies. Often, lack of guidelines to tackle the latest technologies leads to new and unexplored territories of legal complexities and disputes which need to be clarified by new legislation or guidelines. The absence of regulations or legislation and the uncertainties as to how existing laws can be applied, discourage organizations from investing in technologies that may in the long run cause more problems than they solve. Often the risk of uncertainty is avoided by sticking to the proven, established marketing methods and tools.

The implementation of regulations related to digital technology as well as the protection of personal data also has a negative impact. Although the basis for the existing Albanian legislation are EU directives, which are the basis for the legislation of most EU countries, it seems that in the case of Albania these directives have not been implemented as they have been in other EU countries. In the case of the General Data Protection Regulation (GDPR), although this is an regulation and not a directive, its implementation in most EU countries was done with the support from the EU and created a lot of resources and support for its implementation. This is not the case in Albania. This, together with the fact that the enforcement of these regulations is not always consistent and clear, sometimes because the people who are responsible for their implementation do not have sufficient knowledge about the AI and ML technologies, and therefore they are often misinterpreted and not implemented evenly, creates a lot of obstacles for the use of AI and ML in marketing. In order to facilitate the use of these technologies in marketing, a clear and adaptive regulatory framework should be created in order to reduce the fear of legal implications and to facilitate their implementation (Doda & Tanku, 2025).

The public policy toward AI also affects the perception AI and ML has among the employees of the marketing organizations. The awareness and understanding that policymakers have of the process of digital transformation is vital in this sense. If the public policy does not stress enough on digital literacy and technological advancements, it can create a false perception of AI causes more problems than benefits. Hence, it is imperative to develop a regulatory environment which fosters AI and ML adoption by creating awareness about its potential benefits to the people and the marketing community in particular.

Finally, by examining the few cases of positive application of AI and ML in the marketing sector in Albania, while noting the challenges that others in the industry are encountering, we can identify the key factors, and major barriers that need to be addressed in the strategic planning of marketing companies, to enable them to successfully manage the digital transformation of the Albanian economy (Tabaku, 2025).

A good example of an implementation of AI in marketing in Albania, is the telecommunications operator, which through chatbots has optimized the service provided to customers. This tool, has reduced the expenses of the company, and has increased customer satisfaction. It has been very successful due to several factors, first of all the training of employees to use AI tools, in order to ensure a smooth transition, in a company that is used to operate in a traditional way. Another factor was the allocation of big budget for digital transformation, in order to build a strong technology base, that could support the implementation of such tool.

the other hand, SMEs and even larger numbers of marketing organizations in Albania are negatively affected by the economic barriers that hamper their entry into the innovative use of the latest marketing technologies and in the use of AI in their daily activities of marketing. Even if the organizations of marketing are in possession of financialOn resources, they find many obstacles that prevent them from investing in advanced technologies, in view of the implementation of AI in them, while other organizations of marketing have a more negative perception of AI, since they of the innovative strategies of marketing and in the creative and innovative campaigns of marketing, through the appropriate use believe that the utilization of this innovative technology requires significant financial resources and also it needs on a continuous basis for the training and development of all employees of an organization of marketing.

A further case study is an Albanian leading E commerce company. This company uses Machine Learning in order to personalize and recommend products. The company analyses and collects data from customers and then uses it in order to create targeted and innovative campaigns. The approach that has been used by this company in order to implement and successfully embed ML in their marketing processes has been successful due to the collaborative culture that supports innovation and experimentation. Also the company leadership supports the innovative approach by allocating necessary resources for research and development.

This panorama characterizes the marketing companies of Albania, and yet, it contrasts sharply with the practices of a handful of marketing companies that already apply successfully AI and ML in their work. The case studies analyzed above serve as evidence of the new approaches of work and how they are perceived by the various stakeholders, i.e. customers, employees and colleagues, and how organizations and marketers view the new trends and the various digital environments, as well as their willingness to change their mindset and practices in order to adapt to the digital innovations and thus to capitalize on the new opportunities of the marketing in the digital era.

It should be noted that AI solutions have implications for stakeholders, consumers, as well as employees of organizations. These days, there are many people who fear that their data may be misused by companies, that it will be sold to third parties, etc. This kind of fear generates apprehension for the implications of using AI solutions and, consequently, affects consumption as

well as the acceptance of use of these solutions by employees of organizations that implement them.

The successful implementation of new AI and ML solutions within the framework of the country's marketing sector and, more broadly, of the economic system as a whole, shall require a successful synergy of the various key actors, i.e. of government, private sector and of educational institutions and of all other related stakeholders. The above-mentioned endeavors shall have to be directed at removing the, for the most part, interrelated and multiple problems arising in the course of the processes of adoption, of diffusion and of implementation of the innovative, information and communication technologies (Halili, 2017). As it has been pointed out by Tabaku (2015), the inter-related and complex number of factors, barriers and challenges, affecting, for instance, the country's marketing sector, shall all have to be considered and addressed by the involved and cooperating stakeholders, as well as by the management and the staff of individual organizations, in the context of a single, overarching and integrated effort, aimed at the effective and successful implementation of the advanced AI and ML solutions, which, in the meantime, shall have to be deemed as being crucial for and conducive to the country's and the world's economic and business system's transition to the, so-called, "digital economy" (Doda & Tanku, 2025).

Government involvement. A government, that is ready to create a progressive and favorable legal environment for the spread of new technologies, can facilitate their development through incentives to companies that apply AI. In this sense, the government of Albania could establish tax reliefs for companies that are conducting research on AI, as well as grants for startups that apply machine learning in marketing. Such economic stimuli would aim to decrease the costs for entry of small and medium enterprises in the market, as well as to incite large companies to apply new and innovative methods in their activities.

Private sector has a big role to play in establishment of a positive environment towards use of AI and ML in marketing. Companies from marketing field need to adopt new technologies and get accustomed to changes that they bring. Big companies can partner with start-ups that implement new technologies and implement AI solutions with their help. Such collaboration can bring new ideas and make implementation easier. Moreover, big companies can develop the skills of their employees in order to analyze data and process information in large amounts, using data for decision making in marketing.

It is through the partnership of government, business, and education that a workforce can be instilled with skills required to face a workforce of AI and ML technologies. An important first step in fostering a culture and working environment where innovations can flourish is through the education system and the incorporation of data science, AI and ML within existing degree programs. It is essential that students in higher education are equipped with the appropriate knowledge, in order to tackle challenges of the working environment of future. By incorporating

theoretical aspects of AI and ML, as well as practical implementation within projects, students gain valuable insight and working knowledge of utilizing such technologies within real-life scenarios. University partnerships with tech companies for internships and collaborative research projects will not only enable students to gain hands-on experience with AI technologies, but also equip them with skills to adapt to an ever changing business environment and tackle the skills gap issue that currently exists within marketing sector of Albania.

Creating an culture and climate of innovation also requires concerted efforts on part of government, businesses and educational institutions. Workshops, seminars and conferences all can provide good environment to talk about various aspects of AI and ML applications, best practices, successful projects and lessons learned in different contexts. Only by creating awareness and stimulating discussions in marketing and business communities alike, can the challenges to innovative use of new technologies be addressed, and by introducing best practices, businesses can realize soon enough that implementing AI and ML in their organizations will improve customer relationships and decision making in their businesses.

To create an environment where the adoption of AI and ML can be made possible and in the long run create a solid framework for sustainable growth in the digital economy, all stakeholders, i.e. government, private sector and educational institutions, must work together to create a supportive environment for the innovative use of the latest marketing technologies. This environment should be created through policies, economic incentives, human resource development and promotion of culture of innovation.

An area where AI can bring enormous benefits for marketing is process optimization. The ability to collect, analyze and process vast amounts of data about customers in real time will enable marketing to become more precise, more efficient and, above all, lead to increased returns on investment. Dynamic pricing, for example, is a marketing strategy that uses AI systems to optimize the price of a product or service in real time, depending on demand. Such a method could allow for an increase in sales, and thus also an increase in revenues for a company. Therefore, companies that implement AI in their marketing strategies will have an edge over the competition.

The. Such organization will be able to save a considerable part of the budget by automating tasks like customer greatest advantage for a marketing organization that adopts AI solutions lies in the automation of routine and time-consuming tasks segmentation and marketing campaign management, thus allowing the marketing department to focus on other strategic activities and thus increase

There are also considerable hidden expenses. For the most efficient functioning of such technologies, companies need to invest in continuous maintenance of programs, the training of employees, and scaling of the technology in line with the development of the business. Hence, the

greatest challenge that AI poses in terms of cost in the Albanian organizations in Albania, considerable hidden expenses of AI could pose a financial challenge, particularly for the small and marketing sector lies in how the initial investment in AI can be translated into returns. For the majority of medium-sized enterprises that face even greater challenges in terms of accessing the latest technological hardware and software in the face of the prevailing economic environment (Haliti Baruti, Hoti, Bajrami, 2025).

At the same time, there are also serious economic implications for those businesses that fail to tap into the power of AI. The fear of being left behind in the face of a competitive market is a major deterrent to many organizations, and the early adopters of AI will reap the rewards while those who fail to implement this technology will fall by the wayside.

Additionally, when evaluating the ROI of AI adoption in the Albanian market, one has to consider the broader economy and its development. The growth in productivity of companies that use AI could also be felt in the broader economy and thus could boost the level of consumption, which in turn would affect the marketing sector positively. However, The adoption of artificial intelligence (AI) and machine learning (ML) in marketing practices creates new challenges for companies that are struggling to stay competitive in a globalized and interconnected environment. While many organizations recognize the potential benefits of using AI in marketing, they often face several structural and cultural barriers. These challenges are particularly pronounced in Albania, where the business environment is still evolving and many companies lack the necessary technological, financial, and human resources to implement advanced AI systems effectively. Furthermore, there are significant cultural and educational obstacles that must be addressed in order to create a workforce that is equipped to develop and implement AI-based marketing solutions. As a result, many organizations in Albania experience significant difficulties when attempting to integrate AI technologies into their marketing strategies, even though they recognize the potential advantages of doing so.

New and exciting technologies are emerging for the integration of AI in Albania's marketing industry some challenges that can be diminished or even removed by recent technological developments and trends that have started to emerge or are expected to surface in the Albanian market in the near future. This could lead to a unique marketing landscape that can boost productivity and competitiveness of Albanian businesses, and therefore a positive impact on the overall economy.

computing is currently one of the fastest growing technologies. Its influence on AI has been huge and in recentCloud has made it possible for organizations of all sizes to process large amounts of information and to conduct advanced data years it has enabled use of many AI-based tools. The use of cloud-based platforms for managing data array of opportunities for AI adoption. In the context of Albanian's marketing sector, it has huge analysis, which are the core functions of AI.

Therefore, cloud-based solutions have opened up a wide potential, mainly because most of the organizations are still in the initial phase of adopting technology due to financial on the adoption of innovative marketing solutions that are based on AI. In the long run, the growing constraints related to setting up of necessary IT infrastructure. Hence, cloud computing is expected to have positive impact trend of cloud computing in Albania is expected to have a positive impact for organizations of all sizes, to easily implement and manage new marketing solutions that are based on AI and large scale data analysis, to increase customer experience and to stay competitive in the market.

The growth of open-source AI frameworks and libraries (e.g., TensorFlow, PyTorch, OpenAI's GPT models, etc.) can help the local development community and the marketing community to work together and create innovative marketing solutions for the local market. This phenomenon is supported by the efforts of universities to train the local technical workforce in data science and machine learning as well as by the efforts of local and international companies to collaborate with universities and help their employees acquire required skills to apply AI in their work.

Moreover, developments in user-friendly AI solutions, which are aimed at non-technical users and could thus be very successful in the marketing sector of marketing in Albania, are emerging more and more frequently. AI companies are actually working on designs of their products that are easier to use. There are numerous automated solutions of various insights, chatbots and even campaigns that are automatically optimized. These solutions enable individuals with little or no experience in IT and marketing to create and run a wide array of marketing activities by depending on the respective system for the majority of the extremely complex work that is typically required for their execution, enabling them to concentrate on creative ideas and strategic concepts that can add value to their organizations and develop marketing initiatives and implement them successfully.

On up with strategic decision based on sophisticated data analysis such as smart data solution that makes use of AI to the other hand, as technology has progressed, various marketing solutions have made use of advanced data to come analyze customer's information. Given the increased importance that decisions based on data have gained for businesses, marketing solution that incorporate the utilization of such data will likely experience an increase in adoption, bringing about changes to marketing processes in an array of markets and creating of very competitive marketing ecosystem where businesses of all sizes are able to effectively compete and market their products and services internationally.

The use of AI in mobile technologies will also bring numerous benefits for marketing functions. As the number of users of smartphones and other mobile devices increases, new strategies will be developed, which will enable the effective and efficient marketing to consumers via mobile applications and services. Personalized recommendations; location-based marketing and also an

improved customer experience will be some of the tools available for marketers to influence their customers.

In summary, while there are significant challenges to the adoption of AI and ML in Albania's marketing industry, recent technological advancements in this field are paving the way for an array of innovative solutions that are very promising. As more and more businesses become familiar with the latest developments in marketing technology, the industry in Albania will undergo significant changes to become more competitive and efficient.

Market readiness within the marketing industry in Albania refers to businesses, infrastructure and environments that are ready to implement complex AI/Machine Learning projects. The current technology infrastructure within many organizations are barriers to the use of AI in Marketing. In some cases, businesses lack digital infrastructure such as internet connectivity, outdated technology systems to in order to provide more personalization to customers, is a major obstacle to the implementation of Marketing with name a few. Lack of digital infrastructure to support the collection, analysis and usage of data by Marketing AI/Machine Learning. Also, there is a lack of employees within organizations that possess the necessary skills and competencies to analyze data and implement AI driven solutions. Businesses fear not being able to maximize potential

The behavior of consumers in Albania regarding the marketing campaigns that utilize AI technologies is one of the determining factors. The consumers show different attitudes regarding the applications of AI. The factor that mostly influences the behavior of consumers is the factor of trust, i.e. the trustworthiness of AI, followed by the factor in order to provide them added value or benefit. According to the findings provided by the research study " of transparency. The consumers also are evaluated on the basis of how they think that AI could be utilizedKaso & Xhindi (2023)," the consumers are mostly positive if they are provided, the primary factor that could influence positively the behavior of the consumers regarding the AI in the marketing, with sufficient information regarding the utilization of AI, and the benefits provided by this technology to them. Therefore is the benefit that it can provide. Therefore, if the consumers are provided with appropriate information regarding the towards these technologies. On the other hand, the fear of the consumers regarding the marketing campaigns that utilize benefits that could be provided by the applications of AI in the marketing campaigns, they will show positive attitudes AI, stems from the fact that such marketing campaigns may pose a threat to the data privacy of individuals. Therefore, the consumers are fearful of the fact that their personal information may be misused by companies that implement the AI technologies in order to influence their decisions regarding the purchase of products. The fear of the consumers regarding the misuse of their data, is likely to lead to a negative attitude towards the technologies of AI in the marketing.

Socio-cultural determinants could also influence the perception of AI in marketing by Albanian consumers. Various studies have suggested that the perception of AI is highly influenced by the

general attitude towards technology. In Albanian culture, in particular, younger consumers tend to be more open to innovative technologies and, therefore, are more likely to be positive towards the use of AI in marketing. Therefore, companies operating in the Albanian market must develop a range of different marketing strategies that are specifically designed to meet the needs of different age groups.

These market factors are further influenced by broader economic circumstances. In a developing country, where the majority of the population is on a low to average income, the willingness and ability of consumers to spend on premium services provided by AI is likely to be restricted. As a result, companies in such markets are likely to encounter significant barriers to using new technology and accordingly, they are likely to opt for more cost effective marketing tools and methods. Thus, businesses will have to take into consideration not only the degree of market readiness but also the economic circumstances in order to be able to develop appropriate marketing strategies and monitor their implementation in relation to the purchasing power and the behavioral patterns of consumers.

AI-driven marketing is greatly influenced by the market, by technological barriers and by consumer behavior. In order to utilize AI and ML tools effectively in marketing, one must be well aware of the challenges and barriers that market, technologies and consumers present to the adoption of such tools. Such a deep understanding of the interplay between all of these will enable businesses to tap into the benefits that these tools can bring to marketing.

In terms of technology, there is a lack of digital infrastructure and a lack of skills and experience amongst marketing professionals to implement AI solutions. As already stated, there have been many positive developments within the country's digital landscape, however, many businesses and organizations are still lacking in terms of high speed internet connectivity and computing power. In addition to this, a lack of skills in data science and ML/AI within the local workforce is a major problem, for many organizations this means that there is a lack of people who are able to design and implement AI driven marketing strategies. The lack of investment in research and development is also a major problem, as businesses are focused on dealing with the current operational problems, there is a lack of investment in long-term technological developments.

Economic challenges for the adoption of AI in the Albanian marketing environment are numerous. Even though the interest for AI and ML is on the rise, many Albanian companies are limited by the funds allocated for the development and the implementation of innovative projects. As already mentioned, the budget for most of the companies in Albania is limited, and the return on investment is perceived to be high. As a result, many companies refrain from investing in new technologies and opt for more traditional approaches. In addition, there is a lack of venture capital and of support from institutions that finance projects that are considered to be innovative and that can bring added value to the business environment in the region.

On the most part, business cultures in Albania are generally rather sceptical in terms of change and of risk the other hand, a number of cultural challenges exist, and present many marketing organizations with problems. For, in general. Often, there is a fear of failure which discourages organizations from attempting to implement marketing, using new and different methods. In addition, marketing, which has traditionally been based upon personal relationships is often viewed as being less important than it would be using different and more automated methods of decision-making. As a result, there is a considerable emphasis placed on more traditional methods of marketing, and an acceptance of the different results that are achieved. The fact that information, which is gathered, and that is used for marketing purposes, is processed, using IT systems is also viewed with suspicion.

The challenges and limitations for the implementation of AI and ML in marketing sector in Albania are numerous. They can be categorized in three main areas: technological, economic and cultural. All of these have their own implications and consequences for the marketing. The main challenge is to create an environment that would facilitate the implementation of these technologies. This can only be achieved through creating an appropriate infrastructure, developing human resources, and creating a culture that would be ready to accept changes.

Looking at the technological aspect of technology, a lack of necessary infrastructure for the application of AI and ML constitutes a big barrier to the use of these technologies. Many companies in Albania do not have access to the internet, or have access to it at very slow speeds, and lack of modern computers and software which are necessary for the implementation of complex algorithms for AI and ML. The lack of skilled professionals in the field of data science and AI and ML constitutes another big barrier, since companies are unable to find employees who can design, implement and manage projects that use these technologies. This constitutes a big barrier to the use of these technologies and a big deterrent to investments in them, since there is a perceived risk that the company will not be able to find people who are able to manage the technology.

Financial factors in Albania pose a great challenge in enabling AI and ML adoption in marketing. Firstly, many businesses are not able to invest due to restricted funds within their budgets. Also, many people believe that AI tools bring high return on investment and also have long ROI timeframes which can deter companies from investing in these types of tools. Also, current financial climate in Albania creates uncertainty and this is reflected in the practices of businesses and how they operate on a day to day basis. Many businesses focus on short-term gains, and adopting new technologies for long-term development is not something that is currently high on the agenda for many marketing organizations in Albania.

Cultural and Social Dimension. First of all, there is a lack of awareness and understanding of AI and ML among the people, particularly in the marketing sector. Most of them view AI and ML as complex technologies that can easily be used by experts in the field, thus a wide array of negative perceptions toward the use of such tools. This is mainly due to a general lack of information on digital marketing tools and slow adaptation to the emerging technologies. Thus, there is a big challenge for the businesses to implement these new and powerful tools for their marketing strategies, because of lack of awareness among the stakeholders and lack of information on how to use them.

The numerous barriers to the implementation of the AI and the ML in marketing to face in Albania, require an integrated and multi-stakeholders approach. It requires joint work among the public and private sector, between the universities, technology companies and marketing agencies. Together they must establish workshops, training programs and projects in order to fill the gap of lack of skills to effectively use AI and ML in marketing. The implementation of the AI and the ML in marketing to take place in Albania, requires the creation of an ecosystem, in which to flow knowledge and resources, for to support businesses to make informed decisions, regarding the adoption and the effective use of AI in marketing, and for to facilitate the process of learning from failures, and for to develop practices, and for to make innovations in marketing.

To improve adoption of AI and ML of marketing in Albania it is important to develop adequate infrastructure, and promote access to high quality internet services. Businesses should have adequate and modern computing equipment in order to be able to successfully implement complex AI and ML algorithms. The government should support this development through policies and financial incentives such as grants for training in use of AI and ML for SMEs, or even for larger businesses that cannot afford the costs of such training.

Finally, stakeholders in and around the Albanian marketing community need to make more aware to other stakeholders of the benefits marketing with AI & ML can bring and provide case studies where these new tools and techniques have been successfully implemented in the market. In such a way, the technological innovations introduced by themselves will not be enough, rather than than, also changes in behavior and in practice have to take place.

In conclusion, addressing challenges encountered in marketing sector of Albania with regard to adoption of AI and ML systems is crucial for the economic development and for the full exploitation of these innovative technologies. For achieving these objectives, it is necessary a harmonious integration of technological development with investments and with cultural opening.

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EMOTIONAL INTELLIGENCE: A THEORETICAL AND PRACTICAL ANALYSIS OF ASSESSMENT INSTRUMENTS

Lejda Abazi

Department of Behavioral and Health Sciences
Barleti University, Tirana, Albania

Corresponding author: l.abazi@umb.edu.al
(Optional: ORCID: 0000-0000-0000-0000)

Abstract

Emotional intelligence represents one of the most important concepts in contemporary psychology, directly influencing psychological well-being, interpersonal relationships, as well as individuals' academic and professional performance. This paper aims to provide a theoretical and practical analysis of the main instruments used for the assessment of emotional intelligence, highlighting their importance, reliability, and applicability in different social and educational contexts.The theoretical section addresses the fundamental concepts of emotional intelligence according to leading authors such as Daniel Goleman, Peter Salovey, and John D. Mayer, as well as its main dimensions: emotional awareness, emotion management, empathy, and social skills. From a practical perspective, the paper focuses on the analysis of psychometric instruments used to measure emotional intelligence, including self-report questionnaires such as TEIQue-SF, which assess emotional intelligence as a personality trait.Through an analytical and comparative approach, the study aims to identify the advantages and limitations of different assessment instruments, as well as the importance of their use in psychology, education, and psycho-social services. The findings of this paper are expected to contribute to a deeper understanding of the role of emotional intelligence and the need for standardized methods in its assessment.

Keywords: emotional intelligence, psychometric assessment, TEIQue-SF, psychological tests, emotions, assessment instruments.

1. Introduction

In recent decades, the concept of emotional intelligence has emerged as one of the most discussed and debated constructs in psychology, education, and organizational behavior. Originally conceptualized as an extension of classical notions of intelligence, EI challenges the long-standing assumption that cognitive ability alone determines human success and adaptation. Instead, it foregrounds the capacity to perceive, understand, manage, and utilize emotions — both

one's own and those of others — as equally critical determinants of psychological functioning and interpersonal effectiveness.

Despite its wide adoption across multiple disciplines, the construct of emotional intelligence has not been without controversy. Scholars have debated its theoretical definition, its overlap with established personality traits, and, crucially, the validity and reliability of the instruments designed to measure it. These debates are not merely academic: the manner in which EI is operationalized directly determines what is measured, how results are interpreted, and how findings are applied in clinical, educational, and organizational settings.

The proliferation of assessment tools — ranging from self-report questionnaires to ability-based performance measures — has further complicated the field. Each instrument reflects a specific theoretical model of emotional intelligence, and each carries distinct methodological advantages and limitations. Understanding these differences is essential for researchers, practitioners, and policymakers who rely on EI assessments to inform decisions about selection, training, and psychological intervention.

2. Literature Review

The study of emotion and intelligence as separate domains extends back to the early twentieth century. Thorndike (1920) introduced the concept of "social intelligence" — the ability to understand and manage people — while Gardner (1983) later proposed his theory of multiple intelligences, which included interpersonal and intrapersonal intelligences. These early formulations established the intellectual groundwork for the emergence of emotional intelligence as a distinct construct.

The formal introduction of the term "emotional intelligence" is attributed to Salovey and Mayer (1990), who defined it as the ability to monitor one's own and others' feelings and emotions, discriminate among them, and use this information to guide thinking and action.

Their model was subsequently refined in 1997 into a four-branch hierarchical structure that remains one of the most theoretically rigorous conceptions of EI to date.

2.1 The Salovey-Mayer Ability Model

Salovey and Mayer's (1990; 1997) ability model conceptualizes emotional intelligence as a genuine cognitive ability — a form of intelligence that involves processing emotional information. Their revised four-branch model organizes EI capacities in ascending order of complexity:

- Branch 1 — Perceiving Emotions: The ability to accurately perceive emotions in oneself and others, including in facial expressions, body language, voice, and artistic representations.
- Branch 2 — Using Emotions to Facilitate Thought: The capacity to generate, use, and feel emotion to communicate feelings and to employ emotions in cognitive processes such as problem-solving and creativity.
- Branch 3 — Understanding Emotions: The ability to understand emotional information — how emotions combine, progress, and transition — and to recognize the complex relationships between emotional states and behavioral outcomes.
- Branch 4 — Managing Emotions: The capacity to regulate emotions in oneself and others, including the ability to moderate negative emotions and amplify positive ones in the pursuit of goals.

This model is notable for its theoretical rigor and its insistence that EI constitutes a true intelligence, measurable through maximal performance tasks rather than self-report. The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), the principal instrument developed from this model, reflects this approach.

2.2 Goleman's Mixed Model

Daniel Goleman's popular conception of emotional intelligence, introduced in his 1995 book Emotional Intelligence: Why It Can Matter More Than IQ, extended the Salovey-Mayer framework to encompass a broader range of personality traits and social competencies. Goleman proposed that EI comprises five core domains: self-awareness, self-regulation, motivation,

empathy, and social skills. While Goleman's model has been enormously influential — particularly in organizational psychology, leadership development, and education — it has been criticized by researchers for conflating emotional intelligence with established personality constructs, thereby threatening its discriminant validity.

Goleman later revised his model in the organizational context (2002), proposing four clusters — self-awareness, self-management, social awareness, and relationship management — with 18 associated competencies. This revised framework has been operationalized through the Emotional Competence Inventory (ECI) and its successor, the Emotional and Social Competency Inventory (ESCI).

2.3 The Trait EI Model (Petrides & Furnham)

A distinct conceptual contribution was offered by Petrides and Furnham (2001), who proposed the trait emotional intelligence model — also referred to as emotional self-efficacy. According to this framework, trait EI refers to a constellation of emotion-related self-perceptions and dispositions located at the lower levels of personality hierarchies. Unlike the ability model, which treats EI as a cognitive capacity assessed through performance tasks, trait EI is measured through self-report and reflects individuals' perceptions of their own emotional abilities.

Petrides and Furnham argue that this distinction is not merely methodological but fundamental: ability EI and trait EI are conceptually distinct constructs that should be measured by different types of instruments. The Trait Emotional Intelligence Questionnaire (TEIQue), developed by Petrides (2009), is the primary instrument derived from this model and encompasses 15 facets organized into four factors: Emotionality, Self-Control, Sociability, and Well-Being.

2.4 Key Dimensions Across Models

Despite differences in conceptualization, the major models of emotional intelligence share a set of core dimensions that appear consistently across theoretical frameworks. These include:

- **Emotional Self-Awareness:** The capacity to recognize and understand one's own emotional states, including their origins, intensity, and behavioral consequences.
- **Emotion Regulation:** The ability to manage and modulate one's emotional responses, particularly in situations of stress, conflict, or interpersonal tension.

- **Empathy:** The capacity to perceive, understand, and respond appropriately to the emotional states of others.
- **Social Competence:** The ability to navigate social relationships effectively, including skills related to communication, conflict resolution, cooperation, and leadership.

These dimensions constitute the conceptual core of emotional intelligence as it is understood across its major theoretical traditions and as it is operationalized in the principal assessment instruments.

3. Psychometric Instruments for Measuring Emotional Intelligence

3.1.1 Ability-Based Measures

Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT)

The MSCEIT (Mayer, Salovey, & Caruso, 2002) is the most widely used ability-based measure of emotional intelligence and represents the most direct operationalization of the four-branch model. It consists of 141 items organized into eight tasks, two for each of the four branches of the ability model. Unlike self-report instruments, the MSCEIT requires respondents to perform actual emotional reasoning tasks — such as identifying emotions in faces or understanding how emotions transition — and responses are scored against expert consensus or general population norms.

The MSCEIT has demonstrated adequate internal consistency (overall alpha typically >.85) and has been validated across numerous cultural contexts. Its principal strength lies in its resistance to response distortion: because there are objectively better or worse answers to many items, the instrument is less susceptible to socially desirable responding than self-report tools. However, the MSCEIT has also attracted criticism, particularly regarding the ecological validity of its scoring method and the question of whether consensus-based scoring truly captures emotional competence or merely social conformity.

3.2 Self-Report Measures

3.2.1 Emotional Quotient Inventory (EQ-i)

Developed by Reuven Bar-On (1997), the EQ-i is one of the earliest self-report measures of emotional intelligence and is grounded in a mixed model that conceptualizes EI as an array of emotional and social competencies influencing overall well-being and effective functioning. The full version of the instrument consists of 133 items across 15 subscales organized under five composite factors: Intrapersonal, Interpersonal, Stress Management, Adaptability, and General Mood.

The EQ-i has been translated into over 30 languages and has accumulated substantial evidence for its reliability and construct validity. A refined version, the EQ-i 2.0, was published in 2011 with updated norms and an improved psychometric structure. However, critics have noted that the instrument's breadth of content — which includes items closely related to established Big Five personality traits — raises questions about its incremental validity beyond standard personality measures.

3.2.2 Schutte Self-Report Emotional Intelligence Test (SSEIT)

The SSEIT (Schutte et al., 1998) is a brief, 33-item self-report measure based on the original Salovey and Mayer (1990) model. Items are rated on a five-point Likert scale and yield a single composite score, though subsequent analyses have suggested a four-factor structure (appraisal of own emotions, appraisal of others' emotions, regulation of emotions, and utilization of emotions). The SSEIT is widely used in research owing to its brevity and ease of administration, and has demonstrated good internal consistency (alphas typically in the .85–.90 range).

Its main limitation is the absence of normative data for diverse populations and its reliance on a single composite score, which may obscure meaningful variation across EI dimensions. Nonetheless, its accessibility and established psychometric record have made it a common choice in applied research settings.

3.2.3 Wong and Law Emotional Intelligence Scale (WLEIS)

The WLEIS (Wong & Law, 2002) is a 16-item self-report scale specifically designed for organizational research contexts. It assesses four dimensions of EI: self-emotion appraisal, others'

emotion appraisal, use of emotion, and regulation of emotion. Each dimension is measured by four items rated on a seven-point Likert scale. The instrument has demonstrated strong psychometric properties in organizational and cross-cultural studies, particularly in East Asian contexts, and its brevity makes it suitable for field research.

3.3 The Trait Emotional Intelligence Questionnaire (TEIQue and TEIQue-SF)

The Trait Emotional Intelligence Questionnaire (TEIQue; Petrides, 2009) is the primary instrument operationalizing Petrides and Furnham's trait EI model. The full-form TEIQue consists of 153 items assessing 15 facets: adaptability, assertiveness, emotion expression, emotion management (others), emotion perception (self and others), emotion regulation, impulsiveness (low), relationships, self-esteem, self-motivation, social awareness, stress management, trait empathy, trait happiness, and trait optimism. These facets are organized into four broad factors — Emotionality, Self-Control, Sociability, and Well-Being — plus a global trait EI score.

The TEIQue Short Form (TEIQue-SF) is a 30-item version of the full-form instrument, designed to retain psychometric adequacy while substantially reducing administration burden. Each of the 30 items is rated on a seven-point Likert scale (1 = Completely disagree to 7 = Completely agree), and the scale yields a global trait EI score without individual facet scores. The TEIQue-SF has demonstrated good reliability (Cronbach's alpha typically in the .85–.89 range across studies) and has been validated across multiple languages and cultures, including Romanian, Spanish, French, and Chinese versions.

A key advantage of the TEIQue-SF is its theoretical clarity: by positioning EI explicitly within the domain of personality rather than cognitive ability, it avoids the conceptual blurring characteristic of mixed-model instruments. It also correlates predictably with established personality measures (particularly the Big Five dimensions of Neuroticism, Extraversion, and Conscientiousness), which supports its construct validity. Its primary limitation is the inability to generate facet-level profiles from the short form, which restricts its diagnostic utility in clinical or coaching contexts.

4. Methodology

The present paper pursues four primary objectives:

- To provide a comprehensive review of the theoretical models of emotional intelligence proposed by key authors, including Salovey and Mayer (1990), Goleman (1995), and Petrides and Furnham (2001);
- To analyze the principal psychometric instruments used for measuring emotional intelligence, with emphasis on their theoretical grounding, structural components, reliability, and validity;
- To compare and critically evaluate the relative advantages and limitations of different assessment approaches (self-report vs. ability-based measures; trait vs. mixed models);
- To discuss the practical implications of EI assessment across psychological, educational, and psychosocial service contexts.

The contribution of this paper is both theoretical and applied. Theoretically, it synthesizes and organizes the diverse conceptual landscape of emotional intelligence, distinguishing between competing models and clarifying their respective theoretical assumptions. Applied, it offers an evidence-based evaluation of assessment instruments that can guide practitioners in selecting appropriate tools for specific contexts. By bridging theoretical frameworks with practical measurement concerns, this paper contributes to a more rigorous and informed use of emotional intelligence constructs in both research and practice.

A particular contribution of this study lies in its focus on the TEIQue-SF — an instrument that operationalizes emotional intelligence as a personality trait rather than a cognitive ability. The analysis of this instrument illuminates the broader debate between trait-based and ability-based conceptions of EI, and situates that debate within contemporary discussions about psychometric rigor, cross-cultural applicability, and ethical use of psychological assessment tools.

5. Results

5.1 Clinical Psychology and Mental Health

In clinical settings, EI assessment serves multiple functions. Trait EI measures such as the TEIQue-SF are used to identify individuals who may be at elevated risk for emotional dysregulation, anxiety, depression, and other psychological difficulties. Research has demonstrated robust negative associations between trait EI and emotional distress, suggesting that low trait EI may function as a trans-diagnostic risk factor for psychopathology. Correspondingly, EI assessment can inform treatment planning by identifying specific areas of emotional functioning — such as emotion regulation or empathy — that may benefit from targeted therapeutic intervention.

EI-based interventions, including emotional skills training and mindfulness-informed

approaches, have shown promising results in reducing psychological distress and improving emotional functioning in clinical populations. The use of standardized EI instruments to measure outcomes in such interventions enhances the scientific rigor of the research and allows for meaningful comparison across studies.

5.2 Educational Contexts

The application of EI assessment in education has been shaped by the growing recognition that social and emotional learning (SEL) is a critical complement to academic instruction. Research consistently demonstrates that students with higher EI — as measured by both ability and trait instruments — show better academic achievement, greater motivation and engagement, more positive relationships with peers and teachers, and lower rates of behavioral difficulties and school dropout.

EI assessments are used in educational settings to identify students who may benefit from SEL interventions, to evaluate the effectiveness of such programs, and to inform the training and professional development of educators. The TEIQue-SF, owing to its brevity and validated use in adolescent populations, has been widely adopted in school-based research. Universal screening programs using brief EI instruments are increasingly incorporated into school mental health frameworks, allowing early identification of at-risk students and timely support.

5.3 Organizational and Psychosocial Services

In organizational psychology and human resource management, EI assessment has been applied to personnel selection, leadership development, team building, and the design of training programs. Mixed-model instruments such as the EQ-i and ESCI are commonly used in these contexts, given their practical orientation and their ability to generate actionable profiles of emotional and social competencies. Research has linked higher EI to superior leadership effectiveness, greater job satisfaction, improved team cohesion, and lower burnout rates in helping professions.

In psychosocial services — including social work, counseling, and community mental health — EI assessment supports the evaluation of clients' social and emotional resources, informs intervention planning, and guides practitioner self-development. The empathy and social awareness dimensions of EI are of particular relevance in these contexts, where the quality of the helping relationship is a primary determinant of outcomes.

6. Discussion

The assessment of emotional intelligence has given rise to a wide range of psychometric instruments, each reflecting the theoretical model from which it derives. These instruments can be broadly classified into two categories: ability-based performance measures and self-report questionnaires. Within the latter category, a further distinction is drawn between mixed-model inventories (which combine EI with personality traits and competencies) and trait-based measures (which assess self-perceptions of emotional functioning as stable personality characteristics).

6.1 Ability-Based vs. Self-Report Approaches

The most fundamental distinction in EI assessment is between ability-based performance measures and self-report questionnaires. Ability-based instruments such as the MSCEIT rest on the assumption that emotional intelligence is a genuine cognitive capacity, akin to general intelligence, and that it should therefore be measured through maximal performance tasks with objectively correct or more accurate responses. Self-report instruments, in contrast, capture individuals' perceptions of their own emotional functioning and do not presuppose that there are correct answers to emotional questions.

This distinction carries significant methodological implications. Ability-based measures are less susceptible to socially desirable responding and impression management, as respondents cannot easily identify the "correct" answers to emotional perception or understanding tasks. However, they are more resource-intensive to administer and score, and their ecological validity — whether laboratory-based emotional reasoning tasks reflect real-world emotional functioning — remains contested. Self-report measures are more efficient and cost-effective, and when well-constructed, yield scores that predict important real-world outcomes. However, they are vulnerable to self-report biases, including social desirability, illusory superiority, and limited self-insight.

Empirical research has consistently found low-to-moderate correlations between ability-based and self-report measures of EI, suggesting that they capture related but distinct aspects of emotional functioning. This finding has led many researchers to recommend using multiple instruments in combination when a comprehensive assessment is required.

6.2 Mixed Models vs. Trait Models

Within the domain of self-report instruments, a further distinction obtains between mixed-model inventories (such as the EQ-i) and trait-model measures (such as the TEIQue-SF). Mixed-model instruments typically include items tapping a wide range of psychological constructs — emotional competencies, personality traits, motivational dispositions, and social skills — under the umbrella of emotional intelligence. This broad scope enhances their practical relevance but complicates theoretical interpretation and discriminant validity.

Trait-model instruments are more theoretically circumscribed, focusing specifically on self-perceived emotional dispositions as defined within a specific theoretical framework. The TEIQue-SF, as a trait EI measure, has the advantage of clear theoretical grounding and a well-specified relationship to established personality taxonomies. However, its reliance on self-perception means that scores may reflect self-evaluation biases as much as actual emotional competence.

6.3 Reliability and Validity Evidence

Across the instruments reviewed, internal consistency reliability (Cronbach's alpha) is generally adequate to strong, with most instruments reporting values above .80 for total scores. Test-retest reliability is less uniformly reported, though the available evidence suggests acceptable stability over short to moderate intervals (weeks to months) for most instruments. The MSCEIT, as an ability measure, shows somewhat lower alpha values for individual branches, reflecting the greater heterogeneity of items within each branch.

With respect to validity, all major EI instruments have accumulated evidence for their concurrent and predictive validity in relation to key outcomes, including psychological well-being, academic performance, job satisfaction, leadership effectiveness, and interpersonal relationship quality. Construct validity evidence, including confirmatory factor analyses supporting the proposed factor structures, is available for the MSCEIT, TEIQue, EQ-i, and their derivatives.

Discriminant validity — demonstrating that EI measures are not simply redundant with established personality or cognitive ability measures — is more variable across instruments and remains an ongoing concern in the field.

7. Conclusion

This paper has provided a comprehensive theoretical and applied analysis of emotional intelligence and its principal assessment instruments. The review of major theoretical models — Salovey and Mayer's ability model, Goleman's mixed model, and Petrides and Furnham's trait model — reveals a field characterized by conceptual diversity and ongoing debate about the nature and boundaries of the construct. Each model makes distinct theoretical assumptions, operationalizes EI in different ways, and leads to different measurement approaches with different strengths and limitations.

The comparative analysis of psychometric instruments underscores the importance of aligning assessment choices with theoretical frameworks, research questions, and practical contexts. Ability-based measures offer theoretical purity and resistance to self-report bias but demand greater resources and raise ecological validity questions. Self-report instruments — particularly trait-based measures such as the TEIQue-SF — offer efficiency, theoretical clarity, and robust psychometric records, but are subject to the limitations inherent in self-perception. Mixed-model inventories occupy a pragmatic middle ground, capturing a broader range of psychologically relevant competencies at the cost of some theoretical precision.

The practical applications reviewed across clinical, educational, and organizational contexts demonstrate the broad relevance of EI assessment and its potential to inform evidence-based intervention. However, responsible use of these instruments requires attention to psychometric quality, cultural validity, and the ethical dimensions of psychological assessment — including informed consent, data confidentiality, and the avoidance of discriminatory applications.

7.1 Limitations and Future Research

This paper has several limitations. As a theoretical and analytical review, it does not present primary empirical data, and its conclusions are therefore contingent on the quality and representativeness of the reviewed literature. The field of EI assessment is evolving rapidly, and instruments and validation evidence not included in this review may alter some conclusions.

Several important directions for future research emerge from this analysis. First, there is

a need for longitudinal studies examining the stability of EI scores across developmental periods and life transitions. Second, the cross-cultural validity of EI instruments — including the TEIQue-SF — requires continued investigation, particularly in non-Western contexts. Third, the integration of neurobiological and behavioral assessment methods with psychometric instruments holds promise for a more comprehensive understanding of emotional functioning. Fourth, research examining the incremental validity of EI measures — above and beyond established personality and cognitive ability measures — in predicting real-world outcomes remains essential for justifying the continued use of distinct EI assessments.

Finally, the development and evaluation of EI-based interventions across diverse populations represents a critical applied frontier. As the science of emotional intelligence matures, the field would benefit from greater standardization of assessment practices, more rigorous criteria for instrument validation, and a stronger commitment to open science principles, including data sharing and pre-registration of empirical studies.

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NEW FORMS OF INTEGRATION IN ITALY: THE WORK OF QBD (QENDRA E BOTIMEVE PËR DIASPORËN / DIASPORA PUBLISHING CENTER)

Maria Buonarota[1], Vittoria Bosna[2] and Nicola Tenerelli[3]

[1] University of Foggia, Foggia, Italy
[2] University Aldo Moro University, Bari, Italy
[3] Universiy Aldo Moro University, Bari, Italy

Corresponding author: maria.buonarorta@unifg.it
(ORCID: 0000-0003-2301-0204)

Abstract

In the context of cultural policies addressed to the Albanian diaspora in Italy, the activity of the Qendra e Botimeve për Diasporën (QBD), the Publishing Center for the Diaspora, can be understood as an integration strategy grounded in the promotion of books and libraries as spaces of connection between the country of residence and the homeland.
Through targeted publishing initiatives – including collections of folk tradition such as Albanian Legends, bilingual editions for children, and Albanian–Italian dictionaries – the QBD supports bilingualism among second generations and fosters a form of inclusion that does not imply assimilation, but rather dialogue between cultural belongings, as also noted by Albania literary.
Central to this perspective is the project "Albanian Libraries in the World," which promotes the establishment and strengthening of sections dedicated to Albanian language and literature within public libraries and cultural institutions in host countries. Embedded within the local cultural fabric, these sections become meeting places open to the wider community, capable of encouraging intercultural exchange and mutual recognition.
At the same time, the systematic dissemination of the national book heritage reinforces ties with Albania, shaping a model of transnational integration in which identity and civic participation mutually reinforce one another.

Keywords: ***Albanian diaspora; Cultural policies; Bilingualism; Transnational integration; Intercultural dialogue.***

1. Introduction

In recent decades, Europe has witnessed growing cultural diversification due to migration flows. Integration policies are no longer limited to economic or employment-related aspects but also include cultural and linguistic dimensions. Among the emerging tools of these policies are libraries and publishing initiatives dedicated to diaspora communities, which can foster processes of inclusion and intercultural dialogue. These are strategic social institutions tasked with preserving and promoting cultural diversity, becoming important instruments for building a society based on multicultural values (Alizadeh & Mahammadli, 2025). Albania is a country that has historically experienced diaspora phenomena, with significant examples already in past eras. In recent years, the Albanian state has chosen to intervene in a structured manner, particularly on the linguistic and

cultural front, establishing the Qendra e Botimeve për Diasporën (QBD) within the Ministry of Education—a public institution committed to promoting the Albanian language and culture among diaspora communities. This paper analyses how the QBD serves as a tool for cultural integration through its publishing activities and the project of Albanian libraries worldwide. Considering these as dynamic repositories of cultural materials, containing vast accessible collections that are used and interpreted in unpredictable ways (Snow et al., 2014), the aim of the article is to show how the promotion of books and libraries can concretely contribute to building new forms of integration in contemporary societies, strengthening intercultural dialogue and the bond between one's identity of origin and host contexts.

2. Cultural Policies and Diaspora Integration

Cultural policies targeting diasporas represent an increasingly important tool for promoting social inclusion and civic participation among migrant communities. Studies in the field of Migration Studies (Levitt & Jaworsky, 2007) show that diasporic phenomena are characterized by the ability of transnational communities to maintain cultural, linguistic, and symbolic ties with the country of origin over time, even in the presence of a high level of integration into host societies. The promotion of the mother tongue and national cultural production helps to strengthen the sense of belonging and identity continuity among diaspora generations, fostering integration models that do not imply assimilation but rather intercultural dialogue. Nye (2019) elaborated the concept of Soft Power, according to which the diffusion of culture, values, and symbolic practices constitutes a form of international influence based on attraction rather than coercion.

In recent years, a new perspective has also emerged in state policies towards the diaspora: many governments now view the permanent presence of their communities abroad primarily as a resource for the economic and social development of the country of origin (Agunias & Newland, 2012; Kunz, 2011). This marks a significant shift from previous views, in which emigration was interpreted mainly as a temporary phenomenon or a tool to reduce pressure on the domestic labor market. In the past, indeed, the economic development of origin states was often associated with the return of productive forces to the home country, the promotion of circular migration, or specific programs to recover skilled workers, such as brain gain policies (Agunias & Newland, 2012). A transnational approach to the study of migration shows that migrants' social practices increasingly develop across national borders, even as the political and cultural structures of states remain strong. Transnational migration studies have progressively established themselves as an interdisciplinary field of research, involving scholars from various disciplines engaged in analyzing the relationships, networks, and practices that simultaneously connect origin and destination societies. From this perspective, migrant transnationalism is analyzed across its economic, political, social, cultural, and religious dimensions, in order to understand the ways in which migrants maintain ties and forms of active participation in multiple national contexts (Levitt & Jaworsky, 2007).

In the case of Albania, policies targeting the diaspora can also be interpreted in light of the classification proposed by Ragazzi (2014), which distinguishes different models of relationship between states and emigrant communities. In this analytical framework, Albania can be placed within cluster 1, defined as the expatriate state, which includes states engaged in developing active policies aimed at maintaining a bond with their citizens residing abroad. These countries invest particularly in the promotion of national language, culture, and education through schools, cultural

institutes, and educational programs aimed at second generations. The main objective is to preserve the cultural identity of the diaspora and strengthen the sense of belonging to the country of origin, while at the same time fostering a continuous relationship between the state and emigrant communities, even when these are fully integrated into host societies.

Table 1. Theoretical models of diaspora policy and cultural instruments: the Albanian library project

Theoretical Framework	Key Concept	Cultural Policy Instruments	Application in the Albanian Case
Ragazzi (2014) – Diaspora Policy Clusters	States develop different models of relationship with the diaspora (expatriate state, global nation, etc.)	Cultural and linguistic programs to maintain ties with citizens abroad	The Albanian library project promotes language and culture within diaspora communities through books and dedicated sections in public libraries
Délano & Gamlen (2014) – Diaspora Engagement Policies	States create institutions and programs to mobilize and engage communities abroad	Language schools, cultural institutions, educational programs	The Qendra e Botimeve për Diasporën (QBD) coordinates the production and distribution of educational materials and books for the diaspora
Nye (2019) – Soft Power	Culture and values become tools for influence and international cooperation	Cultural diplomacy, circulation of books, and cultural activities	Book donations and the creation of bilingual reading spaces in Italian libraries strengthen cultural ties between Albania and diaspora communities
Levitt & Jaworsky (2007) – Transnational Approach in Migration Studies	Diasporic communities maintain simultaneous ties with the country of origin and the host society.	Cultural networks, libraries, and shared educational spaces.	The library project in Foggia and Casalvecchio di Puglia creates cultural spaces that connect the local territory and the homeland.

The action of the Qendra e Botimeve për Diasporën (QBD), an Albanian institution dedicated to promoting the Albanian language and culture among communities residing abroad, falls within the strategies of Cultural Diplomacy. The mission of the QBD consists of "njohja dhe përhapja e gjuhës dhe kulturës shqiptare në diasporë përmes botimit të teksteve shkollore" (knowing and spreading the Albanian language and culture in the diaspora through the publication of school textbooks) (Qendra e Botimeve për Diasporën, n.d.-b). The provision establishes that the institution operates as a public body tasked with developing publishing activities, educational programs, and cultural initiatives aimed at Albanian communities abroad (Republic of Albania, 2018). Within the structure, a Coordinating Council for Diaspora Publications is also foreseen, composed of representatives from the Ministry of Education, the Ministry of Foreign Affairs, the Academy of Sciences of Albania, and the National Library, with the task of supervising publishing policies and cultural activities aimed at diaspora communities (Republic of Albania – Qendra e Botimeve për Diasporën, n.d.-a). These projects assume a strategic role that goes beyond simple cultural promotion. Libraries and publishing activities become places of cultural mediation and tools for transnational cooperation, contributing to the construction of shared cultural spaces between Albania and the countries where the diaspora resides, and supporting integration processes based on the valorization of plural identities. It thus contributes to the transnational circulation of ideas, values, and cultural heritage, strengthening the

bond between the diaspora and the country of origin while at the same time promoting the visibility of Albanian culture in the international arena (Republic of Albania – Qendra e Botimeve për Diasporën, n.d.-b).

3. Libraries as Spaces of Intercultural Dialogue

This study adopts a qualitative research design based on document analysis. Data were collected from three main sources: (a) Albanian institutional and legal sources (Vendim i Këshillit të Ministrave no. 469/2018; Law no. 16/2018 and Law no. 93/2025 "Për diasporën"; official mission statements and governance documents from qbd.gov.al); (b) the complete catalogue of QBD publications available at https://qbd.gov.al/category/botime, including bilingual children's books, textbooks for diaspora students, educational materials (Libri i leximeve plotësuese, Mësojmë shqip series), and periodicals ("Letra nga Diaspora", "Flasim shqip"); (c) peer-reviewed scientific literature on diaspora policies, multicultural libraries, transnationalism, and soft power (2014–2025), also including foundational works (Nye, 2019; Oldenburg, 1997) for the theoretical framework.

The document analysis was conducted following the principles of qualitative content analysis (Elliott & Woodward, 2007). The analysis was structured in three phases: (1) coding of documents to identify references to language preservation strategies, tools for bilingual education, library-based integration models, and institutional coordination mechanisms; (2) categorization of codes into thematic clusters (publishing strategy, library project, policy framework); (3) interpretation of the results through the theoretical lenses of transnational migration studies (Levitt & Jaworsky, 2007), diaspora policy models (Ragazzi, 2014; Délano & Gamlen, 2014), and the theory of the library as an interdisciplinary place for learning, meeting, and cultural exchange (Kawamoto & Koizumi, 2023; Oldenburg, 1997). According to recent studies such as Jacquet (2018), the library is defined as a place where culture, leisure, social connection, human exchange, and lifelong learning intertwine, where one can socialize and also participate in the creation and functioning of the library. The symbolic value of libraries is also considered according to the concept of the theory of places and non-places by Marc Augé (2024). Contemporary libraries are no longer just places for preserving books, but open cultural spaces that promote lifelong learning, community participation, and intercultural dialogue (Egamberdiyeva, 2025). Kawamoto (2023) shows how public libraries must address social problems such as the crisis of democracy and social isolation. The Albanian diaspora in Italy was selected as a case study for three main reasons. First, Italy hosts one of the largest Albanian communities abroad. Second, the QBD has initiated active library projects in several cities, including, in Apulia, Foggia, Casalvecchio di Puglia, Bari, and Corato. The institutional model analyzed here was recently established (2018).

Becoming social knowledge infrastructures, in which the sharing of books and cultural resources fosters intercultural dialogue and citizen participation.

Table 2. Cultural policies toward diaspora and integration outcomes

Policy Dimension	Cultural Instruments	Implementation Example	Expected Integration Outcomes
Language preservation policies	Bilingual books, dictionaries, children's texts	Publications of the Publishing Centre for the Diaspora intended for second generations	Strengthening of bilingualism and linguistic continuity

Educational support for diaspora	Language schools, teaching materials, educational programs	Educational activities of Albanian language schools in migrant communities	Transmission of cultural memory and diasporic identity
Cultural dissemination policies	Libraries, cultural events, book presentations	"Albanian Libraries in the World" project in public libraries	Increased visibility of Albanian culture in the local context

Policy Dimension	Cultural Instruments	Implementation Example	Expected Integration Outcomes
Transnational cultural cooperation	Book donations and institutional collaborations	"La Magna Capitana" Library in Foggia and the Library of Casalvecchio di Puglia	Strengthening of ties between diaspora and country of origin
Community integration initiatives	Intercultural reading spaces and youth activities	Creation of bilingual reading corners in libraries	Intercultural dialogue and local integration

4. The Publishing Strategy of QBD

The Qendra e Botimeve për Diasporën (QBD) represents one of the main instruments through which the Albanian state maintains a cultural and linguistic bond with its communities abroad. It is a public body mandated to preserve, promote, and disseminate the Albanian language and culture among citizens residing outside national borders, with particular attention to the second generations. Its role, however, is not limited to a merely conservative function: its publishing activity is fully embedded within cultural diplomacy strategies, contributing to building a symbolic and concrete bridge between the country of origin and the diaspora's countries of residence. The QBD is tasked with defining editorial guidelines and ensuring that publications effectively respond to the educational and cultural needs of Albanian communities abroad (Republic of Albania – Qendra e Botimeve për Diasporën, n.d.-a). It supports the learning of the Albanian language among young people born or raised abroad, fostering knowledge of the national cultural and literary heritage through tools that facilitate intergenerational transmission. The integration between publishing production and library infrastructures in host countries becomes a central element. It is not simply a matter of distributing books, but of creating physical and symbolic spaces, with sections dedicated to "Albanian Libraries in the World," where Albanian culture can meet the local one in a context of mutual recognition.

4.1. QBD Production:

The publications are primarily intended for students from primary and secondary school, until the eighth grade. The aim is to facilitate the learning of the Albanian language and knowledge of the national cultural heritage (Qendra e Botimeve për Diasporën, 2026). The QBD's publishing strategy is articulated across several lines of intervention, each designed to respond to the specific needs of diaspora families and youth.

4.1.1. Children's books

A central role is played by illustrated books for children, conceived to introduce the youngest learners to the language and cultural traditions in an accessible and engaging manner. These are often bilingual editions, presenting the Albanian text alongside a translation in Italian, Greek, or English, allowing children to approach their heritage language without feeling disoriented. Among these are classics of children's literature such as E Bukura dhe Bisha (Beauty and the Beast), Ujku dhe 7 kecat (The Wolf and the Seven Young Kids), Hirushja (Cinderella), Pinoku (Pinocchio), Piter Pani (Peter Pan), Bukuroshja e fjetur (Sleeping Beauty), Rosaku i shëmtuar (The Ugly Duckling), Kësulëkuqja (Little Red Riding Hood), Sirena e vogël (The Little Mermaid), and Libri i xhunglës (The Jungle Book). Many of these volumes are available in multiple language versions, demonstrating attention

to the diverse diaspora communities scattered around the world. Works of folk tradition

Alongside international classics, the QBD dedicates great attention to valorizing the Albanian narrative heritage. A significant example is the collection Tregime të moçme shqiptare (Ancient Albanian Tales), edited by Mitrush Kuteli and published in bilingual Albanian-Greek, Albanian-English, and other languages. These works "serve to expand the knowledge and cultivate the learning of diaspora students regarding the mother tongue, literature, and culture," also functioning as support texts for Albanian schools abroad (Qendra e Botimeve për Diasporën, 2026). The literary journal "Letra nga Diaspora" (Letters from the Diaspora) and the linguistic-cultural magazine "Flasim shqip" (We Speak Albanian) complete the offering, creating a space for dialogue and exchange among teachers, students, and enthusiasts of Albanian culture worldwide.

4.1.2. Texts for teaching the Albanian language.

The QBD has also developed a complete range of didactic texts for teaching the Albanian language, produced in collaboration with university professors and sector specialists. These include the volumes Gjuha shqipe dhe kultura shqiptare (Albanian Language and Albanian Culture) for levels 1 and 2 along with accompanying teacher guides, the series Të mësojmë gjuhën amtare dhe kulturën shqiptare (Let's Learn the Mother Tongue and Albanian Culture) in three volumes, and the course Mësojmë shqip (Let's Learn Albanian) for levels A1 and A2, which also includes thematic workbooks and supplementary materials.

Particularly interesting is the *Libri i leximeve plotësuese – Niveli A1/A2* (Supplementary Readings Book – Level A1/A2), produced by professors Dhurata Shehri and Persida Asllani of the University of Tirana and published online for free by the QBD. The text was conceived "in harmony with the common curriculum program approved by the Ministries of Education of Albania and Kosovo" and takes into account the specificities of diaspora students, promoting the development of their plurilingual and intercultural competences (Qendra e Botimeve për Diasporën, 2026). Although there is no standalone dictionary in the catalogue, the QBD has integrated lexical tools within the teaching materials. Illustrated glossaries accompany the bilingual books, while the Mësojmë shqip series includes lexical supports designed to facilitate gradual language learning.

4.1.3. Games and supplementary didactic materials for discovering the territory.

Completing the offering are ludic-didactic materials, thematic workbooks (Fletore tematike), and game activities associated with the Mësojmë shqip texts. These tools, although not always catalogued as individual works, represent valuable support for making learning more engaging and suitable for younger learners.

4.2 The “Albanian Libraries in the World” Project

One of the most significant elements of the activity of the Qendra e Botimeve për Diasporën (QBD) is the "Albanian Libraries in the World" project, aimed at creating sections dedicated to the Albanian language and literature within public libraries and cultural institutions in countries with a presence of Albanian communities. This project falls within the legal and political framework defined by the Albanian state's regulatory efforts concerning relations with the diaspora: indeed, the QBD was established by Vendim i Këshillit të Ministrave (VKM) nr. 469, datë 26.07.2018 "Për krijimin, organizimin dhe funksionimin e Qendrës së Botimeve për Diasporën" (Decision of the Council of Ministers no. 469 of July 26, 2018, "On the creation, organization, and functioning of the Publishing

Centre for the Diaspora"), which governs its creation, operation, and institutional role in supporting education, culture, and language among Albanian citizens residing abroad (Republic of Albania, 2018).

The QBD's activity also develops within the framework of state policies dedicated to the diaspora, in particular *Ligji nr. 16/2018 "Për diasporën"* (Law no. 16/2018 "On the Diaspora") (Kuvendi i Republikës së Shqipërisë, 2018) and the more recent *Ligji nr. 93/2025 "Për diasporën"* (Law no. 93/2025 "On the Diaspora") (Kuvendi i Republikës së Shqipërisë, 2025), which include among their objectives the production and distribution of educational and cultural materials aimed at strengthening the ties between Albania and Albanian communities abroad, while at the same time promoting linguistic literacy and the transmission of national culture. Through the distribution of books, bilingual materials, and the organization of cultural and educational activities, the libraries involved in the project assume a significant educational and social role, becoming not only points of reference for the diaspora but also meeting places open to the local community. Embedded in the cultural fabric of the host cities, these library sections contribute to promoting reading in Albanian, supporting bilingualism among second generations, and fostering forms of intercultural dialogue. In this perspective, the library surpasses the traditional function of preserving book heritage and defines itself as a space for cultural integration and social exchange, in line with the objectives of national policies aimed at the diaspora.

5. Discussion

The scientific literature highlights that libraries can play a central role in supporting linguistic and cultural diversity within communities. In particular, Little and Murray (2024) emphasize the way in which multilingual libraries constitute both a physical and a symbolic space for the recognition of multilingualism in contemporary societies. Their research, however, highlights some critical issues, including limitations in cataloguing systems and in the ways in which the outcomes of library initiatives are evaluated. Despite this, multilingual resources and activities significantly contribute to strengthening the sense of identity and belonging of the communities involved.

Similarly, the study by King and Pérez Andrade (2025) demonstrates that, although they are still not very widespread, multilingual libraries can counteract monolingual ideologies by promoting the valorization of family, heritage, and community languages. The research documents the creation of a multilingual picture book library developed through a university-school collaboration, accompanied by reading programs such as multilingual storytime. The results show that the availability of linguistically diverse collections increases the visibility of minority languages, strengthens the sense of cultural belonging, and fosters the development of multilingual literacy among primary school students.

From an editorial perspective, multilingual illustrated books represent a particularly effective tool for promoting language learning in multicultural contexts. Kümmerling-Meibauer (2013) notes that these texts can present two or more languages on the same page or on alternating pages, or combine different languages in an interlinguistic mode, requiring readers to engage in code-switching and to simultaneously interpret visual and textual codes. Despite the spread of multilingualism in numerous countries, including Belgium, India, Kenya, Spain, South Africa, and Switzerland, the editorial production of multilingual children's books remains relatively limited, highlighting a gap between language policies and available publishing offerings. The scholar further observes that countries traditionally defined as "melting pots" or "mosaics," such as Canada, the United States, and the United

Kingdom, have been exposed to this situation for many decades. Their populations consist of immigrants from all over the world, whose native languages and cultures contribute to a multifaceted multicultural and multilingual blend. However, most immigrants and their children do not speak the official language of the host country. They necessarily learn English as a second or even third language, a fact that has a verifiable impact on learning institutions, including kindergartens, primary schools, and secondary schools. Stimulated by educational and cultural studies investigating the linguistic and cultural knowledge of immigrant students and considering its influence on school curricula, publishers in the United States began publishing bilingual and multilingual children's books as early as the 1960s (Kümmerling-Meibauer, 2013).

In this international context, the Albanian approach is characterized by a particularly significant institutional choice. Albania has decided to manage its own diaspora directly, both from an editorial and language-teaching perspective. Although fully defined parameters for the selection and training of teachers have not yet been established, with the current system relying largely on volunteers and local associations, the decision to entrust this process to the Ministry of Education rather than to the Ministry of Foreign Affairs reveals a fundamental strategic element. This institutional choice brings to light the great desire to make diaspora citizens still feel that they belong to the Albanian state, even when they are outside national borders. Entrusting the management of language and culture to the ministry responsible for education means recognizing the children of the diaspora as an integral part of the national educational community, emphasizing that belonging to the state does not cease with emigration but is renewed through the transmission of language and culture. In this perspective, Albanian libraries and language schools abroad become instruments of a policy that aims to preserve not only a cultural heritage but also a bond of citizenship that transcends geographical borders.

6. Conclusion

Beginning in the second decade of the 2000s, Albania entered a new phase in its policies toward its diaspora. In terms of methods and strategies, this phase is clearly distinct from previous ones, which were characterized by a substantially welfare-oriented approach or, in the best cases, merely cultural. Today, by contrast, the management of language, education, and cultural memory is entrusted to a dedicated public body, the Qendra e Botimeve për Diasporën (QBD), and coordinated by the Ministry of Education, not the Ministry of Foreign Affairs. This choice reveals a profound shift: the diaspora is no longer considered a distant community to be assisted, but an integral part of the nation, to be kept connected to the state through language and culture.

This study demonstrates that the Albanian model is based on a structured editorial and library strategy. The QBD produces bilingual books, textbooks, dictionaries, and journals, and promotes the "Albanian Libraries in the World" project, which has led to the creation of sections dedicated to Albanian literature in public libraries in Italy and other countries. In this way, second generations can maintain an active relationship with their heritage language without this hindering integration into the host society. Inclusion, from this perspective, does not require abandoning cultural roots but rather their dialogue with other belongings.

However, the system still presents critical elements. The teaching of the Albanian language in the diaspora relies largely on the voluntary efforts of associations and families, and only recently have the first paid teacher contracts been introduced ((Ministry of Education, Sport and Youth of Albania, Mësues për Greqinë – Teachers for Greece, 2024). Bilingual publishing offerings remain

predominantly entrusted to Albanian institutional initiative, with rare exceptions from local publishers operating on Italian national territory.

The QBD model represents a significant experiment for strengthening the identity bond with the diaspora and for cultural transmission. Not only for Albania, but also for Italy and for other European countries that find themselves managing increasingly permanently settled migrant communities. If properly supported and developed, this model can offer a concrete answer to a question that is often overlooked: how to ensure that integration does not mean renunciation, and that second generations can feel they belong to more than one culture without being torn between them.

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PRELIMINARY APPLICATION OF A RETROFIT EFFICIENCY INDICATOR (REI) FOR SEISMIC STRENGTHENING OF A CONFINED MASONRY BUILDING

Marjo Hysenlliu[1], Enio Deneko[1], Ksanti Hysenlliu[2], Etleva Dobjani[3] and Laura Shumka[3]

[1] Department of Mechanics of Structures
Polytechnic University of Tirana, Albania
[2] Department of Economics, Entrepreneurship and Finance Barleti University, Albania
[3] Department of Architecture and Design Marin
Barleti University, Albania

Corresponding author: mhysenlliu@gmail.com

Abstract. The seismic vulnerability of existing buildings is a concern in various regions of the world, especially regarding architecture built prior to the development of current seismic design codes of practice. In Albania, old residential stock comprises a relatively high number of masonry and confined masonry buildings that may not possess sufficient seismic capacity when exposed to strong ground motion. Strengthening interventions are often therefore necessary in order to ensure safety and functionality.

In practice, effectiveness of strengthening is usually assessed on the basis of structural analysis results that can prove complicated to interpret, especially if comparison of several options needs to be made in a short period of time. This research paper proposes a simplified indicator, called **Retrofit Efficiency Index (REI)**, to provide a quick indication of retrofitting efficiency achieved through a simple combination of strength and ductility enhancements.

This concept is demonstrated utilizing a quick static analysis of a confined masonry building before and after a typical retrofit intervention, based on the application of RC jacketing. Dynamic analysis results are used to establish the change in base shear capacity and deformation capacity. The proposed indicator is then calculated in order to provide a simplified interpretation of the structural improvement achieved by the retrofit.

While the REI is presented here in a preliminary shape and only in one case example, the concept seems to hold promise as a useful aid in the comparison of retrofit measures in existing buildings. Further investigation with a larger set of buildings and retrofit options can help to develop and validate the proposed approach.

Keywords: seismic retrofit, masonry buildings, retrofit efficiency indicator.

1 INTRODUCTION

Many regions of the Mediterranean area are characterized by significant seismic hazard and a large stock of existing buildings constructed before the adoption of modern seismic design provisions. In Albania, this situation is particularly evident in residential buildings built during the second half of the twentieth century, where structural systems such as unreinforced ma-sonry, confined masonry and early reinforced concrete frames are commonly encountered.

Past earthquake events have repeatedly demonstrated that these structures may exhibit limited seismic performance, especially when structural detailing and construction quality do not meet current standards. As a result, the seismic assessment and strengthening of existing buildings has become an important topic for both structural engineers and architects involved in rehabil-itation and renovation projects.

The effectiveness of seismic retrofitting interventions is typically evaluated through detailed structural analyses that quantify improvements in strength, stiffness and deformation capacity. While such analyses provide valuable information, the interpretation of results may not always be straightforward when multiple retrofit strategies must be compared. In many practical situ-ations, designers and decision makers benefit from simplified indicators that can provide a quick and intuitive understanding of the structural benefit achieved through strengthening in-terventions.

In this context, the present study explores the concept of a **Retrofit Efficiency Indicator (REI)** intended to provide a simplified measure of the effectiveness of seismic strengthening. The indicator combines two key aspects of structural performance: the increase in lateral strength and the improvement in deformation capacity obtained after retrofitting.

To illustrate the concept, the indicator is applied to the seismic assessment of an existing con-fined masonry building. The structural response of the building is evaluated before and after a retrofit intervention based on reinforced concrete jacketing of selected structural elements. By comparing the results of the analyses, the proposed indicator is calculated and its potential usefulness as a preliminary comparative tool is discussed.

Although the REI is presented here in a preliminary form and applied to a single case study, the concept aims to contribute to the ongoing discussion on practical methods for evaluating seismic retrofit strategies in existing buildings.

2 CASE STUDY BUILDING

To illustrate the proposed concept, a confined masonry residential building is considered as a representative case study. Confined masonry systems are widely used in many Mediterranean and Latin American countries and are also frequently encountered in the Albanian building stock. These structures consist of masonry walls that are laterally confined by reinforced con-crete tie-columns and tie-beams, which improve the overall structural integrity and seismic behaviour of the system.

The selected building is a three-storey residential structure with a regular rectangular plan. The structural system is composed of load-bearing masonry walls arranged along both principal directions, with reinforced concrete confining elements located at wall intersections and open-ings. Floor slabs are assumed to behave as rigid diaphragms, ensuring the distribution of hori-zontal seismic forces to the vertical resisting elements.

The masonry walls are constructed using solid clay bricks with cement mortar joints. Based on available data and typical values reported in the literature, the compressive strength of the ma-sonry is assumed to be consistent with values commonly adopted for similar existing buildings (Tomaževič, 1999). Reinforced concrete elements are assumed to have material properties rep-resentative of construction practices commonly observed in buildings of similar age.

For the purposes of the present study, the building is modelled using a simplified structural representation suitable for nonlinear analysis. The aim of the analysis is not to provide an

exhaustive assessment of the structure but rather to obtain a reasonable estimate of its lateral strength and deformation capacity before and after retrofitting.

Fig. 1. View of Building 1 (left) and building 2 (right) during retrofit.

3 SEISMIC ASSESSMENT

The seismic performance of the building is evaluated through nonlinear static analysis, commonly referred to as pushover analysis. This method has been widely used for the assessment of existing buildings, as it provides a practical way to estimate the global capacity of a structure under increasing lateral loads (Fajfar, 2000).

In the pushover procedure, lateral forces are gradually applied to the structure following a predefined load pattern until a target displacement or structural instability is reached. The resulting relationship between base shear and roof displacement provides the **capacity curve**, which represents the global seismic resistance of the structure.

The analysis of the original building indicates that the structural response is primarily governed by the behaviour of the masonry walls, which provide the majority of the lateral stiffness and strength. As the applied lateral forces increase, nonlinear behaviour develops in the walls, eventually leading to a reduction in stiffness and the formation of damage mechanisms.

Two parameters are of particular interest in the present study:

- **Base shear capacity**, representing the maximum horizontal force that the structure can resist.
- **Deformation capacity**, related to the ability of the structure to sustain lateral displacements without collapse.

These parameters form the basis for evaluating the effectiveness of the retrofit intervention considered in the following section.

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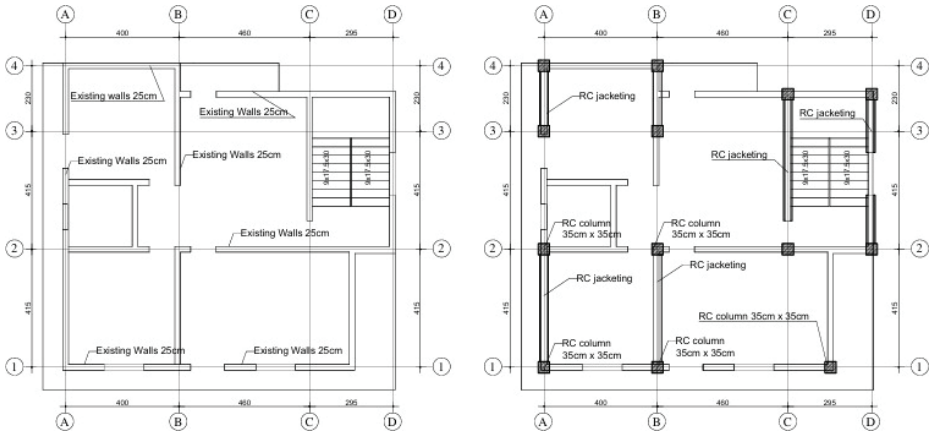

Fig. 2. Plan of URM building 1 before (right) and after (left) retrofit.

4 RETROFIT INTERVENTION

In order to improve the seismic performance of the building, a retrofit strategy based on **reinforced concrete jacketing** is considered. This technique is commonly adopted in strengthening projects because it can significantly increase both the strength and confinement of structural elements.

The retrofit intervention consists of applying reinforced concrete jackets to selected masonry walls and confining elements. The addition of reinforced concrete layers improves the load-carrying capacity of the walls while also enhancing their ductility through improved confinement.

From a structural perspective, the intervention leads to:

- an increase in lateral stiffness
- an increase in base shear resistance
- improved deformation capacity due to enhanced confinement.

After the retrofit intervention is incorporated into the structural model, the nonlinear analysis is repeated in order to evaluate the modified capacity curve of the strengthened structure. The comparison between the original and retrofitted structural responses provides the basis for the introduction of the proposed retrofit efficiency indicator.

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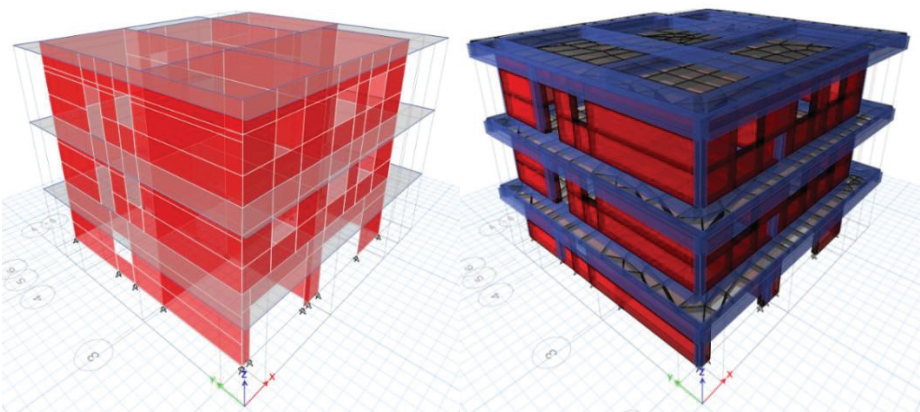

The analysis results indicate an increase in both the base shear capacity and the ductility

5

Fig. 6. 3D models of Building 1 before (left) and after (right) retrofit.

5 RETROFIT EFFICIENCY INDICATOR (REI)

While detailed structural analyses can provide extensive information regarding the performance of retrofitted buildings, the comparison of retrofit effectiveness is not always straight forward. For this reason, the present study introduces a simplified parameter referred to as the **Retrofit Efficiency Indicator (REI)**.

The idea behind the indicator is to combine two fundamental aspects of structural improvement:

- increase in lateral strength
- increase in deformation capacity

The indicator is defined as:

REI = \left(\frac{V_{retrofit}}{V_{original}}\right) \times \left(\frac{\mu_{retrofit}}{\mu_{original}}\right)

where:

VretrofitV_{retrofit}Vretrofit represents the base shear capacity after retrofitting

VoriginalV_{original}Voriginal represents the base shear capacity of the original structure

μretrofitμ_{retrofit}μretrofit represents the ductility factor after retrofitting

μoriginalμ_{original}μoriginal represents the ductility factor of the original structure.

The indicator therefore provides a simplified representation of the combined improvement in strength and ductility resulting from the retrofit intervention. Higher values of the indicator correspond to greater structural improvement.

It should be emphasized that the REI is introduced here as a **preliminary concept** intended to facilitate the interpretation of retrofit effectiveness. Further research involving multiple buildings and strengthening techniques would be required in order to fully validate and refine the indicator.

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6 RESULTS AND DISCUSSION

The nonlinear analyses performed for the original and retrofitted structural models allow a direct comparison of the global response of the building. The resulting capacity curves show a clear increase in both the maximum base shear resistance and the deformation capacity after the retrofit intervention.

For the original structure, the capacity curve indicates that the lateral resistance is primarily governed by the behaviour of the masonry walls. As the lateral load increases, cracking and damage gradually develop in the masonry, leading to a reduction in stiffness and eventually to a peak base shear value corresponding to the maximum structural capacity.

After the introduction of reinforced concrete jacketing, the structural response changes noticeably. The strengthened elements provide additional stiffness and confinement, allowing the structure to sustain higher levels of lateral load before reaching its peak capacity. At the same time, the deformation capacity of the structure increases due to the improved confinement provided by the reinforced concrete layers.

The improvement can be expressed through the ratios used in the Retrofit Efficiency Indica-tor.

DYSLIPIDEMIA AS AN EARLY PREDICTOR IN THE DEVELOPMENT OF NEURODEGENERATIVE DISEASES

Meri Papajani[1], Gerti Caushi[2] , Jera Kruja[3]

[1] Department of Neurology, Neurosciences Unit QSUNT,
Tirana, Albania
[2] Faculty of Medicine
University of Medicine, Tirana, Albania
[3] Faculty of Medical Sciences Barleti
University, Tirana, Albania

Corresponding author: m.papajani@umb.edu.al

Abstract

Neurodegenerative diseases constitute a large and growing group of disorders. Identifying early predictive factors is increasingly important. Disturbances in brain lipid metabolism are a major risk factor for multiple neurodegenerative conditions, and there is growing interest in using lipid measures as biomarkers. Neuronal degeneration begins long before clinical symptoms appear. Detecting predictive factors of early neuronal loss is crucial. Timely identification and management of these predictors may slow disease progression and improve outcomes. Data collection included serum lipid measurements (total cholesterol, LDL, HDL, and triglycerides). Structural brain changes were assessed by MRI and cognitive function was evaluated with neuropsychological tests. Higher midlife LDL cholesterol and triglyceride levels are strongly associated with increased risk of Alzheimer's and Parkinson's diseases. Low HDL levels were identified as a risk factor for neurodegeneration in individuals with a family history of Alzheimer's disease. Individuals with elevated LDL cholesterol showed a higher risk of developing cognitive impairment and neurodegenerative disease. Dyslipidemia is an important early predictor of neurodegenerative diseases. Lifestyle modification and pharmacologic treatment targeting lipid abnormalities may play a role in reducing the risk of neurodegeneration.

Keywords

Dyslipidemia, Neurodegeneration, Alzheimer's disease, Parkinson's disease, Cognitive decline

1. Introduction

Neurodegenerative diseases constitute a large and growing group of disorders. Neurodegenerative diseases (NDs) are a large group of pathologies, including frontotemporal dementia, Alzheimer's disease, Parkinson's disease, and amyotrophic lateral sclerosis, wich are major causes of disability.

They have been increasing in recent decades, so studies of possible predictive factors in their development have a special role for the future. Identifying early predictive factors is increasingly important. Disturbances in brain lipid metabolism are a major risk factor for multiple neurodegenerative conditions, and there is growing interest in using lipid measures as biomarkers.Early identification of modifiable risk factors is critical for prevention. Dyslipidemia is an abnormal blood lipid levels. It has emerged as a potential early biomarker. Types of Abnormal levels of lipids in the blood: Elevated LDL ("bad cholesterol"), Decreased HDL ("good cholesterol"), Elevated triglycerides. Lipids play an important role in the central nervous system (CNS). They contribute to the structural integrity and physical characteristics of cell and organelle membranes, act as bioactive signalling molecules, and are utilised as fuel sources for mitochondrial metabolism. The brain is highly dependent on lipid metabolism. Lipids are crucial for:Neuronal membrane integrity, Synapse formation, Myelin sheath maintenance. Mechanisms connecting dyslipidemia to neurodegeneration are : Atherosclerosis of cerebral vessels which reduced blood flow, Neuroinflammation induced by altered lipid profiles, Amyloid beta metabolism dysregulation in Alzheimer's disease and Oxidative stress damaging neurons.

2. Objectives

Neuronal degeneration begins long before clinical symptoms appear. Detecting predictive factors of early neuronal loss is crucial. Timely identification and management of these predictors may slow disease progression and improve outcomes.

3. Methods

Data collection included serum lipid measurements (total cholesterol, LDL, HDL, and triglycerides). Structural brain changes were assessed by MRI and cognitive function was evaluated with neuropsychological tests.

4. Results

Higher midlife LDL cholesterol and triglyceride levels are strongly associated with increased risk of Alzheimer’s and Parkinson’s diseases. Low HDL levels were identified as a risk factor for neurodegeneration in individuals with a family history of Alzheimer’s disease. In ALS dyslipidemia associated with disease severity and progression. Individuals with elevated LDL cholesterol showed a higher risk of developing cognitive impairment and neurodegenerative disease.

5. Discussion

Food is a source of various circulating nutrients, including triglycerides (TG), which are the postprandial lipid source. TG can enter the brain, where they act directly on the neurons that release

or respond to dopamine. This mechanism is lipoprotein lipase-mediated (LPL). TG hydrolysis and is translated by inhibition of these neurons in the reward system. TG act on neurons in the reward system that exerts control over dopamine-dependant behaviours. Early screening for lipid abnormalities in at-risk populations. Lifestyle interventions: Diet, exercise, statins may have neuroprotective effects. Potential for dyslipidemia to be included in predictive models for NDs. Challenges and Limitations of this study is the heterogeneity of study results. Differences in lipid profiles based on genetic, environmental, and ethnic factors. We need for large, longitudinal studies in the future.

6. **Conclusions**

Higher levels of LDL cholesterol and triglycerides in midlife are strongly associated with a higher risk of Alzheimer's and Parkinson's disease. Low HDL levels were identified as a risk factor for neurodegeneration in individuals with a family history of Alzheimer's. Individuals who exhibited high LDL cholesterol had a higher risk of developing cognitive impairment and neurodegenerative diseases. Dyslipidemia is an important early predictor of neurodegenerative diseases. Lifestyle modification and pharmacologic treatment targeting lipid abnormalities may play a role in reducing the risk of neurodegeneration.

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REFORMS AND CHALLENGES IN THE ALBANIAN EDUCATION SYSTEM TOWARDS ALIGNMENT WITH THE EUROPEAN EDUCATION AREA

Merita Dinaj

Department of Justice
Barleti University, Tirana, Albania

Corresponding author: meritazenelaj86@gmail.com

Abstract

This paper explores the main challenges facing the Albanian education system in the context of its ongoing alignment with the European Education Area (EEA). Despite continuous reforms, the system remains affected by structural limitations, including insufficient public funding, disparities in infrastructure, and persistent inequalities between urban and rural areas. These challenges directly influence both the quality and accessibility of education, as well as the overall effectiveness of policy implementation.The study is based on a qualitative analysis of recent institutional reports and relevant academic literature, aiming to identify the gap between policy objectives and practical outcomes. Particular attention is given to the role of lifelong learning and higher education as key dimensions in addressing systemic weaknesses. Lifelong learning is considered essential for improving workforce adaptability and promoting social inclusion, while higher education institutions are increasingly expected to respond to labor market needs and support innovation.Findings suggest that, although Albania has adopted several European frameworks, implementation remains uneven, especially in areas such as digital education, teacher development, and quality assurance mechanisms. The lack of coordination between institutions and limited access to professional development opportunities further contribute to these gaps.The paper concludes that a more integrated approach is required, combining increased investment, stronger institutional capacity, and a clearer focus on lifelong learning policies. Strengthening the role of higher education and aligning it more closely with European standards can support a more sustainable and inclusive development of the education system.

Keywords

Albanian education system; European Education Area; lifelong learning; higher education; educational inequality; policy implementation

1. Introduction

Education is widely recognized as a key driver of economic development, social cohesion, and institutional stability, particularly in countries undergoing structural and political transformation. In Albania, the education system has experienced continuous reform over the past decades, largely influenced by the country's ambition to align with European standards and integrate into the European Education Area (EEA). However, despite these efforts, the system continues to face persistent challenges that affect both its effectiveness and inclusiveness (World Bank, 2023).One of the most critical issues relates to the gap between policy design and implementation. Although Albania has formally adopted European frameworks concerning curriculum reform, quality assurance, and digital education, their application remains uneven across regions and institutions. Structural limitations, including insufficient public funding, outdated infrastructure, and fragmented governance, continue to hinder progress (European Commission, 2022). Public expenditure on education in Albania remains below the European Union average, which limits investments in teaching resources, school facilities, and professional development opportunities (World Bank, 2023).In addition to structural constraints, disparities between urban and rural areas represent a significant concern. Schools located in urban centers tend to benefit from better infrastructure, more qualified teaching staff, and improved access to digital tools, while rural schools often face shortages of basic resources and specialized teachers. These inequalities have a direct impact on students' academic performance and access to quality education (UNICEF, 2022). Evidence from international assessments such as PISA also indicates notable gaps in learning outcomes between students from different socio-economic and geographic backgrounds (OECD, 2019).

Furthermore, the relevance of education in relation to labor market needs remains a pressing issue. Rapid technological developments and economic changes require a more flexible and adaptive education system. In this context, lifelong learning has become increasingly important as a mechanism for continuous skill development and social inclusion (European Commission, 2020). At the same time, higher education institutions are expected to play a more active role in preparing graduates for the labor market, fostering innovation, and supporting economic growth (OECD, 2021).The main objective of this paper is to analyze the current challenges facing the Albanian education system and to assess its level of alignment with the European Education Area. Particular attention is given to the role of lifelong learning and higher education as key components in addressing systemic weaknesses and supporting long-term

development. By examining both structural and qualitative dimensions, the study aims to provide a comprehensive understanding of existing gaps and opportunities for reform. The contribution of this paper lies in its integrated approach, combining policy analysis with recent empirical evidence from institutional reports and academic studies. Unlike studies that focus on isolated aspects of the education system, this research provides a broader perspective by linking structural challenges with strategic reforms, particularly in the areas of lifelong learning and higher education. The paper is structured as follows. The next section reviews relevant literature and theoretical perspectives. This is followed by the methodology section, which outlines the research design and data sources. The results section presents the main findings, while the discussion interprets these findings in relation to existing research. The final section concludes the paper and provides recommendations for future research.

2. Literature Review

The education system in Albania has been widely analyzed within the broader context of post-transition reforms and European integration. Existing literature highlights both progress and persistent structural challenges, particularly in relation to quality, equity, and institutional capacity. Over the past decades, Albania has expanded access to education; however, improving learning outcomes and system effectiveness remains a central concern (Maghnouj et al., 2020).A key theme in the literature is the issue of educational inequality. Research consistently shows that students' academic performance is strongly influenced by socio-economic background and geographic location. OECD (2020) reports that a significant proportion of students in Albania do not achieve basic proficiency levels in reading, mathematics, and science. These findings indicate systemic weaknesses in teaching quality, assessment practices, and resource distribution. Disparities between urban and rural areas remain particularly pronounced, affecting both access to quality education and long-term educational outcomes.Another important area of research concerns governance and policy implementation. Studies suggest that, although Albania has adopted policy frameworks aligned with European standards, their implementation remains inconsistent. UNESCO (2017) emphasizes that limited institutional capacity, fragmented governance, and weak coordination among stakeholders contribute to gaps between policy objectives and practical outcomes. These challenges are evident in areas such as curriculum reform, teacher evaluation, and quality

assurance systems.The literature also highlights the role of infrastructure and digitalization in shaping educational outcomes. UNICEF (2022) points out that access to digital technologies varies significantly across regions, with rural schools facing substantial disadvantages. While digital tools have the potential to improve learning processes and student engagement, their effectiveness depends on adequate infrastructure, teacher training, and institutional support. In Albania, these conditions are not yet fully met, which limits the impact of digital education initiatives.

Higher education has received increasing attention as a key driver of economic development and innovation. Research indicates that universities in Albania face ongoing challenges related to curriculum relevance, quality assurance, and alignment with international standards. Nathanaili et al. (2023) argue that strengthening links between higher education institutions and the labor market is essential for improving graduate employability and supporting national development. At the same time, issues such as limited research capacity and insufficient funding continue to constrain the effectiveness of higher education reforms.In addition, lifelong learning has emerged as a central concept in contemporary education policy. European frameworks emphasize lifelong learning as a means of promoting continuous skill development, adaptability, and social inclusion. However, in the Albanian context, the development of lifelong learning systems remains limited. Studies indicate that adult education opportunities are fragmented and not sufficiently integrated into national education strategies (CSL, 2024). This limits the system's ability to respond to changing labor market demands and technological advancements.Overall, the literature suggests that the Albanian education system is characterized by a combination of structural constraints, institutional weaknesses, and socio-economic disparities. While reforms have contributed to policy alignment with European standards, significant challenges remain in terms of implementation, quality, and inclusiveness. These findings provide a strong foundation for further analysis of how lifelong learning and higher education can contribute to addressing these systemic issues.

3. Methodology

This study employs a qualitative research design supported by a structured document analysis and a thematic analytical framework. The approach is particularly suitable for examining

complex educational systems, where multiple institutional, structural, and policy-related dimensions interact.

Research Design

The research follows a descriptive-analytical design combined with a comparative perspective. It aims to explore how the Albanian education system operates in practice and to what extent it aligns with the European Education Area (EEA).A qualitative strategy was selected to enable an in-depth interpretation of policy frameworks, institutional reports, and academic findings. The study integrates thematic analysis with a comparative approach, allowing for the identification of discrepancies between policy intentions and actual implementation.

Data Collection Methods

Data were collected through a systematic review of secondary sources. The selection process followed three main criteria:

- Relevance to the Albanian education system and European standards
- Credibility of institutional and academic sources
- Recency, focusing primarily on publications from the last 5–7 years

The dataset includes:

- International institutional reports (OECD, World Bank, European Commission, UNESCO, UNICEF)
- National education strategies and policy documents
- Peer-reviewed academic studies on education, higher education, and lifelong learning

Sample

Since the study is based on document analysis, the sample consists of selected sources that provide reliable and comparable data.

Table 1. Document Selection Criteria

Criteria	Description

Relevance	Direct focus on Albanian education or European education policies
Publication date	Mainly 2018–2024
Source type	Institutional reports, academic journals, policy documents
Reliability	Recognized organizations (OECD, UNESCO, EU institutions)

Analytical Tools

The study applies qualitative thematic analysis, supported by a structured coding process. The analysis was conducted in three main stages:

1. Initial coding – Identification of recurring concepts and issues
2. Theme development – Grouping codes into broader analytical categories
3. Interpretation – Linking findings to policy frameworks and theoretical perspectives

Table 2. Thematic Coding Framework

Code Category	Description
Structural issues	Funding, infrastructure, governance
Inequality	Urban–rural disparities, access to resources
Quality of education	Teaching standards, curriculum implementation
Digitalization	ICT access, digital skills, online learning
Higher education	University performance, labor market alignment
Lifelong learning	Adult education, continuous training systems

In addition, a comparative analytical approach was used to assess the alignment between Albania and EU standards.

Comparative Analysis Framework

Table 3. Comparison Between Albania and EU Standards

Dimension	Albania	European Standards

Funding	Below EU average	Higher and more stable investment
Infrastructure	Uneven, especially in rural areas	Well-developed and standardized
Curriculum	Formally competency-based	Fully student-centered and flexible
Teacher development	Limited and uneven	Continuous and structured
Digital education	Fragmented implementation	Integrated and mandatory

Ethical Considerations

This study relies exclusively on publicly available secondary data and does not involve human participants. As such, no direct ethical risks are associated with the research process.All sources have been critically evaluated and properly cited in accordance with academic standards.

4. Results

The analysis indicates that structural constraints continue to represent one of the most critical barriers to the effective functioning of the Albanian education system. Public investment in education remains below the European average, limiting the capacity for sustainable improvements in infrastructure, teaching resources, and institutional development.Infrastructure disparities are particularly evident between urban and rural areas. While schools in major cities benefit from relatively better facilities, many rural schools still face deficiencies in basic conditions, including heating, sanitation, and access to digital tools. These gaps directly affect the implementation of modern teaching practices and reduce the overall quality of education.In addition, governance challenges and fragmented institutional coordination contribute to inefficiencies in policy implementation. Limited data availability and weak monitoring mechanisms further complicate evidence-based decision-making.

Table 4. Structural Challenges in the Albanian Education System

Dimension	Key Issues Identified	Impact on Education System
Funding	Below EU average	Limited investment capacity

Infrastructure	Uneven (urban vs rural)	Inequality in learning conditions
Governance	Fragmented coordination	Inefficient policy implementation
Teacher retention	Low stability in early career stages	Disruption in teaching continuity

Quality and Accessibility

The findings reveal significant inequalities in both the quality and accessibility of education across different regions. Urban schools generally provide better access to qualified teachers, updated materials, and digital infrastructure. In contrast, rural schools often face shortages of specialized teaching staff and limited access to educational resources.These disparities are reflected in student performance outcomes, where learners from disadvantaged areas consistently demonstrate lower levels of achievement. The lack of equal access to quality education not only affects academic performance but also contributes to long-term social and economic inequalities.Furthermore, the implementation of competency-based curricula varies significantly between schools. While some institutions have adopted more student-centered approaches, others continue to rely on traditional teaching methods.

Table 5. Disparities in Quality and Accessibility

Indicator	Urban Areas	Rural Areas
Teacher qualification	Higher	Lower
Access to ICT	Strong	Limited
Learning resources	Adequate	Insufficient
Student outcomes	Higher performance	Lower performance

Alignment with European Standards

The results show that Albania has made formal progress in aligning its education system with European standards; however, practical implementation remains inconsistent. Policy

frameworks, including competency-based curricula and quality assurance systems, are in place but not uniformly applied.Teacher evaluation systems continue to rely heavily on seniority rather than performance-based assessment. In addition, opportunities for continuous professional development are not equally accessible across regions.Digital education represents another area where the gap between policy and practice is evident. While national strategies emphasize digital transformation, their implementation is often fragmented and limited by infrastructure and capacity constraints.

Table 6. Alignment with European Standards: Policy vs Practice

Policy Area	Policy Framework (Albania)	Implementation Reality	European Standard
Curriculum	Competency-based	Partially applied	Fully student-centered
Teacher evaluation	Seniority-based	Limited feedback	Performance-based
Quality assurance	Institutional framework exists	Weak enforcement	Strong and transparent
Digital education	Strategic focus	Uneven implementation	Fully integrated

Lifelong Learning and Higher Education

The analysis highlights that lifelong learning remains underdeveloped despite its growing importance in European education policy. Opportunities for adult education and continuous professional training are limited and not systematically integrated into national strategies.Higher education institutions are undergoing gradual transformation; however, several challenges persist. These include issues related to curriculum relevance, limited research capacity, and insufficient collaboration with the labor market. As a result, many graduates face difficulties in transitioning into employment.Strengthening the connection between higher education and labor market needs is essential for improving employability and

supporting economic development. At the same time, expanding lifelong learning opportunities can contribute to greater adaptability and social inclusion.

Table 7. Lifelong Learning and Higher Education Challenges

Area	Current Situation	Key Challenges Identified
Lifelong learning	Limited and fragmented	Lack of strategic integration
Adult education	Low participation	Restricted access
Higher education	Expanding system	Quality and relevance concerns
Labor market linkage	Weak	Skill mismatch

5. Discussion

These results are consistent with previous research, which emphasizes that education systems in transitional contexts often struggle with gaps between policy design and implementation (Maghnouj et al., 2020; UNESCO, 2017).One of the most significant issues identified is the persistence of structural constraints, particularly related to funding and infrastructure. The results indicate that insufficient investment continues to affect both the quality of educational resources and the capacity for system-wide improvement. This aligns with findings from OECD (2020), which highlight that financial limitations in education systems are directly associated with lower student performance and reduced institutional capacity. In the Albanian context, these limitations are further intensified by regional disparities, reinforcing inequalities in access to quality education.The study also highlights the strong impact of geographic and socio-economic inequalities on educational outcomes. Differences between urban and rural areas remain pronounced, affecting access to qualified teachers, learning materials, and digital infrastructure. These findings support earlier studies suggesting that educational inequality is not only a matter of resource distribution but also of structural and institutional imbalance (UNICEF, 2022). As a result, students in disadvantaged areas face limited opportunities, which may contribute to long-term social and economic disparities.Another important aspect discussed in the literature is the gap between policy frameworks and their implementation. Although Albania has formally adopted European standards, including competency-based

curricula and quality assurance systems, the results show that these reforms are not consistently applied. This reflects a broader challenge identified in education policy research, where formal alignment with international standards does not necessarily translate into effective practice (European Commission, 2022). Weak institutional coordination and limited monitoring mechanisms appear to be key factors contributing to this gap.The role of lifelong learning and higher education emerges as particularly significant in addressing these systemic challenges. The findings suggest that lifelong learning remains underdeveloped, despite its importance in supporting adaptability and continuous skill development. This observation is consistent with European policy frameworks, which emphasize lifelong learning as a critical component of modern education systems (European Commission, 2020). In Albania, however, the lack of integrated strategies and limited access to adult education programs reduce its potential impact.Similarly, higher education institutions face increasing pressure to align with labor market needs and contribute to economic development. The results indicate that weak links between universities and employers continue to contribute to skill mismatches and limited graduate employability. This finding is supported by OECD (2021), which highlights the importance of stronger collaboration between higher education and the labor market in improving educational outcomes and economic competitiveness.Overall, the discussion suggests that the challenges facing the Albanian education system are interconnected and require a comprehensive and coordinated response. Addressing structural constraints, reducing inequalities, and improving policy implementation are essential steps toward achieving alignment with the European Education Area. At the same time, strengthening lifelong learning systems and enhancing the role of higher education can provide important opportunities for long-term improvement.

6. Conclusion

The findings indicate that, despite ongoing reforms and formal policy alignment with European standards, significant gaps remain in implementation, quality, and accessibility.One of the key conclusions is that structural constraints—particularly limited public funding, uneven infrastructure, and fragmented governance—continue to hinder the effective functioning of the education system. These challenges are closely linked to persistent inequalities between urban and rural areas, which affect both access to quality education and student outcomes. The results also highlight that improvements in policy design have not always translated into tangible outcomes, reflecting a gap between strategic objectives and practical

implementation.Furthermore, the study emphasizes the growing importance of lifelong learning and higher education in addressing systemic weaknesses. Lifelong learning remains insufficiently developed, limiting opportunities for continuous skill development and adaptability in a rapidly changing labor market. At the same time, higher education institutions face ongoing challenges related to curriculum relevance, research capacity, and alignment with labor market demands.Based on these findings, several recommendations can be proposed. First, increasing investment in education is essential to improve infrastructure, teaching quality, and institutional capacity. Second, strengthening coordination between central and local institutions can enhance policy implementation and ensure more effective use of resources. Third, targeted interventions are needed to reduce regional disparities, particularly by supporting rural schools and improving access to qualified teachers and digital tools.

In addition, the development of a comprehensive lifelong learning strategy is crucial for promoting social inclusion and economic competitiveness. Expanding adult education programs and integrating them into national education policies can help address skill mismatches and support workforce development. Finally, strengthening the role of higher education through closer collaboration with industry and increased focus on research and innovation can contribute to long-term system improvement.This study is limited by its reliance on secondary data and qualitative analysis. Future research could benefit from empirical data collection, including surveys and interviews, to provide deeper insights into the experiences of students, teachers, and policymakers. Further studies may also explore the long-term impact of ongoing reforms and the effectiveness of specific policy interventions.

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GOVERNANCE READINESS FOR PARTICIPATORY INNOVATION IN HEALTHCARE LIVING LABS: PREPARATORY LESSONS FROM THE PEARL-LAB PROJECT

Michele Biring-Pani[1], Patricia Ripoll[2], Adam Skali[2], Isabel Amo Mora[3], Merfa Aliaj[4], Ketrin Zeno[5],

[1]Stamina Living Lab
Barleti Medical Group (BMG), Tirana, Albania
[2]Fundacion Visible, Barcelona, Spain
[3]Universidad Internacional de Catalunya (UIC Barcelona), Barcelona, Spain
[4]Stamina Living Lab
Barleti Medical Group (BMG), Tirana, Albania
[5]Stamina Living Lab
Barleti Medical Group (BMG), Tirana, Albania

Corresponding author: m.biring@umb.edu.al
(ORCID ID: 0009-0006-6472-6347)

Abstract

Participatory innovation and co-creation are increasingly promoted within healthcare research and innovation settings, particularly with the proliferation of living labs. Yet while patient and stakeholder involvement receives growing attention, less attention has been given to how healthcare institutions prepare governance conditions for ethical and meaningful engagement before implementation activities begin. This paper examines the preparatory phase of the PEARL-Lab project ("Patient Engagement for Advancing Responsible Living Labs") as a case study focused on governance readiness for ethical patient engagement in outpatient and home health living lab settings in Albania. Grounded in living lab principles and the framework of Open and Responsible Research and Innovation (ORRI), the project seeks to strengthen patient engagement across outpatient and home healthcare settings through structured co-creation and governance processes. The paper examines how stakeholder mapping, cohort design, facilitation planning, governance adaptation, and ethical preparation shaped the early development of the engagement process. Particular attention is given to the practical tensions that emerged as the institutions attempted to balance inclusiveness, operational feasibility, and existing power dynamics. Rather than presenting implementation outcomes, the study explores an under-examined dimension of participatory innovation theory: governance readiness required to make stakeholder engagement legitimate, balanced, and usable in healthcare settings. Preliminary reflections from the planning process suggest that effective participation depends on more than stakeholder inclusion alone. Facilitation capacity, leadership alignment, ethical preparation, and institutional structures also shape the quality and sustainability of co-creation processes. The project contributes an emerging governance-readiness perspective for healthcare organizations seeking to move from stakeholder inclusion toward meaningful, ethical, and operationally usable participation.

Keywords:

participatory innovation; healthcare living labs; stakeholder engagement; ORRI; institutional readiness; co-creation; governance

1. Introduction

Healthcare innovation is often discussed as if better evidence, better technology, or better implementation plans are enough. In practice, they are not. A digital tool may be technically sound and still fail because patients cannot use it easily. A service redesign may satisfy institutional priorities while overlooking staff and caregiver burden. A research project may include consent forms and ethics approval, yet still leave patients with little influence over the questions being asked. These tensions explain a broader shift in healthcare innovation. Many organizations are increasingly moving away from traditional top-down models toward more participatory approaches that involve patients, caregivers, clinicians, and communities throughout the innovation process (Slattery et al., 2020). Living labs, co-creation methodologies, and participatory governance frameworks have gained growing attention within healthcare systems, particularly in areas related to patient-centered care, digital health, implementation science, and service redesign (Følstad, 2008; Greenhalgh et al., 2016; Slattery et al., 2020). These approaches emphasize collaboration within real-world settings. The aim is to strengthen the relevance, usability, and societal responsiveness of healthcare innovation. At the same time, frameworks such as Open and Responsible Research and Innovation (ORRI) have reinforced expectations for inclusiveness, transparency, ethical accountability, and stakeholder participation across research and innovation activities (Stahl, 2013; Von Schomberg, 2011). Across Europe, healthcare institutions are increasingly encouraged to involve patients and other stakeholders not only as research participants, but also as contributors to governance discussions, implementation processes, and innovation design. Despite this growing emphasis on participation, much of the existing literature continues to focus on the theoretical benefits of co-creation or on the outcomes of living lab activities themselves. Comparatively limited attention has been given to the institutional preparation required before genuine stakeholder engagement can occur.

This gap is especially important in healthcare settings. Participatory approaches must operate within complex clinical structures shaped by professional hierarchies, ethical obligations, operational pressures, and unequal distributions of authority and expertise. Meaningful patient engagement requires more than inviting stakeholders into workshops or consultation activities. Attendance at such events or even participation in surveys does not signify influence or inclusion. Institutions must also develop governance structures, facilitation processes, and organizational cultures capable of supporting participation in an ethical, balanced, and operationally sustainable manner. Questions related to governance adaptation, facilitation capacity, leadership involvement, ethical preparation, and the management of power dynamics therefore remain insufficiently explored within healthcare living lab environments, despite growing recognition of organizational readiness as a critical factor in implementation processes (Shea et al., 2021).

The PEARL-Lab project ("Patient Engagement for Advancing Responsible Living Labs") was developed in part in response to these challenges within a living lab healthcare setting in Albania. As the living lab began to grow with a number of healthcare innovation projects, project teams looked for specific ORRI frameworks to ethically and meaningfully incorporate patients into living lab projects in a systematic way. Existing ORRI and Living Lab guidance offered useful principles but required local operational translation for outpatient and home-health workflows. Therefore, the PEARL-Lab project explores how healthcare organizations can prepare operationally for participatory innovation through structured stakeholder engagement planning grounded in living lab and ORRI principles. The living lab regularly operates in an outpatient and home health setting. Therefore, a multi-stakeholder co-creation process designed to support innovation practices necessarily and routinely are part of projects. As an important stakeholder of any healthcare innovation, the project team asked, "how can patients be ethically included?" This paper focuses on the preparatory phase of the PEARL-Lab project. Rather than presenting implementation outcomes, it examines the institutional planning processes undertaken prior to stakeholder engagement activities, with particular attention to stakeholder mapping, cohort design, facilitation planning, governance adaptation, and ethical preparation within a healthcare living lab context. By examining these preparatory activities, the paper contributes to the growing discussion surrounding organizational readiness for participatory healthcare innovation and argues that governance preparation and operational planning remain underdeveloped but essential dimensions of ethical stakeholder engagement within healthcare living labs.

2. Background and Literature Review

2.1 Participatory Innovation and Living Labs in Healthcare

Traditionally, healthcare innovation involved patients and end users primarily during evaluation or implementation stages through focus groups or surveys, where key features were tested. However, recent evidence suggests patient involvement is now more common in earlier stages (problem identification and invention) than in later adoption stages, though patients' impact on decision-making remains limited (Zipfel et al., 2022). In recent years, healthcare systems have increasingly sought to involve stakeholders more actively throughout the innovation lifecycle. These developments reflect broader shifts toward patient-centered care, implementation science, service design, and collaborative governance within healthcare systems (Greenhalgh et al., 2016; Trischler et al., 2019).

Within this context, living labs have emerged as a prominent framework for participatory innovation. Living labs are real-world environments where stakeholders collaboratively design, test, refine, and evaluate innovations using multimethod, user-centred approaches (Følstad, 2008; Bergvall-Kåreborn et al., 2009). Living labs are defined as user-centric research methodologies characterized by five key components: user-centricity, co-creation, real-life context, innovation testing, and open innovation (Zipfel et al., 2022). Rather than separating innovation development from implementation, living labs integrate users, professionals, researchers, and organizations into

iterative co-creation processes grounded in operational realities and lived experience, where patient input can directly impact design (Zipfel et al., 2022).

In healthcare settings, living labs have been applied across diverse contexts including digital health, rehabilitation, community health, aging and long-term care, mental health services, patient-centered service redesign, and public-sector innovation initiatives (Schuurman & Tõnurist, 2021). A recent scoping review found that living labs are increasingly recognized in healthcare as collaborative environments that drive digital health innovation through real-world testing and stakeholder engagement (Joyal et al., 2026). This participatory approach produces measurable benefits: living labs contribute to successful implementation outcomes, particularly acceptability (demonstrated in 22 studies) and feasibility (demonstrated in 17 studies) (Zipfel et al., 2022). Involving patients, families, and professionals throughout the innovation journey leads to more relevant and usable results, with patients testing solutions in everyday healthcare settings under real-life conditions and adapting innovations to local contexts (Zipfel et al., 2022; Archibald et al., 2021).

Patient involvement in living labs is both common and strategically important. Most studies (23 out of 30) involve patients and the public as key stakeholders working alongside healthcare providers (included in 17 of 30 studies), with components primarily applied during the development phase (21 of 30 studies focusing on this early stage rather than later implementation or diffusion) (Zipfel et al., 2022). Living labs function as collaborative knowledge-sharing systems that employ multimethod approaches, user engagement, multiple stakeholders, real-life settings, and co-creation as their five key elements (Archibald et al., 2021).

Achieving these outcomes requires attention to specific success factors. Research identifies six critical success factors for living labs: leadership, involvement, timing, openness, organisational support, and ownership (Zipfel et al., 2022). In other words, living labs are most successful when they are well-led, include the right people, engage them at the right time, foster open collaboration, receive institutional support, and give participants a genuine stake in the process. Optimal outcomes depend on patients, healthcare professionals, entrepreneurs, and policymakers collaborating together rather than in isolation (Zipfel et al., 2022).

Despite recognition that patient engagement is important, systematic approaches to engagement and co-ideation remain limited in living lab practice (Archibald et al., 2021). Living labs, as open knowledge systems, have the potential to address gaps in knowledge exchange and improve collaborative problem solving but remain underexplored in healthcare (Archibald et al., 2021). This gap suggests that while living labs hold significant potential for effective patient participation, more deliberate and structured approaches are needed to ensure consistent, equitable engagement throughout the innovation process (Archibald et al., 2021).

2.2 ORRI and Ethical Stakeholder Engagement

The growing emphasis on participatory innovation has been accompanied by increased attention to responsible and ethically grounded research and innovation practices. Open and Responsible Research and Innovation (ORRI) frameworks encourage the integration of societal actors

throughout research and innovation processes in ways that are inclusive, transparent, responsive, and ethically accountable (Stahl, 2013; Von Schomberg, 2011). See Fig 1 for ORRI principles. In ORRI, diverse participants actively contribute. Rather than treating stakeholders as passive recipients of innovation, ORRI approaches promote more active forms of participation capable of influencing decision-making, implementation, and governance processes.

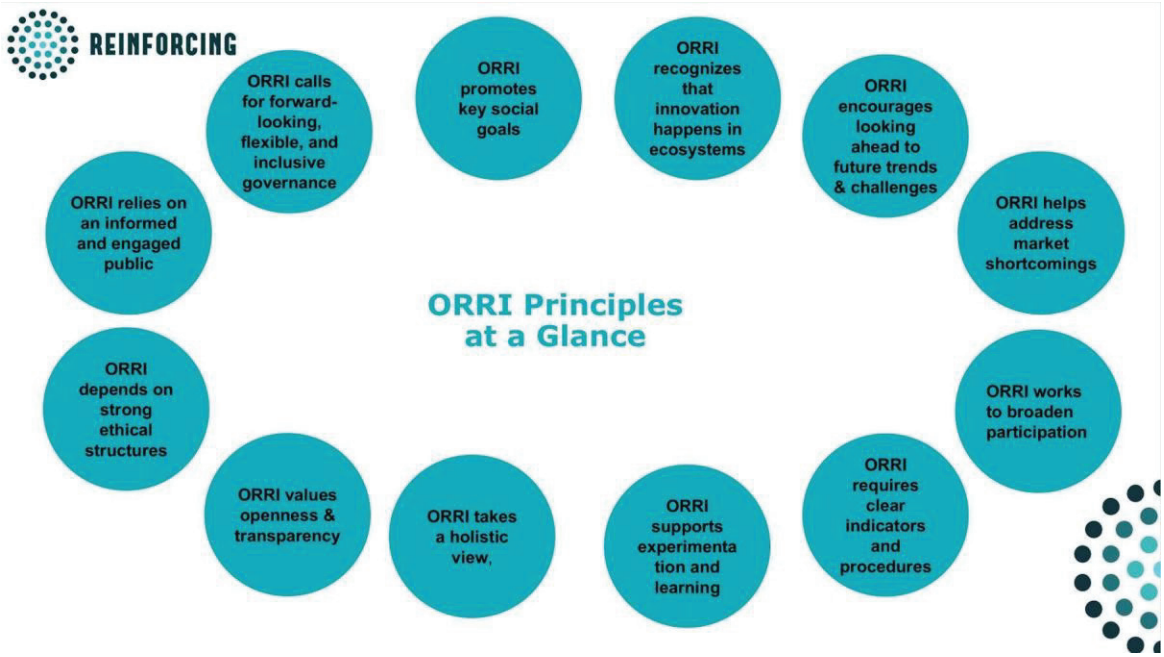

Fig. 1. ORRI Principles at a Glance. Adapted from REINFORCING ORRI Principles (REINFORCING, 2024).

In healthcare settings, this shift has contributed to greater emphasis on patient engagement, co-creation, shared decision-making, and participatory governance structures. Existing literature identifies several potential benefits associated with ethical stakeholder engagement, including improved trust, stronger implementation relevance, greater legitimacy of innovation activities, and increased responsiveness to user needs and lived experience (Greenhalgh et al., 2016; Papoutsi et al., 2021).

At the same time, it is difficult to achieve. Many studies acknowledge persistent challenges associated with participatory healthcare innovation. These include unequal participation, tokenistic engagement, organizational resistance, unclear governance structures, and difficulties balancing inclusive participation with operational realities. Power dynamics remain a particularly important concern within healthcare engagement processes. Patients and caregivers may hesitate to challenge clinical perspectives or contribute openly within environments including those with clinical authority. In addition, some professionals may be subject to traditional hierarchy. Nurses, for example, may defer to doctors when present. Participation alone therefore does not guarantee inclusion. Ethical stakeholder engagement also requires skillful facilitation, clear governance

processes, and organizational conditions capable of supporting psychologically safe and balanced interaction across stakeholder groups. A trained, impartial facilitator works to ensure all voices are heard, balancing session dynamics. In addition, facilitators use techniques to de-escalate and diffuse situations as necessary. Operationally, clinicians struggle to dedicate time for feedback sessions in their busy schedules and institutional pressures for profitability can further reduce incentives.

These concerns exist in other contexts but become especially relevant within healthcare living labs.

2.3 Gaps in Existing Literature

Participatory innovation, stakeholder engagement, and co-creation are widely discussed within living lab and ORRI literature. Existing research has examined conceptual frameworks, implementation outcomes, patient involvement strategies, and the value of collaborative innovation processes across healthcare environments (Greenhalgh et al., 2016; Trischler et al., 2019). More recent studies have also emphasized the growing importance of participatory governance, patient-centered innovation, and implementation-oriented co-creation within digital health and healthcare transformation initiatives (WHO, 2021).

Previous healthcare living lab research has identified leadership, involvement, timing, openness, organizational support, and ownership as important conditions for implementation success (Zipfel et al., 2022). Despite this expanding body of work, comparatively limited attention has been given to the institutional and operational preparation required before meaningful stakeholder engagement can occur, despite growing discussion surrounding implementation processes and organizational adaptation within healthcare systems (Damschroder, 2020). This gap is important because meaningful participation depends not only on the willingness and ability of stakeholders to engage. The capacity of institutions to support participation in a structured, ethical, and operationally sustainable manner is also important. Without appropriate preparation, participatory processes risk becoming symbolic, extractive, or difficult to sustain over time. The approach taken by innovators will shape whose perspectives are heard, legitimized, and incorporated into decision-making processes. Ultimately, those voices will shape the products and solutions.

The preparatory phase of participatory innovation therefore represents an important but underdeveloped area within both living lab and implementation science literature. Greater understanding of how institutions plan operationally for ethical stakeholder engagement may contribute to stronger governance models, more sustainable participation structures, and improved implementation of co-creation methodologies within healthcare settings. This issue may be especially relevant in emerging healthcare innovation ecosystems such as Albania, where participatory structures and living lab practices are still evolving institutionally.

2.4 From Stakeholder Mapping to Governance Readiness

Stakeholder mapping is not new within living labs or participatory innovation practices. In the PEARL-Lab project, however, mapping was treated not only as a way to list relevant actors or classify them by interest and influence. We first conducted traditional stakeholder mapping to identify actor roles and influence levels, then used this analysis to identify power imbalances, which we planned for and used to increase participation. It was also used as an early governance exercise. The central question was not simply who should be invited, but the project team also asked who was likely to speak, who was likely to remain silent, who held formal authority, who held experiential knowledge, and whose input could be overlooked during decision-making. This identification was important because in practice healthcare participation is shaped by clinical hierarchy, professional responsibility, patient vulnerability, and institutional accountability. For this reason, stakeholder mapping became the first step in designing the conditions for meaningful engagement. It helped identify where facilitation safeguards were needed, where patient and caregiver voices required additional support, and where leadership involvement had to be balanced carefully. In this sense, PEARL-Lab reframed stakeholder mapping as part of governance readiness: a preparatory process concerned with how participation would be structured, protected, interpreted, and connected to institutional decisions.

3. Methodology

3.1 Institutional and Operational Context

The PEARL-Lab project ("Patient Engagement for Advancing Responsible Living Labs") was developed within a healthcare living lab environment in Albania within the Barleti Medical Group's living lab STAMINA. The project emerged in response to the growing projects in the living lab and its subsequent increased levels of participation by stakeholders in healthcare innovation projects. Therefore, the research and innovation project teams' interest grew in systematic ethical stakeholder engagement and implementation-oriented co-creation best practices within developing healthcare innovation environments.

The institutional ecosystem combines healthcare delivery, academic research, and living lab activities across interconnected operational settings. These include outpatient clinical services, home healthcare services, research, teaching, and innovation activities focused on participatory healthcare design. Together, these environments provide a real-world setting in which patients, caregivers, clinicians, researchers, operational staff, technology developers, and institutional leadership interact across both healthcare delivery and innovation processes.

The project was implemented through collaboration between Barleti Medical Group and Universitat Internacional de Catalunya (UIC Barcelona). The partnership combined local implementation activities with external expertise in patient advocacy, innovation theory, and Open and Responsible Research and Innovation (ORRI) approaches. In addition to capacity-building and supporting stakeholder engagement activities, the collaboration contributed to broader

institutional discussions surrounding participatory governance, ethical stakeholder involvement, and organizational readiness for healthcare innovation.

Two operational healthcare environments were selected as primary engagement settings: the Barleti University Polyclinic, representing an outpatient healthcare environment, and the Barleti Home Health Agency, representing a community-oriented and home-based care setting. The inclusion of both settings was intended to support broader patient groups while allowing the planning process to also reflect differing organizational workflows, patient interaction patterns, and operational realities across healthcare environments. In outpatient settings, clinical authority and institutional workflow are more visible. In home-health settings, family members, caregivers, daily routines, and informal decision-making become more prominent. PEARL-Lab therefore explored whether patient engagement changes across care settings or acts as a single uniform process.

3.2 Conceptual and Planning Approach

This paper adopts an exploratory case-study design focused on the planning phase of the PEARL-Lab project. The stakeholder engagement process was designed to address practical barriers to balanced participation. This included challenges of equitable participation, balancing stakeholder interaction, and organizational feasibility within healthcare living lab environments. Rather than treating stakeholder engagement as a single consultation exercise, the project adopted a phased and iterative planning approach grounded in living lab principles and ORRI-oriented governance practices.

The planning process emphasized institutional preparation prior to the initiation of co-creation activities. Particular attention was given to the operational conditions required to support substantive contribution across stakeholder groups with differing professional roles, levels of authority, and lived experience. This included consideration of governance structures, facilitation processes, ethical preparation, participant balance, and organizational readiness for participatory innovation activities. To bridge knowledge gaps, the plan aimed to prepare participants as well as co-create and gather feedback. A separate leadership review was included to preserve strategic oversight while reducing the risk that senior institutional voices would dominate co-creation discussions. This maintained their input and strategic guidance, gathered buy-in, and signaled legitimacy. Pilot studies and feedback loops served to yield practical insights to advice and support iterative refinement.

Therefore, the engagement structure was organized around four interconnected phases: information and alignment activities, co-creation sessions, leadership review and operational reflection, and pilot-oriented validation and refinement activities. This phased approach was intended to support progressive stakeholder involvement while allowing institutions to reflect continuously on implementation feasibility, governance implications, and participation dynamics throughout the planning process.

The overall methodological orientation of the project was influenced by participatory innovation, implementation science, and co-creation literature emphasizing real-world stakeholder involvement within operational environments (Greenhalgh et al., 2016; Trischler et al., 2019). At the same time, the planning process recognized that participation alone does not guarantee meaningful inclusion. The project therefore incorporated organizational and facilitation structures to reduce excessive hierarchical influence, offer multiple opportunities for engagement, support psychologically safe interaction, and strengthen the practical integration of stakeholder perspectives into institutional reflection and innovation planning.

Rather than focusing exclusively on innovation outcomes, the planning approach treated stakeholder engagement itself as an institutional learning process. Preparatory activities were therefore designed not only to organize co-creation sessions, but also to stimulate broader organizational reflection regarding governance readiness, ethical participation, facilitation capacity, and the integration of participatory practices within healthcare innovation environments.

3.3 Stakeholder Identification and Engagement Design

Stakeholder identification was conducted using a purpose- and role-oriented approach designed to ensure representation from multiple perspectives relevant to participatory healthcare innovation. The use case for this study was the innovation of healthcare technologies. The project sought to recruit participants from both outpatient and home healthcare environments to capture differences in organizational workflows, patient interaction patterns, and service delivery contexts. The inclusion of multiple care settings strengthened the relevance of engagement discussions while allowing the planning process to reflect operational variation across healthcare environments.

To map stakeholders involved in new healthcare technology projects, the team identified actors affected by or involved in the process. The planning process sought to incorporate both professional and experiential forms of knowledge within the engagement structure. This proved to be an extensive group. Stakeholder groups identified multiple layers of actors with varying levels of proximity to healthcare innovation activities, ranging from directly affected parties (patients, caregivers, clinicians, researchers, and technology developers) to indirect and ecosystem-level stakeholders (regulators, patient associations, funders, living lab networks, and policy actors). Those selected for participation included all those regularly and routinely involved in the innovation process: patients, caregivers, clinicians, operational coordinators, researchers, living lab representatives, innovation and technology developers, quality and legal actors, and institutional leadership representatives. See Figure 2.

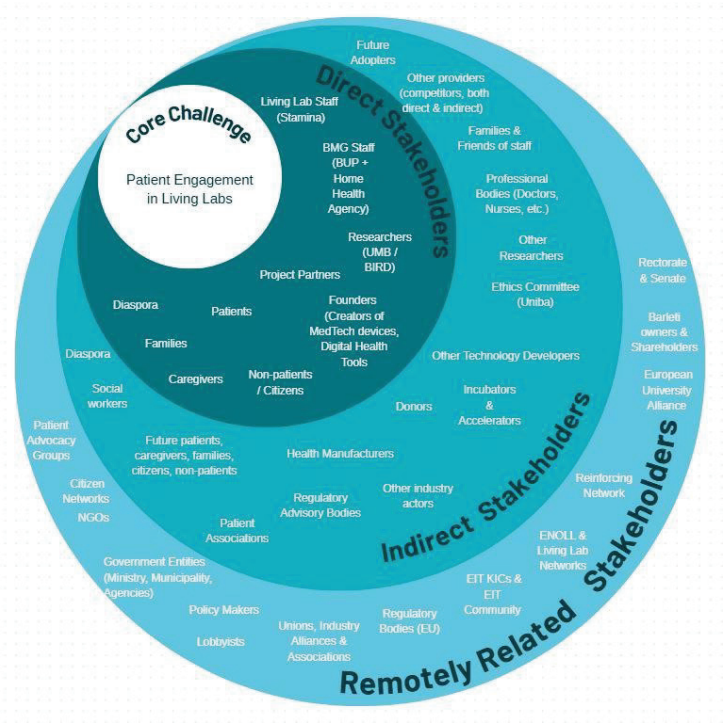

Fig. 2 Stakeholder Mapping.

During planning discussions, the project team also considered the question of patient background and type for co-creation activities. The intention was not to restrict participation to highly educated or professionally experienced patients, but rather to identify the types of support required to enable genuine contribution across differing levels of familiarity with healthcare innovation processes. While no formal "expert patient" requirement was established, the project recognized that participants entered the process with differing levels of confidence, communication experience, health literacy, and prior exposure to participatory activities. As a result, the facilitation model emphasized not only accessible language but also preparatory orientation activities with the intention to support equitable participation across diverse participant profiles.

However, the mapping exercise soon uncovered governance risks. Some stakeholders held formal authority, while others held experiential knowledge. Some groups could be easily overshadowed if facilitation or institutional safeguards were not included. The central concern was not only representation, but the conditions under which representation could become meaningful.

Therefore, the engagement structure adopted a small-cohort model rather than relying exclusively on large mixed-group discussions. This decision was informed by concerns related to participation balance, psychological safety, and the management of interpersonal dynamics within healthcare settings. Smaller cohorts were expected to further encourage more active participation, reduce barriers to contribution, and provide facilitators with greater capacity to manage discussion quality across stakeholder groups with differing levels of authority and expertise. Particular effort was made in the design to include more patients and caregivers to act not simply as symbolic

participants, but as active contributors to discussions surrounding healthcare experiences, co-creation practices, and stakeholder engagement processes. In addition to supporting participation quality, the use of parallel cohort structures provided methodological advantages during the planning process. Smaller groups allowed facilitators to compare recurring themes, identify divergent perspectives, and observe differences in stakeholder priorities across engagement environments. This structure also supported iterative co-creation and reflection.

The planning process also recognized that healthcare environments often contain implicit hierarchical structures capable of shaping participation patterns. Patients and caregivers may hesitate to openly challenge professional perspectives within institutional settings dominated by clinical authority or technical expertise. Cohort design therefore formed part of a broader strategy intended to support more balanced interaction and reduce excessive dominance by any single stakeholder group.

3.4 Facilitation and Governance Preparation

The project team placed significant emphasis on facilitation and governance preparation prior to the initiation of stakeholder engagement activities. A structured Facilitator Guide was developed to support consistency across multiple sessions while remaining adaptable to differing stakeholder dynamics and operational environments. The guide included session objectives, facilitation procedures, discussion prompts, participant coordination processes, and documentation approaches intended to support coherent implementation across engagement activities.

Facilitation planning focused on maintaining inclusive discussion environments, supporting balanced participation, managing interpersonal and institutional power dynamics, and creating psychologically safe conditions for dialogue. Particular attention was given to the role of facilitators in moderating interaction among stakeholders with differing levels of professional authority, technical expertise, and lived experience.

The project recognized that worthwhile participation depends not only on stakeholder presence but also on the quality of interaction within co-creation environments. The co-creation process incorporated several structured engagement techniques, including guided reflection activities, thematic discussion prompts, iterative group discussion, and Start–Stop–Change–Continue exercises. These approaches were selected because they provided a balance between open reflection and operational practicality while remaining accessible to participants with differing levels of familiarity with research, innovation, or healthcare governance terminology.

Ethical preparation formed an important part of the planning process. Participant Information Sheets, Consent Forms, facilitation procedures, and session documentation processes were developed prior to implementation in order to support transparency, informed participation, and procedural consistency across engagement activities. Ethical preparation also extended beyond formal consent procedures alone. Consideration was given to confidentiality, respectful facilitation, participant inclusion, psychological safety, and the management of professional and institutional power dynamics during stakeholder interaction.

Governance preparation additionally included the development of leadership review processes intended to connect stakeholder discussions with organizational reflection and implementation planning. Rather than treating stakeholder engagement as an isolated consultation activity, the team realized that collecting stakeholder input would have limited value unless participants could see how their contribution influenced decisions. As a result, a formal feedback process was incorporated into the engagement design.

4. Emerging Domains of Governance Readiness

Although the PEARL-Lab project remains in an ongoing implementation phase, the preparatory activities undertaken prior to stakeholder engagement sessions generated several early institutional observations regarding participatory innovation within healthcare living lab environments. These observations emerged through iterative planning discussions, facilitation preparation activities, and organizational reflection among project coordinators, facilitators, and institutional stakeholders involved in the development of the engagement structure.

From the planning perspective, five domains of governance readiness became visible. See Fig. 3. These domains were not treated as a validated measurement tool but as an emerging practical framework for organizing participation before co-creation begins. The first domain, representation readiness, focused on *who must be present* (*and who should not*) to ensure that relevant perspectives and stakeholders are included in the process. The second domain, facilitation readiness, examined *how participation would be structured* so that each voice could be heard and balanced appropriately. The third domain, ethical readiness, addressed *the ethical management of participant safety and expectations* throughout engagement activities. The fourth domain, authority readiness, considered *the relationship between patient input and existing clinical and institutional responsibilities*, clarifying how contributions would inform decision-making. Finally, feedback readiness focused on *how participants are informed about outcomes*, including what changes are implemented, what adaptations are made, and which proposals cannot move forward. Together, these five domains provided a practical framework for assessing governance readiness during the preparatory phase of innovation projects.

Fig. 3.Living Lab Governance Readiness

Firstly, representation readiness concerned the question of who needed to be present. Stakeholder mapping showed that patient engagement could not be designed only around formal institutional actors or technical experts. Patients, caregivers, clinicians, researchers, Living Lab staff, operational coordinators, technology developers, and institutional representatives all held different forms of knowledge and influence. The mapping process therefore helped the project team consider not only stakeholder categories, but also whose perspectives might otherwise be absent or easily overshadowed. This is especially important in a healthcare context, where experiential knowledge may be less visible than clinical or technical expertise. The preparatory phase also highlighted the influence of existing professional and organizational hierarchies on participation dynamics within healthcare environments. Some participants also held differing levels of authority. Reporting relationships as well as power imbalances were considered such that who was in the room was as important as who was not in the room. For example, a manager and subordinate in the same cohort were avoided, a doctor and accompanying nurse were likewise avoided, etc.

Secondly, facilitation readiness concerned how participation would be balanced once stakeholders were in the room. Patients, caregivers, clinicians, researchers, and institutional representatives entered the process with different levels of confidence, authority, and familiarity with innovation activities. The project therefore adopted smaller cohort structures and structured facilitation methods to reduce the risk that professional or institutional voices would dominate discussion. Facilitation was treated not only as a logistical function, but also as a governance strategy for protecting participation quality and psychologically safe discussion environments. For example, participants were encouraged to express their opinions through writing individually before open discussions. Small cohorts were asked to report as a group in writing before reporting verbally. This approach increased the likelihood of participant contribution before open discussion.

Thirdly, ethical readiness concerned how consent, confidentiality, expectations, and participant comfort would be managed before engagement began. Formal documents such as Participant Information Sheets and Consent Forms were necessary, but not sufficient. The planning process also required attention to psychological safety, sensitive disclosures, accessible language, and the possibility that participants might share personal healthcare experiences during group discussion. For example, extra time was built into the agenda for laying ground rules of respect, for processing of emotions or difficult questions, and extra time to ask questions. Another strategy, two facilitators allowed for the possibility for one to help a participant individually while the other continued. A further strategy, writing activities to share sensitive topics and opinions privately. Ethical preparation therefore extended beyond compliance. It became part of the practical design of the engagement environment.

Fourthly, authority readiness concerned the relationship between patient input and clinical or institutional responsibility. The project team recognized that participation alone does not resolve questions of decision-making authority. Patients and caregivers provide essential experiential knowledge, particularly regarding communication barriers, acceptability, trust, and lived experience. At the same time, clinicians and institutional actors retain responsibilities related to patient safety, legal compliance, professional standards, and operational feasibility. PEARL-Lab therefore approached participation through a model of structured influence rather than simple equality of decision-making authority. Transparency in how decisions are made for stakeholders coupled with a separate opportunity for decision makers to review designs and recommendations allowed for real co-creation in an authentic way. This model allows patient insights to heavily shape the *direction* and *design* of solutions, while ensuring those solutions are actually *viable* and *realistic* within strict institutional constraints.

Fifthly, feedback readiness concerned how participants would be informed about what happened after their input was collected. Without feedback, stakeholder engagement risks becoming symbolic. The planning process therefore included attention to how recommendations would be synthesized, reviewed, adopted, adapted, deferred, or returned to participants for validation. This was especially important for maintaining transparency and trust. Participants needed to understand that their input would be taken seriously, even when not every recommendation could be implemented exactly as proposed.

Taken together, these five domains suggest that the preparatory phase extended beyond logistical coordination. It became a process of governance design. PEARL-Lab used planning activities to consider who should participate, how participation should be facilitated, how ethical safeguards should operate, how influence should relate to responsibility, and how feedback should close the engagement loop. In this sense, the Living Lab functioned not only as a space for innovation testing, but also as an institutional learning environment for developing more participatory healthcare innovation practices.

5. Discussion

The preparatory phase of the PEARL-Lab project suggests that participatory healthcare innovation depends not only on stakeholder willingness to engage, but also on the institutional capacity to support participation in a structured, ethical, and operationally sustainable manner. While living labs and co-creation methodologies are increasingly promoted within healthcare innovation ecosystems, the planning process demonstrated that meaningful stakeholder engagement requires substantial preparation before implementation activities begin. Existing living lab literature already recognizes leadership, involvement, openness, organizational support, and ownership as important conditions for successful implementation (Zipfel et al., 2022). PEARL-Lab does not claim that preparation itself is new. Instead, it shows how preparation can be organized as a governance-readiness process in healthcare settings where patient voice, clinical authority, ethical responsibility, and operational feasibility must be balanced before co-creation begins. These observations align with broader discussions surrounding organizational readiness and implementation capacity within healthcare systems research (Damschroder, 2020; Shea et al., 2021). However, comparatively limited attention has been given to how these issues intersect specifically with living lab methodologies and participatory healthcare innovation.

One issue that emerged during the planning phase concerned the relationship between stakeholder participation and the decision-making authority. The process may appear inclusive while still reinforcing existing institutional hierarchies if not carefully handled. The project therefore considered how patient perspectives would be incorporated into governance and implementation discussions alongside clinical, operational, legal, and organizational considerations. At the same time, innovation operates within healthcare environments where responsibilities related to patient safety, regulation, workflow management, and ethical oversight could not always be distributed equally across stakeholder groups. Rather than adopting either a purely hierarchical model or a fully equal voting structure, the project team approached participation through a model of structured influence and separated leadership's voice. Within this approach, patient and caregiver perspectives are treated as essential sources of experiential knowledge, particularly regarding communication barriers, participation challenges, acceptability, and lived healthcare experience. Clinical and institutional actors retained responsibility for decisions involving legal compliance, patient safety, and operational feasibility. In this framework, managing expectations and transparency becomes central to the process. Participants were informed that recommendations could be adopted, adapted, prioritized, or deferred following institutional review by those in responsible positions. The intention was to avoid symbolic participation while also recognizing the practical realities of healthcare governance and implementation.

In this respect, the planning process also acknowledged the complex role of institutional leadership within participatory innovation activities. If patient participation needed to avoid tokenistic involvement, leadership also needed balancing. Leadership involvement is necessary for operational coordination, governance alignment, and institutional legitimacy. Yet excessive leadership presence within co-creation discussions risked reinforcing organizational hierarchy and limiting open participation. The project therefore approached leadership involvement selectively,

incorporating institutional review and reflection processes while seeking to preserve balanced interaction during stakeholder engagement activities. Another important observation concerned the relationship between ethical preparation and organizational practice. Ethical stakeholder engagement extends beyond procedural consent requirements or formal ethics documentation. It also depends on the ability of institutions to create environments in which participation is respectful, transparent, psychologically safe, and meaningfully connected to organizational learning processes. In this context, ethical preparation functioned not as a standalone administrative requirement, but as an integrated component of governance and facilitation planning.

The PEARL-Lab experience further suggests that living labs may function as organizational learning environments in addition to innovation environments. Stakeholder engagement planning stimulated broader institutional reflection regarding governance readiness, participatory culture, facilitation capacity, and implementation feasibility across the participating organizations. These observations highlight the need for further research on how governance-readiness structures influence participation quality, stakeholder influence, and implementation outcomes within healthcare living labs.

6. Limitations

Several limitations should be considered when interpreting the observations and reflections presented in this paper. First, the PEARL-Lab project remains in an ongoing implementation phase. This paper focuses specifically on the preparatory and planning stages of the stakeholder engagement process rather than on completed co-creation activities, pilot implementation outcomes, or validated engagement frameworks. The discussion therefore reflects institutional planning processes and emerging organizational observations rather than formal evaluation findings. Second, the project was developed within a specific university-affiliated healthcare ecosystem in Albania that combines outpatient healthcare services, home healthcare services, academic structures, and living lab activities. The organizational characteristics, institutional culture, and operational realities of this environment may differ substantially from those of larger healthcare systems or more established living lab ecosystems. As a result, the planning approaches and institutional reflections described in this paper may not be directly transferable to all healthcare contexts. Third, the paper adopts a conceptual and implementation-oriented perspective rather than a formal empirical evaluation design. The observations presented are derived from stakeholder engagement planning activities, facilitation preparation, governance discussions, and organizational reflection processes undertaken during the preparatory phase of the project. Future stages of the PEARL-Lab initiative will require more rigorous evaluation of stakeholder experiences, participation dynamics, implementation outcomes, and organizational impacts following the completion of co-creation and pilot activities. In addition, the planning process itself remained influenced by existing institutional structures, organizational priorities, and professional hierarchies within the participating organizations. Although the project sought to support inclusive and participatory engagement practices, preparatory activities were still conducted within

healthcare and academic environments shaped by operational constraints and unequal distributions of authority. The possibility of unintended bias within participant selection, facilitation planning, or governance design therefore cannot be excluded. Finally, living lab and ORRI methodologies continue to evolve across differing disciplinary and operational contexts. There remains limited consensus regarding best practices for organizational readiness, governance adaptation, and ethical stakeholder engagement within healthcare living lab environments. The PEARL-Lab project should therefore be understood as an exploratory contribution to an emerging area of implementation and governance research rather than as a finalized or universally applicable model for participatory healthcare innovation.

7. Conclusion

This paper examined the preparatory phase of the PEARL-Lab project and argued that meaningful stakeholder engagement in healthcare Living Labs depends on governance readiness before co-creation begins. The project identified five emerging domains of governance readiness: representation, facilitation, ethics, authority, and feedback. Together, these domains show that preparation is not only a logistical activity. It is also a governance process. The contribution of PEARL-Lab is not the claim that preparation is new. Existing Living Lab literature already recognizes the importance of leadership, involvement, openness, organizational support, and ownership. Rather, this paper shows how preparation can be organized in healthcare settings where patient voice, clinical authority, ethical responsibility, and operational feasibility must be balanced.

Future phases of the project will examine how these governance-readiness domains function during co-creation, pilot implementation, and validation activities. Further research is needed to evaluate stakeholder experiences, participation dynamics, and the long-term organizational effects of participatory governance models in healthcare Living Labs.

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TITLE OF PAPER: BUSINESS MODEL INNOVATION AS A STRATEGIC CONDUIT LINKING ENTREPRENEURIAL ORIENTATION AND INNOVATION CAPABILITY TO NON-FINANCIAL PERFORMANCE

Rezart Prifti

Department of Economy, Entrepreneurship, and Finance
Barleti Univesrity, Tirane, Albania

Corresponding author: r.prifti@umb.edu.al
(ORCID: 0000-0002-8328-4090)

Abstract

This study develops and tests an integrated framework linking entrepreneurial orientation (EO), innovation capability (IC), business model innovation (BMI), and non-financial performance (NFP). Building on the view of EO as a strategic posture, IC as a knowledge-based organizational capability, and BMI as the reconfiguration of value creation and value capture mechanisms, the study examines how these constructs jointly shape broader firm outcomes beyond immediate accounting returns. Using partial least squares structural equation modeling (PLS-SEM), the findings indicate that EO positively influences both IC and BMI, while IC also exerts a positive effect on BMI. BMI emerges as the only significant direct predictor of NFP, whereas the direct effects of EO and IC on NFP are not statistically significant. The results suggest that the value of entrepreneurial posture and innovation capability is realized primarily through business model transformation rather than through direct performance effects. The study contributes to the literature by clarifying a sequential innovation pathway in which BMI serves as the principal mechanism through which EO and IC are translated into superior non-financial performance.

Keywords

Entrepreneurial orientation; innovation capability; business model innovation; non-financial performance

1. Introduction

In increasingly turbulent and innovation-intensive environments, firms are required not only to improve products and processes, but also to rethink the underlying logic through which they create, deliver, and capture value. This challenge has intensified scholarly interest in entrepreneurial orientation (EO), innovation capability (IC), and business model innovation (BMI) as key explanatory constructs of organizational adaptation and renewal. Although each construct has attracted substantial attention in the literature, their interrelationships remain insufficiently

integrated, particularly in relation to broader, non-financial dimensions of firm performance. This omission is consequential because many strategically important outcomes of innovation, such as customer loyalty, reputation, stakeholder credibility, and market legitimacy, emerge before financial returns become visible and may function as leading indicators of long-term organizational success. EO is commonly conceptualized as a firm-level strategic posture reflected in innovativeness, proactiveness, and risk-taking. In the present study, EO is treated not as an isolated behavioral tendency, but as an organizationally embedded posture whose effects are contingent on the firm's capacity to mobilize and apply knowledge. This perspective is important because it shifts the analytical focus from a simplistic direct EO–performance relationship toward the organizational mechanisms through which entrepreneurial intent is transformed into strategic and operational outcomes. Prior literature suggests that EO acquires performance relevance when supported by learning, knowledge creation, and coordination processes, implying that EO is best understood as an upstream strategic force rather than as a self-sufficient driver of performance.

From this standpoint, IC assumes a central mediating role. Innovation capability refers to the firm's ability to mobilize, combine, and deploy knowledge in ways that support product, process, and managerial innovation. Rather than representing a narrow technological competence, IC captures a broader organizational capacity for renewal. Yet capability accumulation alone may not be sufficient to generate visible organizational outcomes unless it is translated into more systemic forms of change. This is where BMI becomes theoretically decisive. BMI extends beyond isolated innovation activities by addressing the reconfiguration of the firm's activity system and the architecture through which value is created and appropriated. As such, BMI offers a more direct mechanism through which entrepreneurial posture and innovation capability may be converted into meaningful performance consequences. The present study argues that BMI is especially relevant for explaining non-financial performance (NFP). Following Chen et al., (2009), NFP is conceptualized as a long-term operational dimension of performance that includes customer loyalty, customer acquisition, and firm image and reputation. This perspective is analytically significant because it recognizes that firms often experience performance gains first in relational, strategic, and reputational domains before such gains are reflected in accounting indicators. The literature reviewed in the article suggests that BMI can enhance customer value, coordination quality, stakeholder trust, transparency, and organizational adaptability, thereby making it particularly salient for explaining non-financial outcomes.

Against this backdrop, the study proposes and tests a sequential framework in which EO functions as the primary strategic antecedent, IC operates as an enabling organizational capability, BMI serves as the principal mechanism of value-system renewal, and NFP represents the focal organizational outcome. The empirical findings support this logic. EO positively affects both IC and BMI, IC positively affects BMI, and BMI is the only significant direct predictor of NFP. By contrast, the direct effects of EO and IC on NFP are not supported. These results indicate that entrepreneurial posture and innovation capability do not automatically improve organizational outcomes; rather, their performance implications materialize chiefly when they culminate in business model innovation. The study therefore contributes to the literature by clarifying a sequential innovation chain in which BMI operates as the principal conduit linking EO and IC to superior non-financial performance.

2. Literature Review

2.1. Entrepreneurial Orientation

For the purposes of this study, entrepreneurial orientation (EO) is treated as a strategic orientation that captures how firms respond to opportunities, uncertainty, and competitive change. Although the reviewed article synthesizes EO primarily through the dominant Millerian tradition, it consistently portrays the construct as an organizational posture reflected in innovativeness, proactiveness, and risk-taking, rather than as an isolated behavioral tendency. In this respect, EO is best understood as a broader strategic logic that shapes decision-making practices, organizational responsiveness, and entrepreneurial action. (Engelen, 2010), as synthesized in the article, further strengthens this view by embedding EO in organizational structure, leadership style, and culture, thereby positioning it not merely as a dispositional trait, but as an outcome of internal organizing choices. This interpretation is consistent with the broader EO literature, which has long treated entrepreneurship at the firm level as an enduring strategic posture rather than a one-time act (Covin & Slevin, 1989; Engelen, 2010; Lumpkin & Dess, 1996; Miller, 1983).

Literature also shows that EO has evolved from a relatively simple firm-level construct into a more differentiated and theoretically contested domain. Earlier work emphasized the extent to which top managers and owners shape entrepreneurial posture through innovative, proactive, and risk-taking

strategic choices. More recent scholarship, however, has problematized this top-management emphasis by arguing that EO may manifest at multiple levels of analysis and that limiting EO to the firm or business-unit level leaves the underlying mechanisms of its effects underexplored. As noted in the reviewed article, this concern is captured in the "black box" critique of EO research, which questions how entrepreneurial posture is translated into organizational outcomes and why its performance effects are not always uniform (Covin & Wales, 2012; Wales et al., 2011). Accordingly, contemporary EO scholarship increasingly treats EO as a multilevel phenomenon whose value depends on the organizational processes through which it is enacted. This shift has important implications for the conceptualization of EO. Literature highlights that EO is no longer seen solely as the province of senior executives; rather, it may be expressed by individuals and teams throughout the organization. In this line of work, individual entrepreneurial orientation (IEO) and team entrepreneurial orientation (TEO) extend the classic firm-level construct downward, suggesting that entrepreneurial posture can be reflected in employee-level initiative, experimentation, and risk acceptance, and then aggregated upward into broader organizational outcomes (Bolton & Lane, 2012; Covin et al., 2020; Kraus et al., 2019). This multilevel perspective is theoretically important because it recasts EO as a distributed strategic orientation rather than a purely top-down posture. It also helps explain why the organizational consequences of EO depend not only on executive intent, but also on how entrepreneurial behaviors are activated, coordinated, and sustained at lower organizational levels (Covin & Wales, 2012; Wiklund & Shepherd, 2005).

A particularly strong theme in the reviewed literature is the relationship between EO and innovative capabilities. The article shows that EO is most convincingly linked to innovation capability through knowledge-based and learning-based mechanisms. Li et al., (2009) argue that EO enhances firm performance by activating knowledge creation processes, including socialization, externalization, combination, and internalization, thereby indicating that entrepreneurial posture generates value when it is translated into organizational processes that create and recombine knowledge. Wang, (2008) reaches a parallel conclusion by showing that learning orientation mediates the EO–performance relationship, suggesting that EO becomes consequential when firms possess routines for information acquisition, collective interpretation, and organizational renewal. This interpretation is reinforced by Hughes et al., (2022), who place

EO within a broader knowledge-based theory of the firm and argue that knowledge production can itself shape EO, while knowledge use mediates the relationship between EO and profitability. Taken together, these studies indicate that EO and innovation capability should not be treated as separate or unrelated constructs. Rather, EO provides the strategic impetus for experimentation and opportunity pursuit, while innovation capability provides the organizational means through which entrepreneurial intent is converted into innovation outcomes and adaptive renewal (Hughes et al., 2021; Li et al., 2009; Wang, 2008). By contrast, the relationship between EO and business model innovation (BMI) remains less fully theorized in the reviewed literature. Wang (2008) suggests that EO becomes especially salient in contexts characterized by shortened product and business model life cycles, implying that entrepreneurial firms operate under conditions that require repeated reconfiguration of value creation and value capture mechanisms. However, the reviewed studies do not directly model BMI as a distinct outcome of EO. The connection is therefore more inferential than explicitly demonstrated. EO appears highly relevant in contexts of business model renewal because innovative, proactive, and risk-taking firms are more likely to challenge existing routines and pursue new strategic configurations, yet the evidence assembled in the article speaks much more directly to innovation capability than to BMI itself. Thus, based on the literature reviewed, BMI should be treated as a plausible but still comparatively underdeveloped extension of EO research.

The EO–performance relationship is likewise supported, but in a more qualified way than earlier research often implied. Literature notes that EO has become one of the most important constructs in entrepreneurship and management research, and that considerable empirical evidence links EO to firm growth and performance. At the same time, skepticism remains because EO does not uniformly or automatically produce superior outcomes. The literature increasingly suggests that the EO–performance link is contingent, mediated, and configuration-dependent rather than direct and universally positive (Covin & Lumpkin, 2011; Covin & Wales, 2019; Martens et al., 2016; Putniņš & Sauka, 2020; Wiklund & Shepherd, 2011). This is especially clear in the team-level work reviewed in the article, where EO-related behaviors generate high performance only under specific combinations of innovativeness, proactiveness, risk-taking, trust, and commitment. Such findings are important because they indicate that EO should not be interpreted as a guaranteed

source of performance, but rather as a strategic force whose effects depend on supportive relational, organizational, and knowledge-based conditions (Covin et al., 2020).

Overall, the reviewed literature supports a view of EO as a strategic orientation whose effects are realized through complementary organizational mechanisms rather than through direct entrepreneurial posture alone. Within this perspective, EO is most robustly connected to innovative capabilities, because entrepreneurial intent appears to become productive when it is translated into learning, knowledge creation, and organizational renewal processes. Its relationship with business model innovation is conceptually plausible but less directly specified, while its relationship with firm performance is broad but clearly conditional. Accordingly, EO can be understood as an upstream strategic force that shapes how firms pursue opportunities, mobilize capabilities, and adapt to changing environments, but whose value is ultimately realized through the organizational capacities and innovation pathways that connect entrepreneurial posture to performance outcomes (Engelen, 2010; Hughes et al., 2022; Li et al., 2009; Wang, 2008).

2.2. Innovation Capability

Innovation capability is defined in this study following Lin, (2007) as a firm's ability to transform knowledge sharing into innovation in products, processes, and managerial systems. This definition is particularly appropriate because it captures the dominant logic running through the reviewed literature: innovation capability is not a narrow technical attribute, nor a proxy for R&D intensity, but a higher-order organizational capacity through which firms mobilize, integrate, and apply knowledge for renewal and adaptation. In this sense, innovation capability is best understood as a knowledge-based and organizationally embedded capability that enables firms to repeatedly generate innovation outcomes rather than relying on sporadic or isolated innovative acts (Iddris, 2016; Lawson & Samson, 2001; Lin, 2007). The literature consistently frames innovation capability as a multidimensional construct. Rather than equating it with technological development alone, prior work positions it as an integrative competence that combines knowledge processes, organizational arrangements, and managerial intent. Lawson & Samson, (2001) provide the strongest early formulation by conceptualizing innovation capability as a meta-capability composed of vision and strategy, harnessing the competence base, organizational intelligence, creativity and idea management, organizational structures and systems, culture and climate, and

management of technology. Iddris, (2016) shows that innovation capability research converges around dimensions such as knowledge management, organizational learning, organizational culture, leadership, collaboration, creativity, idea management, and innovation strategy, despite variation in labels and operationalizations across studies. Taken together, these studies suggest that innovation capability should be treated as a composite organizational competence rather than a single functional skill (Iddris, 2016; Lawson & Samson, 2001). A central point of convergence in the literature is the knowledge-based nature of innovation capability. Lin (2007) places knowledge sharing at the center of the construct, and the uploaded review materials strongly support that choice. Iddris (2016) identifies knowledge management as the most recurrent and conceptually important dimension of innovation capability, emphasizing activities such as knowledge acquisition, storage, distribution, transformation, and application. The same knowledge emphasis is echoed in more recent work. Houessou et al., (2023) show that external tacit knowledge acquisition enhances incremental innovation capability, thereby reinforcing the idea that innovation capability depends not simply on possession of knowledge but on access to and use of difficult-to-codify expertise. Similarly, Shahzad et al., (2025)argue that SMEs strengthen innovation capability through knowledge co-creation and ecosystem collaboration, particularly when intermediary actors help firms contextualize and exploit external knowledge. These studies collectively affirm that innovation capability is rooted in the firm's ability to absorb, recombine, and exploit knowledge across internal and external boundaries. Literature also indicates that innovation capability is inseparable from organizational learning and adaptation. This is visible both in firm-level systematic reviews and in conceptually adjacent capability research. Lawson and Samson (2001) position innovation capability within the dynamic capabilities tradition, arguing that firms innovate successfully when they can repeatedly align competencies, structures, and strategic intent in response to change. (Vu, 2020) similarly treats innovation capability as a capability through which firms integrate key resources and competences to stimulate innovation, while Strønen et al., (2017) clarify its relationship with dynamic capabilities by suggesting that innovation capability concerns the firm's capacity to innovate, whereas dynamic capabilities relate more broadly to sensing, seizing, and transforming in changing environments. The conceptual overlap is important: innovation capability is not identical to dynamic capability, but it is closely related insofar as both concern purposeful organizational renewal. In this respect, the literature supports viewing innovation capability as a specific form of adaptive organizational competence

centered on innovation generation and implementation. Another strong theme is that innovation capability depends on organizational and relational conditions, not only internal technical assets. Iddris (2016) highlights the importance of culture, leadership, collaboration, and organizational learning routines, while Shahzad et al., (2025) extend this logic to ecosystem settings by showing that SMEs build innovation capability through collaborations with core partners and intermediary firms.

With respect to business model innovation (BMI), literature provides a conceptually suggestive but still indirect connection. Lawson & Samson (2001) argue that innovation capability is the primary engine of organizational wealth creation because it enables firms to generate new products, services, and systems rather than merely exploit existing assets. This formulation implies a broader capacity for reconfiguring how value is created and delivered. Vu (2020) and Strønen et al. (2017) reinforce this implication by locating innovation capability near dynamic capabilities and organizational renewal, both of which become especially salient when firms confront technological discontinuities or new business models. However, literature does not directly theorize BMI as a distinct outcome of innovation capability in the way it does for more traditional innovation outputs. The most defensible conclusion, therefore, is that innovation capability is conceptually proximate to BMI because both involve reconfiguration, adaptation, and new value architectures, but the direct theoretical and empirical treatment of that relationship remains underdeveloped.

By contrast, the relationship between innovation capability and firm performance is much more clearly established. Lawson and Samson (2001) explicitly argue that firms with stronger innovation capability are better able to achieve superior business performance because they can repeatedly execute innovation processes effectively. Somwethee et al., (2023) provide direct empirical support by showing that innovation capability positively influences sustainable organizational performance across economic, social, and environmental dimensions. The broader review literature points in the same direction. Wanyoike & Muigai Kinyua (2025) identify innovation capability as a predictor of firm performance, particularly in dynamic and uncertain markets, while Houessou et al. (2023) show that knowledge-based processes strengthen incremental innovation capability in ways that support competitiveness and adaptation. Across these contributions, performance is not restricted to short-term financial returns. Rather, innovation

capability is associated with broader outcomes such as competitiveness, organizational resilience, customer value, and long-term adaptability. This makes innovation capability particularly relevant for studies concerned with non-financial or strategic dimensions of performance (Houessou et al., 2023; Lawson & Samson, 2001; Somwethee et al., 2023; Wanyoike & Muigai Kinyua, 2025).

Overall, the literature supports a parsimonious but robust conclusion. Following Lin (2007), innovation capability is most appropriately understood as a firm's capacity to convert knowledge sharing into innovation outcomes in products, processes, and managerial systems. The reviewed studies consistently show that this capability is knowledge-based, multidimensional, and organizationally embedded, drawing on learning, leadership, collaboration, culture, and strategic coordination (Bell, 2009). Two implications are especially important for the this paper: first, innovation capability is conceptually close to business model innovation, because both involve organizational renewal and reconfiguration, even if that link remains less directly theorized; second, innovation capability shows a much stronger and more explicit connection with firm performance, including both conventional business outcomes and broader sustainable or non-financial results. In this sense, innovation capability should be seen not as a narrow innovation input, but as a higher-order organizational competence through which firms transform knowledge into innovation and innovation into enduring performance advantages.

2.3. Business Model Innovation

Business model innovation (BMI) is best understood as the redesign of the activity system through which a firm creates and captures value (Zott & Amit, 2007a). This definition remains influential because it directs attention away from isolated product or process change and toward the broader architecture of transactions, relationships, and activities linking the firm to customers, partners, and other external actors. The distinction between novelty-centered and efficiency-centered design remains especially important: BMI may involve new ways of organizing exchange, or more efficient coordination of existing exchanges, but in both cases, it concerns nontrivial reconfiguration of value architecture rather than incremental adjustment (Foss & Saebi, 2017; Zott et al., 2011; Zott & Amit, 2007a). Early work on business models had already suggested that

competitive advantage depends not only on technologies or products, but also on the logic through which firms connect with markets and convert opportunities into economic value (Casadesus-Masanell & Ricart, 2010; Chesbrough & Rosenbloom, 2002; Zott & Amit, 2007b). Later contributions strengthened this argument by showing that technologies themselves do not create value automatically; rather, value depends on the business model in which they are embedded (Chesbrough, 2010; Teece, 2010). BMI therefore became central because it captures the mechanism through which firms alter that logic of value creation, delivery, and capture (Foss & Saebi, 2018; Zott et al., 2011). A major advance in the BMI literature has been the shift from static to processual understandings of the construct. (Andreini et al., 2022a) show that BMI unfolds through cognition, knowledge shaping, strategizing, value creation, and evolutionary learning, thereby positioning it as an ongoing transformation process rather than a one-off redesign decision. This perspective is important because it explains how firms actually move from one business logic to another through interpretation, experimentation, and organizational learning. It also aligns with the broader effort to consolidate the field and clarify the boundaries of BMI as distinct from ordinary (Andreini et al., 2022a; Foss & Saebi, 2017; Wirtz & Daiser, 2018). A second major stream links BMI to technological change. (Ancillai et al., 2023a) show that digital technologies affect value creation, delivery, and capture, making BMI one of the main routes through which firms exploit digital transformation. (Ritter & Pedersen, 2020a) complement this argument by showing that digitization capability—rooted in data, permission, and analytics—acts as an antecedent to business model digitalization because it can affect all business model elements. The same pattern appears in AI-driven BMI: Jorzik et al. (2024) demonstrate that firms often fail to realize AI's value not because AI lacks potential, but because managers lack the routines and capabilities needed to redesign business models around it. Together, these studies show that BMI is the strategic mechanism through which technological possibilities become commercially meaningful (Ancillai et al., 2023a; Jorzik et al., 2024a; Ritter & Pedersen, 2020a). Sustainability research broadens BMI further by showing that business model redesign can integrate economic, environmental, and social value. Evans et al. (2017) argue that BMI may reorganize wider value networks to deliver multiple forms of value, while Geissdoerfer et al. (2018), describe the ability to move into new business models as a source of sustainable competitive advantage. These contributions matter because they extend BMI beyond narrow commercial logic and place it within broader stakeholder systems. Across the field, BMI therefore emerges as a systemic and processual

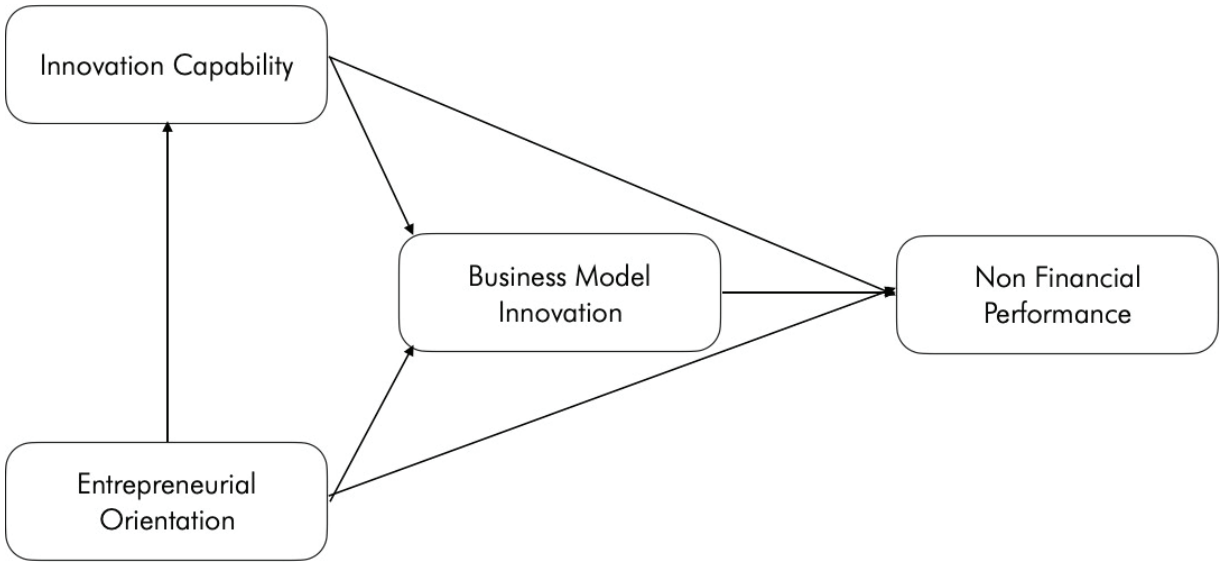
form of strategic renewal: it is deeper than incremental innovation, yet more specific than diffuse organizational transformation. Within this broader understanding, entrepreneurial orientation (EO) and innovation capability (IC) are most coherently treated as antecedents of BMI. EO provides the strategic willingness to challenge inherited routines and pursue uncertain opportunities, while IC provides the organizational capacity—learning, coordination, experimentation, and implementation—needed to redesign the business model effectively. This interpretation is consistent with the process-based, digital, and AI-driven BMI literature, all of which imply that business model redesign depends on both a strategic posture open to novelty and capabilities able to execute reconfiguration (Andreini et al., 2022b; Jorzik et al., 2024b; Ritter & Pedersen, 2020). Finally, the relationship between BMI and firm performance is one of the main reasons the construct gained prominence. Foundational work showed that business model design influences entrepreneurial firm performance, especially where novelty is high (Zott & Amit, 2007). Later studies broadened this by linking BMI to sustainable competitive advantage, stakeholder value, adaptability, and resilience (Ancillai et al., 2023; Evans et al., 2017; Geissdoerfer et al., 2018). In this sense, BMI occupies the pivotal position in the present model: it sits downstream of EO and IC and upstream of performance, functioning as the central mechanism through which entrepreneurial posture and innovation capability are translated into superior organizational outcomes.

2.4. Operationalization of Non-Financial Performance

Non-financial performance is conceptualized here in line with Chen et al. (2009) as a long-term operational dimension of firm performance that captures outcomes beyond immediate accounting returns. In their model, non-financial performance emphasizes increasing customer loyalty, attracting new customers, and enhancing firm image and reputation, and is measured with five items reflecting these outcomes. This framing treats non-financial performance as a strategic market-based consequence of innovation rather than a residual category. Chen et al. (2009) further argue that service delivery innovation strengthens non-financial performance by making buying easier, clarifying deliverables and outcomes, improving the firm's ability to meet customer needs, and adding convenience for customers. Importantly, non-financial performance is not isolated from

economic outcomes; it positively influences financial performance, indicating that customer loyalty, reputation, and customer acquisition function as leading indicators of longer-term firm success.

Figure 1 Conceptual model.



Source: Author's work.

The conceptual framework (Figure 1) of this study proposes that entrepreneurial orientation (EO) serves as the primary strategic antecedent shaping firm-level innovation and performance outcomes. Specifically, firms with stronger entrepreneurial orientation are expected to develop higher innovation capability (IC) and to engage more intensively in business model innovation (BMI). In turn, innovation capability is also expected to strengthen business model innovation, suggesting that firms' internal ability to generate, absorb, and apply innovation supports the redesign of value creation and value capture mechanisms. The framework further posits that business model innovation is a direct driver of non-financial performance (NFP), as firms that innovate their business model are more likely to improve customer-related, strategic, and organizational outcomes. At the same time, both entrepreneurial orientation and innovation capability are also assumed to exert direct effects on non-financial performance. Taken together, the model reflects a sequential logic in which entrepreneurial orientation acts as an upstream strategic force, innovation capability functions as an enabling organizational mechanism, and business model innovation represents the principal pathway through which these innovation-

related resources and orientations are translated into enhanced non-financial performance. Based on the conceptual model and the logic of research we raise these hypotheses:

H1. Entrepreneurial orientation has a positive effect on innovation capability.

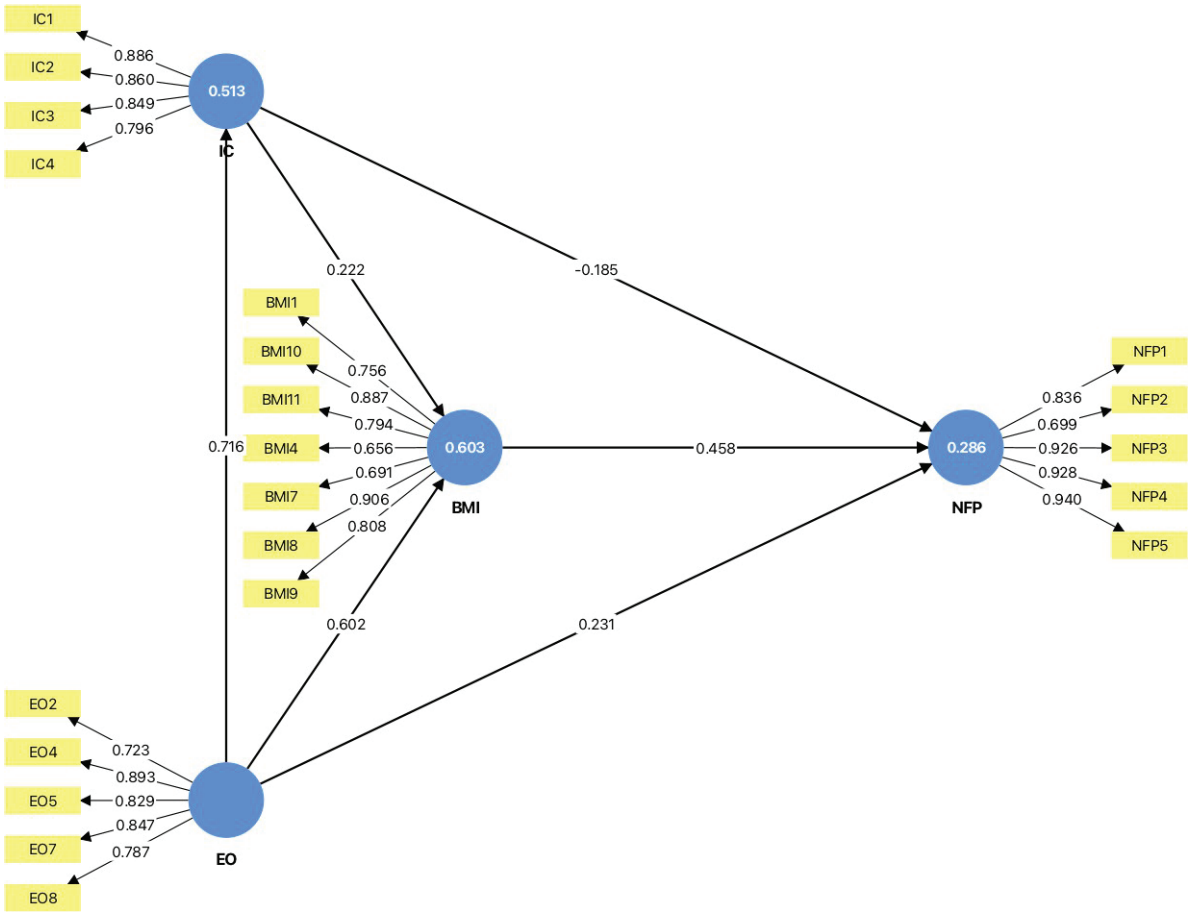
H2. Entrepreneurial orientation has a positive effect on business model innovation.

H3. Innovation capability has a positive effect on business model innovation.

H4. Business model innovation has a positive effect on non-financial performance.
H5. Entrepreneurial orientation has a positive effect on non-financial performance.
H6. Innovation capability has a positive effect on non-financial performance.

3. Methodology

Figure 2 SmartPLS SEM Algorithm results.



Source: Author's calculations.

This study employed partial least squares structural equation modeling (PLS-SEM) to examine the relationships among Entrepreneurial Orientation (EO), Innovation Capability (IC), Business Model Innovation (BMI), and Non-Financial Performance (NFP). PLS-SEM was selected because it is appropriate for the simultaneous assessment of the measurement model and the structural model, while also being well suited for predictive and theory-development purposes in models involving multiple latent constructs and mediation paths (Hair et al., 2021). All constructs were modeled reflectively and assessed using established reliability and validity criteria. The analysis followed the standard two-stage PLS-SEM procedure.

First, the measurement model (Figure 2) was evaluated to ensure that the latent constructs were measured reliably and validly. Indicator reliability was assessed through outer loadings, with values above 0.70 considered desirable, while slightly lower loadings were retained when construct-level reliability and validity remained satisfactory (Cronbach, 1951; Holmbeck & Devine, 2009). Internal consistency reliability was examined using Cronbach's alpha, rho_A, and composite reliability (rho_c), with threshold values above 0.70 indicating acceptable reliability. Convergent validity was assessed through the average variance extracted (AVE), where values above 0.50 indicate that a construct explains more than half of the variance of its indicators (Kump et al., 2019). Discriminant validity was then examined using both the heterotrait–monotrait ratio (HTMT) and the Fornell–Larcker criterion, ensuring that each construct was empirically distinct from the others (Fornell & Larcker, 1981).

Second, the structural model was assessed by examining the size and significance of the path coefficients, the explanatory power of the model using R^2 and adjusted R^2, and the contribution of each predictor through effect size (f^2). To test the significance of direct, indirect, and total effects, a bootstrapping procedure was applied, generating standard errors, t-values, and p-values for inferential assessment. This step was essential to evaluate the robustness of the hypothesized relationships and to determine whether mediation effects were statistically supported. In addition, approximate global model fit was examined using SRMR, d_ULS, d_G, and NFI. Although model fit indices in PLS-SEM are supplementary rather than decisive, they provide additional evidence on the adequacy of the specified model. This procedure enabled a rigorous assessment of both the psychometric quality of the constructs and the substantive relationships among EO, IC, BMI, and NFP.

Table 1 Synthesis of hypothesis testing after model estimation.

Hypothesis	**Statement**	**Path / Effect**	**Result**
H1	Entrepreneurial Orientation positively affects Innovation Capability.	EO → IC	**Supported**
H1	Entrepreneurial Orientation positively affects Innovation Capability.	EO → IC	**Supported**
H2	Entrepreneurial Orientation positively affects Business Model Innovation.	EO → BMI	**Supported**
H3	Innovation Capability positively affects Business Model Innovation.	IC → BMI	**Supported**
H4	Business Model Innovation positively affects Non-Financial Performance.	BMI → NFP	**Supported**
H5	Entrepreneurial Orientation positively affects Non-Financial Performance.	EO → NFP	**Not supported**
H6	Innovation Capability positively affects Non-Financial Performance.	IC → NFP	**Not supported**
H7	Entrepreneurial Orientation positively affects Business Model Innovation indirectly through Innovation Capability.	EO → IC → BMI	**Supported**
H8	Entrepreneurial Orientation positively affects Non-Financial Performance indirectly through the mediating chain.	EO → … → NFP	**Not supported**
H9	Innovation Capability positively affects Non-Financial Performance indirectly through Business Model Innovation.	IC → BMI → NFP	**Not supported**

Measurement model assessment

The analysis began with the assessment of the measurement model, because structural relationships can only be interpreted meaningfully when the latent constructs are measured with sufficient reliability and validity. The first step involved examining the outer loadings of the indicators (Table 2). Most indicators loaded above the recommended threshold of 0.70, indicating satisfactory item reliability. Specifically, BMI indicators ranged from 0.656 to 0.906, EO indicators from 0.723 to 0.893, IC indicators from 0.796 to 0.886, and NFP indicators from 0.699 to 0.940. Although a small number of items were slightly below 0.70, namely BMI4 (0.656), BMI7 (0.691), and NFP2 (0.699), they were retained because the construct-level reliability and convergent validity statistics remained clearly acceptable.

Table 2 Outer Loadings

BMI1 <- BMI	0.756
BMI10 <- BMI	0.887

BMI11 <- BMI	0.794
BMI4 <- BMI	0.656
BMI7 <- BMI	0.691
BMI8 <- BMI	0.906
BMI9 <- BMI	0.808
EO2 <- EO	0.723
EO4 <- EO	0.893
EO5 <- EO	0.829
EO7 <- EO	0.847
EO8 <- EO	0.787
IC1 <- IC	0.886
IC2 <- IC	0.860
IC3 <- IC	0.849
IC4 <- IC	0.796
NFP1 <- NFP	0.836
NFP2 <- NFP	0.699
NFP3 <- NFP	0.926
NFP4 <- NFP	0.928
NFP5 <- NFP	0.940

Methodologically, this step is important because sufficiently strong outer loadings indicate that the observed variables adequately represent their intended latent constructs. Internal consistency reliability was then assessed using Cronbach's alpha, rho_A, and composite reliability (Table 3). All constructs exceeded the conventional threshold of 0.70 across all reliability measures. Cronbach's alpha ranged from 0.870 to 0.919, rho_A ranged from 0.874 to 0.957, and composite reliability ranged from 0.909 to 0.940. These results demonstrate strong internal consistency and indicate that the items within each construct consistently capture the same underlying concept. This step is statistically important because unreliable constructs would weaken or distort the structural estimates in the model.

Table 3 Internal consistency, composite reliability, and convergent validity.

	Cronbach's alpha	Composite reliability (rho_c)	Average variance extracted (AVE)
BMI	0.897	0.920	0.624
EO	0.875	0.909	0.669
IC	0.870	0.911	0.720
NFP	0.919	0.940	0.759

Next, convergent validity (Table 3) was assessed through the average variance extracted (AVE). The AVE values for BMI (0.624), EO (0.669), IC (0.720), and NFP (0.759) all exceeded the recommended threshold of 0.50. This confirms that each construct explains more than half of the variance of its indicators. Establishing convergent validity is methodologically necessary because it demonstrates that the indicators of the same construct converge on a common conceptual domain.

The analysis then examined discriminant validity, which is critical to ensure that the constructs are empirically distinct and not merely reflections of the same underlying phenomenon. Using the HTMT criterion (Table 4), all values were below the liberal threshold of 0.90. The highest value was observed between BMI and EO (0.856), followed by EO and IC (0.806), while the remaining HTMT values were clearly lower. This suggests acceptable discriminant validity overall, although BMI and EO are relatively closely related constructs. The Fornell–Larcker criterion further supported discriminant validity (Table 5), as the square root of the AVE for each construct exceeded its correlations with all other constructs. For example, the square root of AVE for BMI was 0.790, which was higher than its correlations with EO (0.761), IC (0.653), and NFP (0.512). Together, these tests indicate that the four latent constructs are empirically distinguishable. This is a crucial step because insufficient discriminant validity would call into question the interpretation of the hypothesized structural paths. Overall, the measurement model demonstrates satisfactory indicator reliability, internal consistency reliability, convergent validity, and discriminant validity, thereby providing a sound basis for interpretation of the structural model.

Table 4 HTMT table

	BMI	EO	IC	NFP

BMI				
EO	0.856			
IC	0.733	0.806		
NFP	0.539	0.488	0.294	

Table 5 Fornell Larcker Criterion

	BMI	**EO**	**IC**	**NFP**
BMI	0.790			
EO	0.761	0.818		
IC	0.653	0.716	0.848	
NFP	0.512	0.446	0.279	0.871

Structural model assessment

After establishing the adequacy of the measurement model, the analysis proceeded to the structural model, where the hypothesized relationships among the constructs were tested. This stage is methodologically important because it evaluates whether the theoretical model is supported by the empirical data. The first structural assessment focused on the direct path coefficients(Table 6). The results show that EO exerts a strong positive effect on IC (β = 0.716) and BMI (β = 0.602), while IC has a positive effect on BMI (β = 0.222). In turn, BMI has a positive effect on NFP (β = 0.458). By contrast, EO has a weaker positive direct coefficient on NFP (β = 0.231), and IC shows a negative direct coefficient on NFP (β = -0.185). However, coefficient magnitude alone is not sufficient; statistical significance must be established through bootstrapping.

Table 6 Path Coefficients

BMI -> NFP	0.458
EO -> BMI	0.602
EO -> IC	0.716
EO -> NFP	0.231

IC -> BMI	0.222
IC -> NFP	-0.185

Using the bootstrapping procedure, the significance of the direct effects was examined through t-values and p-values. EO significantly predicts IC ($\beta = 0.716$, $t = 11.034$, $p < 0.001$) and BMI ($\beta = 0.602$, $t = 6.280$, $p < 0.001$), while IC significantly predicts BMI ($\beta = 0.222$, $t = 2.144$, $p = 0.032$). BMI also significantly predicts NFP ($\beta = 0.458$, $t = 2.179$, $p = 0.029$). In contrast, EO does not significantly predict NFP directly ($\beta = 0.231$, $t = 1.109$, $p = 0.268$), and IC does not significantly predict NFP directly ($\beta = -0.185$, $t = 1.496$, $p = 0.135$). This step is statistically central because it identifies which theoretical relationships are empirically supported. Substantively, the results suggest that EO functions primarily as an upstream strategic driver of innovation capability and business model innovation, while NFP is improved mainly through BMI rather than through direct effects from EO or IC. The analysis then turned to indirect effects, which are essential when the theoretical model proposes mediation. The indirect effect of EO on BMI is positive and significant ($\beta = 0.159$, $t = 2.067$, $p = 0.039$), indicating that EO enhances BMI not only directly, but also indirectly through IC. By contrast, the indirect effects of EO on NFP ($\beta = 0.216$, $t = 1.181$, $p = 0.238$) and IC on NFP ($\beta = 0.102$, $t = 1.444$, $p = 0.149$) are not significant. This step is methodologically important because it clarifies whether the influence of an exogenous construct is transmitted through intervening variables. In this case, the evidence supports mediation from EO to BMI through IC, but does not provide sufficient support for indirect transmission to NFP.

The total effects were also examined, as they summarize the overall influence of one construct on another by combining direct and indirect effects. EO has a very strong total effect on BMI ($\beta = 0.761$, $t = 13.386$, $p < 0.001$) and a significant total effect on NFP ($\beta = 0.446$, $t = 3.763$, $p < 0.001$), despite its non-significant direct path to NFP. This indicates that EO matters for NFP at the aggregate level, but this influence is not transmitted through a simple direct route. IC, however, does not have a significant total effect on NFP ($\beta = -0.084$, $t = 0.684$, $p = 0.494$). Interpretation of total effects is important because it captures the full substantive role of a construct within a mediated causal system.

The explanatory power of the model was then assessed through R^2 values (Table 7). The model explains 51.3% of the variance in IC, 60.3% of the variance in BMI, and 28.6% of the variance in

NFP. These values indicate substantial explanatory power for IC and BMI, and moderate explanatory power for NFP. The bootstrapped R^2 results confirmed that the explained variance for BMI ($t = 6.874$, $p < 0.001$), IC ($t = 5.612$, $p < 0.001$), and NFP ($t = 2.272$, $p = 0.023$) is statistically meaningful. R^2 is methodologically important because it indicates how well the model accounts for the endogenous constructs. In substantive terms, the model is particularly effective at explaining innovation-related outcomes, while performance remains only partially accounted for, suggesting that additional antecedents of NFP may exist outside the current model.

Table 7 Explanatory Power of the model

	R-square	R-square adjusted
BMI	0.603	0.593
IC	0.513	0.507
NFP	0.286	0.260

To further understand the relative contribution of each predictor, **effect sizes (f^2)** were examined (Table 8). EO has a large effect on BMI ($f^2 = 0.444$) and an extremely large effect on IC ($f^2 = 1.051$), while BMI has a small-to-moderate effect on NFP ($f^2 = 0.117$). EO and IC have only small effect sizes on NFP (0.025 and 0.022, respectively), and IC has a small effect on BMI (0.061). Although bootstrap testing of the f^2 values showed statistical robustness only for EO → IC ($p = 0.016$), the descriptive magnitudes remain informative. This step is methodologically valuable because path significance alone does not indicate substantive importance; f^2 helps distinguish relationships that are statistically significant but practically modest from those that exert substantial influence.

Table 8 Assessing effect sizes (predictor contribution).

	f-square
BMI -> NFP	0.117
EO -> BMI	0.444
EO -> IC	1.051
EO -> NFP	0.025
IC -> BMI	0.061

IC -> NFP	0.022

Finally, approximate model fit was assessed (Table 9). The SRMR value was 0.088, while NFI was 0.732, with d_ULS = 1.789 and d_G = 0.978. The SRMR suggests acceptable but not strong fit, as it is below 0.10 but above the stricter benchmark of 0.08. Moreover, the observed SRMR exceeded both the 95% and 99% bootstrap reference values, which indicates that the model fit is somewhat weaker than ideal. In PLS-SEM, model fit indices are supplementary rather than decisive, but they remain useful for detecting potential misspecification. Thus, while the model is empirically usable and theoretically meaningful, it should be interpreted as adequate rather than optimally fitting.

Table 9 Model fit indices

	Saturated model	**Estimated model**
SRMR	0.088	0.088
d_ULS	1.789	1.789
d_G	0.978	0.978
Chi-square	440.601	440.601
NFI	0.732	0.732

Taken together, the results support the positive effects of EO on IC and BMI, the positive effect of IC on BMI, and the positive effect of BMI on NFP. The direct effects of EO and IC on NFP are not supported. Mediation is supported only for the indirect path from EO to BMI through IC. Overall, the findings portray EO as the principal upstream driver, IC as an enabling mechanism for BMI, and BMI as the central pathway through which innovation-related capabilities are translated into non-financial performance outcomes.

4. Discussion and theoretical implications

The findings offer several theoretical implications for the innovation and performance literature. First, they reinforce the view that entrepreneurial orientation is a foundational strategic capability that stimulates both innovation capability and business model innovation. This supports arguments that entrepreneurial firms are more willing to experiment, reconfigure resources, and pursue novel value-creation logics. Second, the results position business model innovation as the most proximate mechanism linking innovation-oriented organizational attributes to non-financial performance. In other words, EO and IC do not automatically translate into better performance; rather, their value appears to materialize when firms convert these orientations and capabilities into concrete changes in their business model. Third, the non-significant direct effect of IC on NFP suggests that capability accumulation alone is insufficient unless it is operationalized through market-facing or organizational innovation outcomes. This refines prior theory by indicating that IC may function more as an enabling resource than as an immediate performance driver. Finally, the significant total

effect of EO on NFP, combined with its non-significant direct effect, suggests a more nuanced causal logic in which EO shapes performance primarily through intervening innovation mechanisms rather than through direct strategic payoff. Overall, the model contributes to theory by clarifying a sequential innovation chain in which EO drives IC and BMI, while BMI serves as the principal conduit to non-financial performance.

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QUALITY OF PUBLIC SECTOR IN ALBANIA: AN EVALUATION USING SERVPERF SCALE

Rezarta Hasanaj Kasemi[1], Krist Zicishti[2]

[1]Faculty of Economics
University "Ismail Qemali" of Vlore, Vlore, Albania
[2]Faculty of Economics, Governance and Law
Barleti University, Tirane, Albania

Corresponding author: rezarta.hasanaj@univlora.edu.al

Abstract
In recent decades, the public sector has faced growing demands for transparency, efficiency, and higher-quality service delivery to citizens. In this context, performance measurement has become a crucial tool for assessing institutional outcomes and enhancing public administration. This paper examines the relationship between organizational performance and the quality of public services, with a particular focus on municipal services in Vlora County, Albania. Undoubtedly, performance measurement is increasingly important and widely used to assess excellence in the public sector. This study aims to discuss the importance of performance measurement in the public sector, specifically the service quality that citizens (organizational consumers) receive. One of the many elements used to measure performance is to evaluate citizens' satisfaction to help guide system-wide improvements. A very effective instrument, the SERVPERF scale, has been used to evaluate service quality in the public sector. This method has helped in understanding citizens' perceptions based on the quality of the service they receive from the public sector. Initially, this paper provides a theoretical framework for the performance measurement in the public sector.

Keywords: SERPERF scale; public sector and quality; performance measurement and public sector

1. Introduction

The economic, social and institutional transformations of recent decades have significantly increased citizens' expectations of public administration. Today, public institutions face increasing demands to provide faster, more efficient, more transparent, and more accessible services to all. Technological development, globalization and international competition have also influenced the way governments organize their work and manage public resources. In this context, the public sector is no longer seen only as an implementer of laws and procedures, but as an active provider of services with a focus on citizens.

Unlike the private sector, where performance is measured mainly through profit, productivity and market share, in the public sector, the evaluation is more complex and

multidimensional. It is related to the realization of the public interest, the quality of services, equality in access, institutional accountability and the level of citizen satisfaction. For this reason, measuring performance in public administration requires the use of quantitative and qualitative indicators that reflect not only the economic efficiency but also the social impact of public policies. A successful administration is not only measured by how much it spends less, but also by how well it responds to the needs of citizens.

In Albania, the European integration process and administrative reforms have stimulated increased interest in performance management and quality standards in the public sector. Efforts to modernize institutions, digitize services, and increase transparency have yielded positive results in recent years. However, there is still a need for more functional performance measurement systems, clearer performance indicators, and more effective monitoring mechanisms. Continuous institutional improvement remains an important condition for strengthening public trust and for approaching European Union standards.

2. Literature Review

The concept of performance management in the sector has gained particular importance in recent decades, within the framework of modern administration reforms and the demands for improving transparency, efficiency and quality of service. Traditional bureaucratic models, focused on administrative procedures and controls, have been replaced by results-oriented approaches and institutional accountability. Contemporary literature emphasizes that performance in this sector should be assessed not only by the rational use of resources, but also by the real impact it creates for the purpose and society (Pollitt & Bouckaert, 2017).

Such a contribution to this field has been made by David Osborne and Gaebler, who argue that administration should focus more on procedures. According to them, the public should function with managerial logic, being more flexible, more innovative and more citizen-oriented. They emphasize that governments should not only administer, but also create public value and performance alone (Osborne & Gaebler, 1992).

On the other hand, Kaplan and Norton (1996) proposed the Balanced Scorecard model, which is widely used for measuring organizational performance. This model includes the financial dimension, internal processes, organizational learning and customer satisfaction. In it, the notion of the customer is adapted to the citizen, making this model of the study of photographs according to sectors and objectives of their strategy.

In the empirical literature, one of the most cited studies is that of Afonso et al. (2006), to have an approach to measuring the performance and efficiency of the public sector at an international level. The authors proposed changes in the profile of professions that combine several important areas of public activities, such as education, health, administration and infrastructure. Based on this approach, Angelopoulos et al. (2008) built a survey report with four main dimensions: administration, control, infrastructure and education. In addition, they assessed the efficiency of the technique through Stochastic Frontier Analysis, integrating the performance of the technically efficient sector into an econometric model.

Furthermore, Rouag and Stejskal (2017), in the methodology of Afonso et al. (2006), suggest that measuring performance in the public sector is a complex and controversial topic, as it requires information on the quantity of qualified elements. In this context, Principal Component Analysis is an effective tool for aggregating many dimensions of the public sector into a single comparative information.

From a theoretical perspective, performance is a measure of effectiveness and efficiency, both in the public and private sectors. Effectiveness is related to institutional objectives, while efficiency is related to the optimal value of financial, human and technological resources. Several different studies have played a comparative role for the public sectors of different languages, considering performance measurement as an instrument for improving public policies and institutional management (OECD, 2023).

Another such dimension in the literature is related to the structural reform of the public sector. Recent studies show that personnel reduction, organizational restructuring and privatization are more frequently as strategies for inefficiency and performance. An empirical study of public managers showed that privatization and organizational downsizing can be positively shown in several dimensions, especially in administrative and operational management flexibility. However, these measures should pay attention to public information and citizen access.

Regarding quality, Deming argues that continuous improvement should be part of every organization's culture. According to him, there is a need not only for final control, but also for systematic use of process, staff involvement, and customer orientation of the service (Deming, 1986). In the public sector, it is related to higher trust of citizens towards the municipality, in this case.

Other studies have analyzed the impact of models such as TQM (Total Quality Management) and SERVQUAL in the public sector. Lentell (2000, 2001), Robinson (1995, 1999) and Williams (1998) find that the schemes are perceived as tools. Researchers such as Cabello and Chirinos (2012) and Le and Fitzgerald (2014) have pointed out limitations of the SERVQUAL model, especially regarding the difficulty in accurately identifying customer expectations and the complex interpretation of results that derive from the difference between expectations and perceptions.

In this context, authors such as Salomi et al. (2005) and Morales and Medina (2015) emphasize the advantages of the SERVPERF model, arguing that it is more practical and easier to implement. This is because SERVPERF focuses only on customer perceptions, avoiding the need to measure their expectations, which reduces the time of administering the questionnaire and simplifies the process of analyzing and interpreting the data.

SERVPERF was developed by Cronin and Taylor (1992) as an alternative to the SERVQUAL model of Parasuraman, Zeithaml, and Berry. The authors rejected the idea that service quality should be measured by the difference between customer expectations and perceptions, arguing that quality can be assessed more accurately only based on customer-perceived performance.

According to them, SERVPERF represents a simpler and more reliable instrument for measuring service quality, as it focuses directly on the actual results of service delivery. The empirical findings of the study, testeCronin & Taylor,d across industries such as fast food, pest control, dry cleaning, and banking, supported the superiority of the "performance-only" model over SERVQUAL (Cronin & Taylor, 1992).

3. Methodology

This paper relies on the qualitative and quantitative research methods, which are considered appropriate for analyzing issues related to performance, quality, and institutional developments in the public sector. The methodological approach is based on the systematic review of domestic and international scientific literature, with a focus on theories and models that address performance measurement, quality management and modernization of public administration.

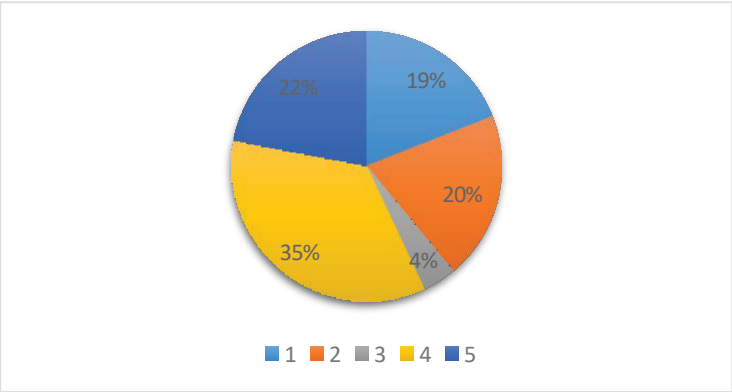
Official documents and institutional reports of the European Commission, OECD, as well as national strategies and documents related to administrative reform, decentralization and digitalization of public services in Albania have also been analyzed using the SERVPERF model to measure quality of service. The collected data have been analyzed using SPSS analysis, enabling the identification of the progress achieved, existing challenges, and perspectives for improving institutional performance.

SERVPERF

In this study, the research design was used to validate the SERVPERF instrument. The study included 379 organizational consumers (citizens), who were randomly selected. The independent variables consisted of the 22 indicators of the SERVPERF scale. A five-point Likert scale was used for each statement, ranging from "Strongly disagree" to "Strongly agree". The dependent variable was service quality, treated as a latent construct created from the 22 variables.

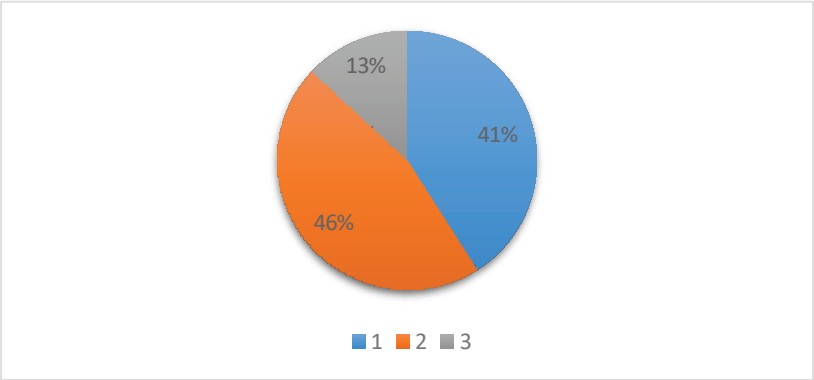
4. Results

In this part, a presentation of demographic factors of the organizational consumer as activity, years of operating in the market, position, gender and the last time services were provided in the Municipality will be shown.



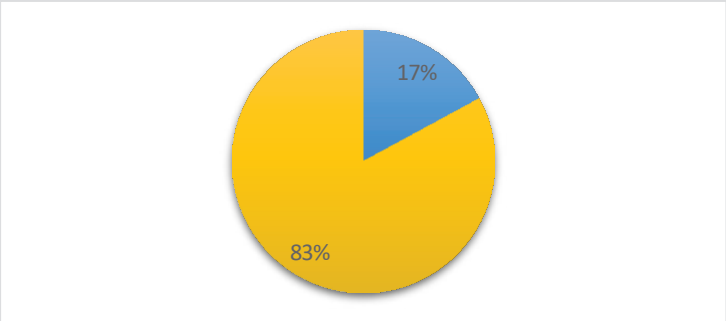
Graph 1. Activity of consumer

Graph 1. presents the activity of the organizational consumer taken into the study. The data are taken from the official INSTAT website, where the organizational consumer is divided into the following activities: construction, information and communication, transport and services, trade, accommodation and services. From the data it is noted that the largest percentage (35%) is occupied by companies engaged in trade, and a smaller percentage (4%) is occupied by transport and service companies. These percentages are the result of the random distribution of questionnaires.



Graphic 2. Years of operating in the market

As it is seen in graphic 2. (41%) companies have been operating in the market for more than 2 years, (46%) over 10 years and only (13%) of them have been operating in the market for over 15 years, in Vlora county.



Graphic 3. Position of the respondent

According to the position of the respondents, administrators are (17%) and economists with a percentage (83%), so economists predominate among the respondents.

The gender of the respondents, showed that (23%) is occupied by women and with (77%) by men. The data for the last question of demographic it is viewed that the majority of the respondents with (71%) have over 1 year, since the last time they performed services in the Municipality and (29%) have over 3 months.

Taking into consideration the suggestions provided by the literature, an analysis was made on the strength and significance of the relationship between service quality dimensions and disruption for 2025 using the Pearson correlation test. Table 1 presents the correlation between quality dimensions for 2025 experience.

Table 1: Pearson Correlation between Service Quality Dimensions Experience- 2025

		1	2	3	4	5	6
Tangibles	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	379					
Responsiveness	Pearson Correlation	-.061	1				
	Sig. (2-tailed)	.231					
	N	379	379				
Reliability	Pearson Correlation	.012	**.128***	1			
	Sig. (2-tailed)	.817	.013				
	N	379	379	379			
Assurance	Pearson Correlation	**.349****	-.087	-.006	1		
	Sig. (2-tailed)	.000	.090	.908			
	N	379	379	379	379		
Empathy	Pearson Correlation	-.060	**.179****	**.101***	.051	1	
	Sig. (2-tailed)	.241	.000	.049	.321		
	N	379	379	379	379	379	
Quality of Service	Pearson Correlation	**.546****	**.503****	**.429****	**.580****	**.405****	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	379	379	379	379	379	379

***. Correlation statistically important at level importance 0.01*

***. Correlation statistically important at level importance 0.05*

Correlation theory suggests that the reliability of research findings tends to improve as the number of observed units increases. In this study, the survey was conducted with a relatively large sample of 379 respondents, selected through appropriate sampling procedures. This sample size enhances the robustness of the analysis and increases confidence in the consistency of the obtained results. Furthermore, the statistical significance reported in the table indicates that the observed relationships are unlikely to have occurred by chance. Therefore, the collected data can be considered reliable, and the interpretations derived from them are based on sound, accurate, and dependable empirical evidence.

The data were processed with computer programs SPSS vs 25 and from their processing, the concrete results presented in various tables below emerged.

Referring to the results obtained and presented in Table 1. It turns out that Tangibles has a significant positive relationship with Assurance ($r(n=382)=.349$, $p\leq.01$) and Service Quality ($r(n=382)=.546$, $p\leq.01$).

Responsiveness has a significant positive relationship with Reliability ($r(n=382)=.128$, $p\leq.05$), Assurance ($r(n=382)=.179$, $p\leq.01$) and Service Quality ($r(n=382)=.503$, $p\leq.01$).

Reliability has a significant positive relationship with Assurance (r(n=382)=.101, p≤.05) and Service Quality (r(n=382)=.429, p≤.01).

Assurance has a significant positive relationship with Service Quality (r(n=382)=.580, p≤.01). Empathy has a significant positive relationship with Service Quality (r(n=382)=.580, p≤.01).

Regarding the strength of the relationship, based on correlation theory, it is noted that the relationships that should be considered (strong or even moderate (relatively strong) relationships) are those relationships where the Pearson correlation coefficient is greater than 0.5. In these cases, the impact of the explanatory factor on the explained factor is strong (above 0.75) or relatively strong (0.5-0.75). Service quality is, therefore a variable that should be taken into account.

After the Pearson Correlation analysis, a more in-depth analysis was conducted on five dimensions. Within the first dimension, Tangibles**,** Question 4 — *"Service-related materials (such as declarations) are visually readable and well formatted by the Municipality"* — recorded the highest mean score of 3.58**,** with a standard deviation of 0.495, indicating a relatively positive and consistent perception among respondents.

For the Reliability dimension, the highest-rated item was Question 12 — *"The employees at the Municipality are never too busy to respond to your requests"* — which achieved a mean value of 4.02 and a standard deviation of 0.352**,** reflecting a high level of agreement and low variability in responses. In addition to the Assurance dimension, the highest-rated item was Question 16— *"The employees of the Municipality are consistently courteous toward you."* 3.58
.182, which achieved a mean value of 4.02 and a standard deviation of 0.352**,** reflecting a high level of agreement. Within the Responsiveness dimension, the item of Question 22 — *"The employees of the Municipality understand your specific needs"* recorded a mean score of 3.97 and a standard deviation of 0.103**,** indicating a high level of respondent agreement and very low variation in perceptions.

In addition, the t-test was applied to examine whether statistically significant differences in perceived service quality existed according to respondents' job position and gender. For this purpose, two comparative tables were constructed.

Accordingly, Table 2 presents the mean values, standard deviations, t-test results, and significance levels (*p-values*) for the five dimensions of service quality from the experience of economists and administrators. The purpose of this analysis was to determine whether meaningful differences of service quality arise from respondents' occupational position, which is often associated with similar professional orientations and work experiences.

Table 2. T –test Differences in the mean values of service quality according to current job position (organizational customer).

Job position	N	Mean	Standard Deviation	t	P

weight Tangibles	Economist	320	6.49	4.852	.415	.678
	Administrator	57	6.21	4.735		
weight Responsiveness	Economist	320	2.90	6.083	.280	.780
	Administrator	57	2.66	5.574		
weight Reliability	Economist	320	3.56	8.220	-.457	.648
	Administrator	57	4.09	8.039		
weight Assurance	Economist	320	11.85	8.080	.572	.568
	Administrator	57	11.19	8.398		
weight Empathy	Economist	320	1.11	2.763	-1.139	.255
	Administrator	57	1.57	3.118		
Weight Service Quality	Economist	320	5.182	3.9064	.069	.945
	Administrator	57	5.142	4.3789		

In the dimension 'service quality' in total, there are no significant differences (p>.05) between the economist and the administrator, who declare the same level of service quality. The same test was also performed for gender. From the data, we see that in none of the elements/dimensions do significant differences appear (p>.05), between genders, showing the same level of service quality.

Following the analysis conducted, we used the ANOVA test to see the differences in the average quality of service according to two factors, namely company size and company activity. Referring to the significance level p, we see that in none of the elements of the analyzed dimensions, there are significant differences (p>.05) between them and the size of the company (organizational customer) reporting the same level of service quality. This indicates that the size of the company is a variable that has no impact on the quality of service and its dimensions, or in other words, there is no difference in terms of the size of the company in terms of their focus on service quality.

The same test was used to see if there are differences between service quality and the type of activity of the companies (organizational consumer). The data for the average level and standard deviation show that the distribution is somewhat irregular. This is related to the fact that companies operating in different activities have different focuses regarding quality dimensions, a focus that is based on the concrete specifics of each field of activity. However, it is important to note that the F-test values are such that, in no case, do the service dimensions show statistically significant differences.

5. Conclusion

Refining the public sector is a main priority in the European Union's enlargement agenda. A high level of good governance, in line with European and international standards, is considered an essential condition for an aspirant country to advance towards candidate status. In this context, quality management is seen as a complementary element of public administration reforms, aiming to increase the quality of public services for citizens and businesses, as well as to improve their well-being and quality of life (Kasemi, R.H., 2021; Thijst & Puzic, 2017).

Performance measurement and quality are two fundamental pillars of modern administration. In Albania, significant progress has been made, especially in digitalization and the facilitation of public procedures. However, to achieve higher European standards, a more results-oriented approach, accountability and continuous improvement is needed. An administration that measures performance in a realistic way and provides quality services increases public trust and contributes to the economic development of the country.

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THE ROLE OF SMALL MEDIUM ENTERPRISES IN THE ALBANIAN ECONOMY. FACTORS AFFECTING TIRANA'S ECONOMIC GROWTH ENGINE, PROFITABILITY AND SUSTAINABILITY.

Rozeta Al-Rawy[1], Semiha Loca[2]

[1] Department of Economics, Entrepreneurship and Finance Barleti University, Tirana, Albania
[2] Department of Economics, Entrepreneurship and Finance Barleti University, Tirana, Albania

Corresponding author: r.rawy@umb.edu.al / tusha.rozeta@gmail.com

Abstract

Small and Medium Enterprises (SMEs) are very important part of the economy of Albania, more specifically to Tirana's economy because of their flexibility and creativity, which positively affect job market, economy diversity ang economic growth. In the last 2 decades, SMEs have become the backbone of the economy of the country. Even if in the last years have been implemented different measures to stimulate and favor the economy, Albania is passing through a transition period from a centralized to a market-based economy, SMEs represent an important tool in creation of competitive markets and also in decrease of unemployment. The purpose of this study is identify the role of SMEs, by examine the challenges they face in Tirana and analyze the factors affecting their growth, profitability and sustainability. The research methodology used was a mixed method, including qualitative and quantitative research methods. It was based on a literature review with a clear inclusion and exclusion criteria. The search strategy covered various published databases/ statistics, and the selected papers/ publications. On the other hand, face to face questionnaire and interviews were the other instruments used for the data collection.

The study highlights the importance of the relationship between business profitability and different influencing factors. Data collected were analyzed in SPSS using the linear regresion in order to examine the impact of business age (number of years), number of employees, costs spent for promotional purposes and the business plan. The results of the statistical analyses show that SMEs' growth, profitability and sustainability are significantly affected by these factors, indicating that internal resources / investments play a very important role in the business performance.

The main conclusions of this study are that SMEs' contribute significantly to employment, investments and GDP even though they continue to face significant challenges in daily bases. Institutional support and technological transformation are essential for SMEs' future growth that will continue to play a crucial role in Albania's sustainable economic development and European integration process.

Keywords

SME; Albanian Economy; Challenges; Economic Growth; Profitability; Sustainability

1. Introduction

After 90s', Albania has gone through an important economic transformation, changing from a centralized economy into a market-oriented economy parallel with the European markets. The private sector, more specifically the Small and Enterprises (SMEs) are playing an important role in the economic development. They are known as the engines of the economic growth because they are a source of the employment opportunities, promote innovation, contribute in the domestic production and poverty reduction.

Based even on the INSTAT publication in 2024, SMEs are still dominating the Albanian economy (INSTAT, 2024):

• 99.9% of active enterprises are SMEs

• 82% of employees work in SMEs

• 81.4% of net sales are generated by SMEs

• 75% of investments are carried out by SMEs

• 78.1% of value added is generated by SMEs

SMEs are one of the most important pillars of the development of economy in Albania, which directly affect the employment, innovation, competitiveness and the generation of income in the economy. In the case of Albania, SMEs' role, year after year, have increased not only in the overall country, but even in the capital city Tirana, which is known as the main economic and financial center of the country. This development is directly related with the economic, organizational and managerial factors, that effect their growth, profitability and sustainability in the market they operate.

The main problem of this case study is connected with the identification and analysis of those factors which affect the fulfillment of the SMEs in Tirana, focusing on their ability to not only survive but even to be sustainable in such competitive environment of economy. Even though SMEs have an important role in the countries' economy, the majority of them face challenges such as difficulty of financial resources, low investment, lack of supportive governmental rules and regulations for this sector, and no long-term strategies that support their development. These challenges, but not only, have a direct important impact in their growth and sustainability in the market.

The purpose of this study is to analyze the role that SMEs have in the country's economy and to identify some of the main factors that nowadays have an important impact on the so-called economic growth engine (SMEs) of Tirana. The purpose of this study is to provide a clear picture of the connection and the relationship performance of these enterprises in the economic side and some factors such as number of years of the activity of the business, number of employees they have, the budget/cost they spent for promotional purposes and the business plan.

The main objectives of the study are as follows:

- To analyze the importance and the role of SMEs in the Albanian economic development;
- To identify some of the main factors affecting the profitability and sustainability of this category of enterprises;
- To identify and analyze the challenges they face in Tirana;
- To analyze the impact of some factors on the business performance;
- To provide recommendations that will help to improve the SMEs' competitiveness and performance development.

The contribution of this study is on the empirical analysis of some factors that have impact on the performance of SMEs in Tirana, by providing concrete results on link between different factors and business profitability. Also, it will contribute on the existing literature of SMEs' development in the country and to be an added value of information for the government institutions, policymakers and the new entrepreneurs.

This study will be structure in some chapters, where the first chapter will present the theoretical and literature review. Second chapter will present the data collection and methodology used for the statistical analysis of the data. Third chapter will present the SPSS analysis and the result of the study. In the end of the paper will be presented the conclusions and recommendations related to the better performance and role of SMEs in the economy development of Tirana, and overall Albania.

2. Literature Review

Small and medium-sized enterprises have a high contribution to job creation in Tirana. Employment statistics in Albania (INSTAT, 2024) show that SMEs comprise more than 99% of the total number of enterprises and employ more than 90% of the labor force. SMEs in Tirana, in particular, are comprised of a great number of local businesses that can absorb the growing labor force in the city and reduce disparities in the different areas of the city. They create jobs and help to increase the standard of living for individuals and families. Their contribution to employment in Tirana is very important for overcoming the current social problems and for creating a stable society in a transitional economy.

The role of small and medium enterprises in economic diversification is a major dimension of growth of Tirana's economy. So far, Albanian economy relies mostly on agriculture and remittances which are sensitive to external impacts and shocks. Thus, SMEs have a vital role to contribute in development of economy by base of economy that is less sensitive to shocks from outside the country. So, in order to create introducing new goods and services that can be consumed both in local and international markets and to create a solid a competitive economy, new sectors such as tourism, information technology and alternative sources of energy have started to be developed mainly by SMEs.

In order to assess the contributions made by SMEs to the economy of Tirana, an analysis of factors that promote or hinder the development and profitability of SMEs is required. The lack of access to finance for a large number of SMEs is currently one of the main barriers to development. The numerous financial products on offer for small businesses are not utilized to their full potential, and SMEs are restricted to suboptimal development due to a lack of funds. While traditional bank loans are available to a small number of SMEs, due to strict criteria and a high level of collateral required, the majority of SMEs are forced to look for alternative methods of financing. These may include personal savings and informal borrowing from others. Informal methods of financing are not always sustainable and restrict the ability of SMEs to develop in terms of size and scope. Therefore, increasing access to finance for SMEs is essential for their future development.

Besides financial and regulatory conditions for SME development there are also many cultural and social aspects which are important for the successful operation of these companies. Also, for entrepreneurship in Tirana there are established social norms and values. And last but not least the education and skills of the workforce in these companies play an important role for their competitiveness and innovation.

The study of contributions made by SMEs to the economy of Tirana aims at identifying challenges and opportunities that SMEs can provide to economic growth and social equity in Albania. A series of political, economic and social steps that Albania has taken, in order to approach European Union standards and practices, makes SMEs a focal point in the process of economic development of the country. Providing supportive environment to growth and development of SMEs in Tirana would bring considerable economic benefits in the short run and help to create sustainable economy in the long run.

SMEs can be characterized through the following criteria, which distinguish them from larger companies.
According to Storey the way how SMEs are defined has changed in time and is different in different countries (Storey, 1994). This happen because the economy and the criteria taken into account are different from one country to the other. Some of the criteria used to classify them are: no. of employees, sector, annual turnover, revenue etc.

Based on the definition of European Commission (European Commission, 2003), the main factors which determine a company as a SME are:

1. Number of employees and
2. Either turnover or balance sheet total

Table 1

The European Commission classification of SMEs			
Company category	No. of Employees	Turnover	Balance sheet total
Micro	< 10	≤ € 2 million	≤ € 2 million
Small	< 50	≤ € 10 million	≤ € 10 million
Medium	< 250	≤ € 50 million	≤ € 43 million

Source: EU

By having a look into the Albanian system, we see that the criteria used to define SMEs is the same: the number of employees, but the size has changed. Albanian Law no. 897, uses the following classification for "Small and Medium Scale Enterprises" dated 17.10.2002:

- Micro Enterprises: ≤ 5 staff
- Small Enterprises: 6 - 20 staff
- Medium Enterprises: 21 - 80 staff

The size of SMEs in the Albanian economy is different when compared to the size of SMEs in other European countries. During the time that Albania started the procedures to become an EU the candidate country, on 29/10/2008 with the new law no. 10183, Albania tried to bring the SME definition closer to EU standards.

On the other hand, the organization and management of a company, business procedures and market goals. These criteria differentiate SMEs from larger companies in terms of their agility and adaptability. Thus, SMEs are very flexible and are able to make quick decisions in a short period of time.

As the number of SMEs in Albania is more than 99%, indicates their significance for the country's economy, and by extension, for the economy of the capital. A large percentage of these enterprises in Tirana are represented by micro and small enterprises. Most of the enterprises in the mentioned category are operating in trade, services and construction. The SMEs in the city of Tirana, as it has been noted before, are representing around 50% of the total employment in Tirana. This reflects their special role not only in terms of creating employment but also as an engine of development for the economy of urban areas in a high pace of development, as it is the case of Tirana.

The long-term sustainability of SMEs in Tirana is dependent upon a number of external and internal factors that can either aid or hinder their development. The availability of finances and supportive government policies are key to aiding the growth of SMEs, however there are also many threats to SMEs such as larger enterprises and the informal economy. The internal factors of an SME, including their ability to innovate, the effective management of the business and the strategic planning involved in the business in order to be profitable and sustainable.(Gschwandtner, and Hirsch, 2017)

In Tirana SMEs are creating about 78% of the employment within the city (Hallunovi, 2021). Thus SMEs not only are providing jobs they also are enhancing inclusive growth. By looking into the sectors of active SMEs within the city we see that they are producing more than 60% of the GDP in the city. There are a variety of sectors where SMEs are creating products or delivering services, which makes a multi-layered contribution to the city's economy, including: manufacturing; wholesale and retail trade; and services, including tourism, catering, other companies that provide services to companies and individuals, etc.

According to TOMORRI, KECO and KAPAJ, findings are in line with those mentioned by Hallunovi, on how SMEs play important role for boosting up innovation and competitiveness within marketplace. Also, many SMEs implement new technologies and practices of business. By adopting these elements, they achieve higher level of productivity. (Tomorri, Keco and Kapaj 20218)

One of the biggest challenges SMEs are facing in Tirana is the limited access to finance in order to start up and run their businesses efficiently. According to Hallunovi, the SMEs are backbone of economic activities and because of that big attention should be paid for supporting of this group of enterprises, which in the actual situations is facing with a lot of obstacles among which the biggest one is the limited access to finance (Hallunovi, 2021).

Furthermore, the regulatory framework and environment for SMEs is also of vital importance. A supportive regulatory environment can increase entrepreneurship by making the processes of establishment and operation of businesses simpler and by reducing bureaucratic hurdles. On the other hand, their relationship with the local community is very important, since they foster local entrepreneurship and help to strengthen social ties and to promote economic development and empowerment in the community.

As Tirana evolves, promoting SMEs will continue to be the focus of all actors in the capital's economic arena, by encouraging business and creation of new jobs in a favorable environment for growth and competitiveness, through sufficient access to capital and more facilitative rules for establishing and operating a business.

Access to finance as the main barrier. Kola, Sula and Calabrese (2015) in their work found that SMEs represent a significant share of the economy; however the development of the SMEs is obstructed by various barriers where the finance barrier is the most significant one. The new financial products developed for small businesses are not easily accessible. In order to create and develop business, entrepreneurs of SMEs need financial resources for initial investments as well as for the expansion of activities. However the traditional banking system is not easily opened for such businesses; due to strict requirements for giving credits and high requirements for collateral. (Kola, Sula and Calabrese, 2015)

Moreover, regulatory environment plays an even greater role for SMEs in Tirana. Supportive policy is being created in order to promote start-up of new businesses, but in practice there are

numerous bureaucratic and informal obstacles created for already existing ones. Business registration procedures are complicated; there is risk of corruption at all levels of public administration and existing regulations are not always implemented in a consistent manner. Therefore, an effort to simplify procedures of starting business and to reduce number of obligations for already existing ones is necessary. Such a change would stimulate creation of new businesses and growth of already existing ones. In order to achieve and maintain the levels of growth and of added value to the economy of Tirana by SMEs, they require a framework of support. All the stakeholders involved (public and private sector, financial and non-financial) have to work in unison in order to create an environment favorable for the development of the said enterprises, and for increasing their competitiveness.

However, in Tirana the local economic environment where SMEs operate is characterized with factors as finance, government support and infrastructure. In this environment, finance in particular is a major problem for the majority of SMEs in Tirana. In traditional banking structures used for financing SMEs there are criteria used for giving credits and accessing funds. Moreover, the cost of funds in Albanian banking system is very high. According to Tusha and Direk findings, SMEs who have access to microfinance and other alternative financial sources have 15% higher profitability then SMEs who rely only on conventional banking sources. This financial accessibility allows for investments in technologies that bring growth for SMEs, in their employees and in their infrastructure. (Tusha and Direk, 2018).

As previously stated, another key element that SMEs must take into consideration in order to be competitive in a new market is the environment that they are entering. This, in essence, would refer to the number of other competitors in the said market, and the ability of the local SMEs to differentiate themselves in some way from the other players. If an SME is able to clearly define the unique value that they are able to bring to their customers, and can position themselves in the market to reach a specific 'niche' then they are likely to find that they are able to compete favorably with their competitors, and achieve good levels of profitability in the face of increasing competition in the market place.

The sustainability of small and medium-sized enterprises (SMEs) in Tirana faces a variety of political, economic, and environmental challenges and risks. These issues affect SMEs in long term and have direct and indirect influence on employment, innovation, and economic diversity in Tirana. Hence, the analysis of the key issues that affect SMEs in Tirana can have crucial implications for developing appropriate policies and measures to sustain these enterprises in the city.

From political perspective, SMEs in Tirana are affected by various changes introduced by government in respect to various issues. Changes in tax laws, labor laws and business registration processes pose uncertainty and create hurdles for enterprises to grow. Such environment makes SMEs cautious in investing and growing. Moreover, corruption hampers development of SMEs as extra-legal demands are made and unequal treatment is provided to various entrepreneurs by

officials responsible for implementing policies and laws. Such environment does not provide level playing field for growth of various entrepreneurs in Tirana.

Economic obstacles pose huge challenges to the survival and growth of the SMEs in Tirana. On the one hand, factors such as lack of finance, difficulties in accessing markets and competition from big enterprises constitute major factors which have a negative impact on SMEs. Furthermore, SMEs in Tirana have to operate in high-cost banking environment, whereas conventional banking institutions adopt very strict criteria in order to grant credits to SMEs (Ur Rehman et al., 2019). Consequently, a large percentage of SMEs encounter numerous difficulties in their attempt to expand and operate efficiently due to the lack of finance and the inefficient and unfair economic environment. Such environment as on their chances to adopt latest technologies in order to improve their productivity and enhance their competitiveness in the hinders the opportunities of SMEs for growth and success and imposes constraints on their daily activities as well

In addition, SMEs that are trying to make their place in the market face a number of challenges due to the competition between other businesses, mostly big ones which have stronger financial background and bigger impact. The main challenges that SMEs face in the market are challenges of pricing, of market access and of differentiation. SMEs are vulnerable to economic volatility and external shock, such as volatility in consumption patterns and external trade policies (Ur Rehman et al., 2019).

Environmental factors constitute important factors for small and medium-sized enterprises to sustain their growth and competitiveness. Today, globally there is increased awareness about ecological problems and their effects on human life and environment. Entrepreneurs of SMEs are expected to control their ecological footprint as much as possible. The environmental protection framework in Albania is not sufficiently developed and environmental regulations are not consistently implemented.

As far as SMEs in Tirana are concerned, their sustainability and growth, their contribution to the local economy, as well as the creation of employment opportunities, are being influenced by political, economic and environmental risks and challenges that they face in their business activities. Therefore, the above-mentioned risks and challenges need to be studied in more detail in order to create conditions and structures that support and foster SMEs in the city of Tirana in order to create a favorable environment for them to operate successfully and create employment.

Financial incentives and support are important to overcome the financial gaps for most SMEs. Albanian government has introduced various incentives, such as subsidies, tax reliefs, grants to promote the development and growth of SMEs. As Myslimi highlights the support that financial measures can bring to the initial costs of start-up phase and to access funding required to launch a business venture. Reducing corporate tax for SMEs can lead to higher profitability of businesses which in turn can lead to higher reinvestment rates in technology, human capital and physical assets essential for sustaining business over long-term. Also, programs such as ‘SME Development

Program' aim to provide direct financial support to help local SMEs to grow and develop. (Myslimi, 2015)

Training programs for SMEs are an important aspect for the support that the government gives to them. Research conducted highlighted the role that vocational training centers, as well as different workshops have played in order to equip entrepreneurs with different practices and with different innovations which can be very important in helping them to start up and to run their own businesses successfully. The issue of training programs for SMEs is an important one, because the support of training for these programs of work, will have a very positive impact on the development of the different skills of entrepreneurs, and this in turn will have a positive impact on the economy of the region as well. Therefore, the investment that is being made by different bodies, in order to provide different programs of work, which are used in order to improve the skills of different entrepreneurs, is very positive, because it will have a positive impact on the different sectors, in which there are different SMEs, and these include the information technology sector, as well as the tourism sector. (Dajci and Dumi, 2023)

In summary, financial support and training programs are vital tools in setting up an adaptive and resilient business environment for SMEs, but more efforts are required to make better and more efficient use of existing instruments to improve and streamline frameworks of regulations and support for SMEs in a public-private partnership framework to promote sustainable growth and development for SMEs in the region.

SMEs operating in Tirana are influenced by the country's overall development path of transition from a centrally planned to a market-based economy. Thus, there are many challenges and opportunities offered by the issues of innovation and technology. Research indicates that enterprises adopting an approach of innovation at SME level have better performance than others, because they increase and improve production and services offered, making them competitive, and create better opportunities for growth and higher profitability. In this sense, investing in R&D and using technology at SMEs are important for better facing market challenges and fulfilling demands for higher quality products and services.

Various factors influence the innovation in SMEs. The individual skills of an entrepreneur, the financial means he has, and the regulatory framework are the most important ones. There are grants, as well as venture capital, that support the innovative start-ups in Tirana. In addition, trade policies have been liberalized, thus granting SMEs the opportunity to address markets at local and international levels and thus to innovate in order to increase their competitiveness.

The adoption of technology by SMEs in Tirana has been greatly affected by the emergence and proliferation of online platforms as well as the growth of the Internet. Digital technologies, in particular, present a great opportunity for entrepreneurs to increase efficiency and reduce costs. In this sense, online marketplaces are becoming an important tool for SMEs to reach a wider audience of customers, develop customer relations and analyze customer behavior using data.

The interplay between innovation and sustainability for enterprises, including those in SME format, has become increasingly critical. The sustainable practice of business and a focus on environmental issues and human rights can lead to enterprises becoming more competitive on the market. SMEs in Tirana that have an ecologically sustainable approach to production are not only complying with the laws and regulations and meeting all of the structural conditions of doing business but are also capitalizing on the needs of an ever-growing customer base seeking eco-friendly products and services, such as organic and locally sourced produce, which they can be assured is contributing to the well-being of both people and the environment. A local example is a company/shop that produce and sell organic agricultural products, they have managed to sustain their competitive edge through their business practices of sourcing produce on a local basis and managing to minimize the use of pesticides on the products they produce in order to create added value and develop a competitive edge on the market through environmentally sustainable practices.

Although the current trend reflects a positive direction in SMEs adopting new technologies, there are several barriers to adoption, most notably shortage of skilled employees, as well as of appropriate infrastructure. There is also a concern of perceived risk when adopting new technologies. The cost of investing in new technologies is a concern for SMEs. Therefore, it is essential to create a supportive ecosystem of education, training, and mentoring as well as of public support, such as grants and tax reliefs, to foster innovation among SMEs in Tirana.

Therefore, innovation and technology have become key determinant for the competitive edge and sustainability of SMEs. Studies, emphasize positive relationship between degree of innovation activities and company's performance. Therefore, SMEs have to continually invest in innovation and latest technology in order to succeed in development-oriented environment of Tirana. (Spahiu and Kapaj 2017).

3. Methodology

Research Design: For this study was used a mixed method research design, by combining qualitative and quantitative research methods, in order to provide a better analysis of the role of SMEs in Albania, together with the factors which influence their growth, profitability and sustainability in the capital city Tirana. The qualitative method was used to better understand the entrepreneurship experience of business owners, and in the other hand the quantitative methos was used for the statistical analysis of the data collected related to business performance and factors which effect their development.

Data Collection Methods: The primary research methods were used in order to collect the data. So, through the face-to-face interviews and questionnaire with the owners of the chosen SMEs in Tirana. In this way, throughout this combination of data collection, a more complete and reliable data was able to be provided for this study.

Sample: The study was done in Albania, by targeting the SMEs that operate in the Tirana market, the capital city of Albania. The reason why Tirana was chosen is because according the ISTANT, Tirana is the city where operates the high number of SMEs, around 50% of SMEs operate in Tirana and Durres (INSTAT, 2024). The sample was selected carefully in order to make sure the representation of different businesses operating in the market.

Analytical Tools: The statistical program SPSS was used to analyze the data collected for this study. Normally, at the beginning, in order to better present the characteristics of the sample, the descriptive analysis was performed. After that, the empirical analysis was used to identify the relationship between some variables and profitability. The variable included in the regression model for this study are: number of years the business is operating, number of employees, budget spent for promotional purposes and the existence of the business plan. The results were interpreted to show the relationship that exist between the factors and the performance of the enterprises.

4. Results

This section will present the main results based in the analytical tools used. Firstly, the results of the socio-economic status of SMEs and owners. Some of the characteristics analyzed that affect enterprises profitability is: business experience, years of running the business, education level, gender and source of capital.

Gender: The results show that most of the business owners are male. Specifically, 58% were male and 42% were female. This shows that in Tirana, entrepreneurship continues to be dominated by men, even though the women in business are significant.

Education level: Based on the results, we can say that entrepreneurs have a good education level. Around 29% of them have Master degree, 46% have bachelor degree, 16% have only the high school diploma and the remain part of 11% have only completed the primary education. This can positively affect the management and development on the business.

Business experience: More than 50% of the owners had previous business experience, so the current business was not the first business they open or managed which help them to have a better performance and sustainability of the enterprise they have now.

Business size: The results of the questionary show that the majority were micro-enterprises. So, 91.7% of the business have less than 10 employees, while only 8.3% have more than 10 employees which classifies them as small enterprises. This show that micro enterprises dominate the market.

Business origine: Related to the origine of the business, most of the owners have established their business. Based on the data collected, 93.75% of respondent said that the business they currently own was created by them, and only 6.25% had inherited from their family.

Source of initial capital: The results show that most of the entrepreneurs have used their personal savings to open their business. So, 65.6% used their personal savings; 28% said that they borrowed money from family or friends and only 6.4% were able to secure financing through bank loans.

This underline the fact how difficult it is for new entrepreneurs to secure a bank loan as an initial financial investment.

On the other hand, the empirical analysis was done in order analyze the relationship between profitability of the business and various economic / organizational factors by using the SPSS. The analysis was carried out using the linear regression method in order to be able to identify the impact of these variables to the profitability of enterprises. The linear regression model used in the study is presented as follows: $\boldsymbol{Y = \alpha + \beta X + \varepsilon}$

Y = The dependent variable **X** = The independent variable
The Significant P-value < 0.05
Four (4) hypotheses were developed to test the link between Y and X. The independent variables included in the analysis are:

1. Number of years of business activity;
2. Number of employees;
3. Promotion costs;
4. Existence of a business plan.

Based on the results, it is shown that the statistical significance value (P-value) was less then the 0.05 which indicates that there is a statistically significant relationship between factors taken into consideration and the business profitability.

Study Hypotheses showed:

H1: There is a positive relationship between the number of years of business activity and its profitability.

H2: The number of employees has a positive effect on business profitability. H3:
Promotion costs have an impact on increasing business profitability.
H4: The existence of a business plan has a positive effect on the performance and sustainability of the enterprise.

So, the results of linear regression showed that the factors taken into consideration have a significant impact in the performance of SMEs and their profitability, by supporting the importance of all these factors in the growth, development, profitability and sustainability of the SMEs in Tirana, Albania.

5. Conclusion

This research study underlined the important role an impact that SMEs play in the economy of Albanian. SMEs remain the backbone of the country's economic development, by contributing considerably to employment rate, investment and Gross Domestic Product (GDP). The study's

findings and results highlighted that the growth, profitability and sustainability of SMEs are affected by business planning, managerial skills, innovation and adaption to the new digital developments.

Through the empirical analysis was shown that factors such as business experience, number of employees, promotion costs and the existence of a business plan have a positive impact on business profitability and sustainability to the market. On the other hand, digital transformation and innovation are becoming increasingly important for increasing the competitiveness and long-term performance of SMEs in the Albanian market.

Even though SMEs make a huge contribution to the economy of the country, they continue to face different challenges such as difficulties in finding financing support, labor migration, and high competition in the market. The findings pointed out that governmental support, technological transformation and supportive economic policies are crucial for the future growth and sustainability of SMEs in Albania.

The main contribution of this study is that the empirical analysis showed an essential positive relationship between profitability and various economic and organizational factors affecting SMEs. On the other hand, the study contributes to the existing literature on SMEs and economic development in transition economies such as Albania.

But, as the research was focused only in SMEs that operate in Tirana, firstly, limit the fact that we can not generalize the results for the all country. Second limitation is on the fact that through questionnaires and interviews, the owners' responses may reflect subjective perceptions. Last but not least, the sample size might limit the broader applicability of the results,

Some recommendations for the future research, is to expand the study by include a larger number of SMEs from different cities and sectors of the Albanian economy. Other studies can also focus on the impact of digitalization, innovation, artificial intelligence, sustainability practices and government policies on the performance and competitiveness of SMEs. Also, comparing studies done in Albania with other countries in the region ca provide with key recommendations that might help the development of SMEs operating in Albania. sights into the development of SMEs in transition economies.

In conclusion, SMEs will continue to play a key role in Albania's sustainable economic development and in the country's European integration process.

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STANDARDIZATION AND HARMONIZATION OF MEDICAL TERMINOLOGY IN EUROPEAN HEALTHCARE SYSTEMS: A COMPARATIVE ANALYSIS OF ITALIAN, ALBANIAN, AND ENGLISH IN THE CONTEXT OF INNOVATION AND ARTIFICIAL INTELLIGENCE

Santo Vuono

Department of Governance, Political Science and Communication
Barleti University, Tirana, Albania

Corresponding author: s.vuono@barleti.al

Dedication

To my little Asia, radiant star, joyful soul,
you are the spark that smiles upon weary evenings.
With your father you built playful and precious words,
new neologisms born among games, lilies, and laughter.

Beloved Asia, gentle dance of dreams and desires,
little poet of magical language,
you transform every moment into wonder.

Among bouncing syllables and shimmering sounds
you created soft and magnificent worlds,
fairy tales woven from imagination and happiness.

May your voice remain light and luminous,
may your heart continue to color the sky
with new, musical, wonderfully yours words.

With all the love of your father.

The Lexicon that Heals the World

In the silence of technical words
an invisible heartbeat of meaning is born,
where the human body becomes language
and language becomes care.

One doctor says “diagnosi,”
another says “diagnostikim,”

and between the two voices there is no distance,
but a fragile bridge of understanding.

Languages do not oppose one another;
they seek one another.

Beneath the white rooms of hospitals
words flow like delicate veins:
ancient Latin, modern accents,
alphabets trembling before pain.

Yet every term is a choice:
to speak with precision,
not to betray the meaning of the body.

Then arrives the silent intelligence of machines,
which neither sleeps, nor forgets, nor breathes,
and attempts to learn
the grammar of suffering.

But even the algorithm stumbles
when a word is not merely a word,
when "care" is not translation,
but intention.

Europe speaks many languages,
yet one single need:
not to lose the patient inside the term,
not to lose meaning inside translation.

Thus science builds shared alphabets,
like maps without borders,
where "infermiere," "nurse,"
and "infermier"
are different hands
of the same attention.

And within the future of digital networks,
among data, codes, and classifications,
one simple truth remains:
medicine is not made only of names,
but of meanings
that draw closer to human beings.

And every correct word
is a small act of justice.

Abstract

This study examines the strategic role of medical terminology in European healthcare systems, with particular attention to processes of standardization, simplification, and harmonization within multilingual contexts. The objective is to analyze the linguistic and conceptual differences among Italian, Albanian, and English, evaluating their impact on professional communication, interoperability, and healthcare education. The research adopts a qualitative-comparative approach based on specialized corpora, institutional terminological resources, and European databases. The findings reveal significant terminological variability and the presence of imperfect equivalences that may compromise communicative effectiveness. The study proposes an integrated model of terminological harmonization and highlights the emerging role of artificial intelligence in supporting linguistic normalization, while also emphasizing the limitations of automated systems.

Keywords: Medical terminology; LSP; Standardization; Multilingualism; Interoperability; Artificial intelligence

Introduction

Within the context of contemporary European healthcare systems, medical-scientific communication requires increasingly high levels of precision, coherence, and interoperability. Medical terminology does not merely represent a collection of linguistic labels, but rather a cognitive structure that organizes and transmits specialized knowledge.[1]European policies focused on innovation and sustainable growth emphasize the necessity of developing integrated systems for terminological knowledge management.[2] However, the coexistence of different linguistic systems — such as Italian, Albanian, and English — generates discrepancies that are not only lexical, but also conceptual and functional.[3]The growing mobility of healthcare professionals, the widespread adoption of electronic health records, and the expansion of digital healthcare platforms require shared and semantically interoperable terminologies.[4] In the absence of common standards, terminological differences may compromise the quality of clinical communication, the effectiveness of specialized translation, and patient safety.[5]This study aims to analyze these dynamics through a comparative perspective, focusing on processes of standardization and harmonization of medical terminology within the framework of European innovation and artificial intelligence applied to healthcare systems.[6]

Literature Review

Modern terminology studies are grounded in the theoretical contributions of Maria Teresa Cabré, who defines terminology as a structured system for representing specialized knowledge.[7] Temmerman introduces a sociocognitive perspective, emphasizing the dynamic nature of terminological concepts and their dependence on communicative context.[8]Within the medical

domain, terminological standardization constitutes a fundamental prerequisite for ensuring clinical safety, semantic interoperability, and the quality of shared healthcare data.[9] Studies on Language for Specific Purposes (LSP) further demonstrate that medical-scientific communication is characterized by a constant tension between technical precision and communicative accessibility.[10]At the European level, tools such as SNOMED CT, ICD, and IATE represent essential references for multilingual terminological harmonization.[11] Recent literature also highlights the growing role of digital technologies and artificial intelligence in processes of terminological management and specialized machine translation.[12]Contemporary medical English performs a dominant function as the lingua franca of international scientific communication.[13] This phenomenon deeply influences both translation strategies and terminological adaptation processes in languages with less consolidated scientific standardization, such as Albanian.[14]

Methodology

The research adopts a qualitative-comparative approach aimed at analyzing terminological variability in the medical field through an interlinguistic perspective. The analyzed corpus includes medical-scientific texts, European institutional documentation, terminological databases, specialized glossaries, and multilingual digital healthcare resources.[15]The principal sources consulted include SNOMED CT, the ICD Classification System, IATE, the WHO Lexicon, and the European Medicines Agency.The analysis develops along three principal dimensions:

- Structural dimension
- Semantic dimension
- Functional dimension

Particular attention was devoted to identifying imperfect equivalences, lexical adaptations, linguistic borrowings, and terminological discrepancies among Italian, Albanian, and English.[16]The analysis was supported by corpus linguistics tools and terminology alignment software, including Sketch Engine and AntConc.[17]

Results

The analysis reveals marked heterogeneity within the examined terminological systems, attributable to historical, linguistic, and institutional factors.[18] In particular, three major critical issues emerge:

- Misalignments in the formation of specialized terms
- Strong influence of English as the lingua franca of medical-scientific communication
- Absence of direct equivalences among certain professional and clinical concepts

In the Albanian case, frequent use of adaptations and linguistic borrowings of Anglo-American origin can be observed, often lacking uniform standardization.[19]

Comparative Terminological Examples

Italian	Albanian	English
Medico di base	Mjek familjar	General practitioner
Infermiere	Infermier	Nurse
Diagnosi	Diagnostikim	Diagnosis
Terapia	Terapi	Therapy
Vaccino	Vaksinë	Vaccine

Terminological discrepancies directly influence specialized translation, healthcare registry classification, professional mobility, and the quality of clinical communication.[20]

Table 1. Comparative Analysis of Medical Terminology in Italian, Albanian and English

(Times New Roman, 10 pt, above table)

Area				**Tipo di**	**Criticità**	**Impatto**
Concettuale	**Italiano**	**Albanese**	**Inglese**	**Variabilità**	**Traduttiva**	**sull'Interoperabilità**
Medicina generale	Medico di base	Mjek familjar	General practitioner	Differenza concettuale e professionale	Il ruolo professionale non coincide pienamente nei sistemi sanitari	Ambiguità nella mobilità professionale europea
Infermieristica	Infermiere	Infermier	Nurse	Adattamento lessicale	Differenze nei livelli di specializzazione	Problemi di riconoscimento professionale
Infermieristica avanzata	Infermiere specialista	Infermier specialist	Nurse practitioner	Assenza di equivalenza diretta	Differenze normative e formative	Disallineamento nei registri europei
Diagnostica	Diagnosi	Diagnostikim	Diagnosis	Variabilità morfologica	Uso alternato tra processo e risultato	Incoerenza nei database clinici
Terapia	Terapia	Terapi	Therapy	Prestito internazionale	Ridotta problematicità semantica	Elevata interoperabilità

Vaccinologia	Vaccino	Vaksinë	Vaccine	Adattamento fonologico	Differenze minime	Standardizzazione elevata
Area Concettuale	**Italiano**	**Albanese**	**Inglese**	**Tipo di Variabilità**	**Criticità Traduttiva**	**Impatto sull'Interoperabilità**
Riabilitazione	Fisioterapista	Fizioterapist	Physiotherapist	Prestito adattato	Diversa classificazione professionale	Problemi nei sistemi di equivalenza europea
Laboratorio clinico	Tecnico di laboratorio	Teknik laboratori	Laboratory technician	Traduzione descrittiva	Ambiguità nei livelli di competenza	Difficoltà nella mobilità lavorativa
Emergenza sanitaria	Pronto soccorso	Urgjencë	Emergency department	Differenza strutturale	Differente organizzazione ospedaliera	Problemi di traduzione funzionale
Cartella clinica	Cartella clinica elettronica	Kartelë elektronike	Electronic health record (EHR)	Influenza inglese	Uso di acronimi standardizzati	Necessità di standard comuni
Diagnostica per immagini	Risonanza magnetica	Rezonancë magnetike	Magnetic resonance imaging (MRI)	Uso di acronimi	Variabilità nell'uso abbreviato	Disallineamenti nei software clinici
Sanità digitale	Telemedicina	Telemjekësi	Telemedicine	Neologia tecnologica	Adattamento recente	Necessità di armonizzazione rapida
Epidemiologia	Tracciamento epidemiologico	Gjurmim epidemiologjik	Epidemiological tracing	Traduzione descrittiva	Complessità terminologica	Impatto sulla gestione sanitaria internazionale
Farmacologia	Farmaco equivalente	Bar equivalent	Generic drug	Differenza concettuale	Non piena corrispondenza normativa	Ambiguità regolatoria

Chirurgia	Chirurgia mininvasiva	Kirurgji minimale invazive	Minimally invasive surgery	Prestito scientifico	Variabilità sintattica	Ridotto impatto clinico
Oncologia	Chemioterapia	Kimioterapi	Chemotherapy	Prestito internazionale	Elevata convergenza terminologica	Alta interoperabilità
Salute pubblica	Assistenza territoriale	Kujdes territorial	Community healthcare	Differenza concettuale	Diversi modelli	Problemi di comparabilità europea

Area Concettuale	Italiano	Albanese	Inglese	Tipo di Variabilità	Criticità Traduttiva	Impatto sull'Interoperabilità
Amministrazione sanitaria	Fascicolo sanitario elettronico	Dosje elektronike shëndetësore	Electronic health file	Variabilità terminologica digitale	Uso non uniforme delle piattaforme sanitari nazionali	Criticità nei sistemi interoperabili
Bioetica	Consenso informato	Pëlqimi informuar	Informed consent	Differenze giuridico-culturali	Complessità pragmatiche	Impatto medico-legale
Intelligenza artificiale sanitaria	Supporto decisionale clinico	Sistem mbështetës klinik	Clinical decision support system	Terminologia tecnologica emergente	Mancanza di standard consolidati	Criticità nei sistemi AI europei

The table highlights how terminological variability does not concern exclusively the lexical level, but also involves structural, semantic, normative, and pragmatic dimensions. In particular, the main critical issues emerge in terms related to: healthcare professional roles; digital systems; clinical documentation; and new technologies based on artificial intelligence.

English plays a dominant role as the language of international scientific mediation, influencing both Italian and Albanian terminology through direct borrowings, morphological adaptations, and semantic calques. However, this influence does not automatically guarantee interoperability, since terminological equivalences often do not coincide with conceptual or institutional equivalences.[21]

In the case of Albanian, greater terminological instability can be observed due to the recent development of national medical-scientific terminology and the strong dependence on Anglophone and Italian models.[22]

Terminological differences directly affect, specialized translation; interoperability of healthcare databases, European professional mobility,communicative safety in multilingual clinical contexts.[23]

Table 2. Extended Comparative Medical Terminology Database (Italian–Albanian–English)

- *(Estratto ampliato per analisi terminologica e interoperabilità sanitaria europea)*

Italiano	**Albanese**	**Inglese**	**Area Specialistica**	**Tipo di Adattamento**
Allergia	Alergji	Allergy	Immunologia	Prestito adattato
Ambulatorio	Ambulancë	Outpatient clinic	Organizzazione sanitaria	Adattamento semantico
Anamnesi	Anamnezë	Medical history	Clinica	Prestito internazionale
Analisi del sangue	Analiza gjaku	Blood test	Diagnostica	Traduzione descrittiva
Anestesia	Anestezi	Anesthesia	Chirurgia	Prestito internazionale
Antibiotico	Antibiotik	Antibiotic	Farmacologia	Prestito adattato
Anticorpo	Antitrup	Antibody	Immunologia	Traduzione semantica
Apparecchio acustico	Aparat dëgjimi	Hearing aid	Audiologia	Traduzione descrittiva
Arteria	Arterie	Artery	Anatomia	Prestito adattato
Asma	Astmë	Asthma	Pneumologia	Prestito adattato
Assistenza sanitaria	Kujdes shëndetësor	Healthcare	Sanità pubblica	Traduzione funzionale
Atrofia	Atrofi	Atrophy	Neurologia	Prestito internazionale
Autopsia	Autopsi	Autopsy	Medicina legale	Prestito internazionale
Batterio	Bakter	Bacterium	Microbiologia	Prestito adattato
Benessere	Mirëqenie	Well-being	Salute pubblica	Traduzione concettuale
Biopsia	Biopsi	Biopsy	Oncologia	Prestito internazionale
Bronchite	Bronkit	Bronchitis	Pneumologia	Prestito adattato
Cancro	Kancer	Cancer	Oncologia	Prestito adattato
Cardiologia	Kardiologji	Cardiology	Cardiologia	Prestito internazionale

Italiano	Albanese	Inglese	Area Specialistica	Tipo di Adattamento
Cartella clinica	Kartelë klinike	Medical record	Amministrazion sanitaria	Traduzione descrittiva
Catetere	Kateter	Catheter	Chirurgia	Prestito adattato
Cellula	Qelizë	Cell	Biologia	Traduzione semantica
Cervello	Tru	Brain	Neurologia	Traduzione diretta
Chirurgia	Kirurgji	Surgery	Chirurgia	Prestito internazionale
Colesterolo	Kolesterol	Cholesterol	Cardiologia	Prestito adattato
Coma	Komë	Coma	Neurologia	Prestito internazionale
Contagio	Infektim	Contagion	Epidemiologia	Adattamento semantico
Contraccezione	Kontracepsion	Contraception	Ginecologia	Prestito adattato
Cuore	Zemër	Heart	Cardiologia	Traduzione diretta
Defibrillatore	Defibrilator	Defibrillator	Emergenza	Prestito internazionale
Demenza	Demencë	Dementia	Neurologia	Prestito adattato
Depressione	Depresion	Depression	Psichiatria	Prestito adattato
Dermatologia	Dermatologji	Dermatology	Dermatologia	Prestito internazionale
Diagnostica	Diagnostikë	Diagnostics	Diagnostica	Prestito adattato
Dialisi	Dializë	Dialysis	Nefrologia	Prestito internazionale
Diabete	Diabet	Diabetes	Endocrinologia	Prestito adattato
Dieta	Dietë	Diet	Nutrizione	Prestito adattato
Disabilità	Aftësi e kufizuar	Disability	Riabilitazione	Traduzione descrittiva
Disturbo mentale	Çrregullim mendor	Mental disorder	Psichiatria	Traduzione semantica

Italiano	Albanese	Inglese	Area Specialistica	Tipo di Adattamento
Dolore cronico	Dhimbje kronike	Chronic pain	Terapia del dolore	Traduzione diretta
Ecografia	Ekografi	Ultrasound scan	Diagnostica	Prestito adattato
Edema	Edemë	Edema	Clinica	Prestito internazionale
Elettrocardiogramma	Elektrokardiogram	Electrocardiogram	Cardiologia	Prestito internazionale
Embolia	Emboli	Embolism	Cardiologia	Prestito internazionale
Emergenza	Urgjencë	Emergency	Emergenza sanitaria	Traduzione adattata
Endoscopia	Endoskopi	Endoscopy	Gastroenterologia	Prestito internazionale
Epidemia	Epidemi	Epidemic	Epidemiologia	Prestito internazionale
Farmacia	Farmaci	Pharmacy	Farmaceutica	Prestito adattato
Farmacologia	Farmakologji	Pharmacology	Farmacologia	Prestito internazionale
Febbre	Temperaturë	Fever	Clinica	Traduzione funzionale
Fegato	Mëlçi	Liver	Anatomia	Traduzione diretta
Flebite	Flebit	Phlebitis	Angiologia	Prestito adattato
Fobia	Fobi	Phobia	Psichiatria	Prestito internazionale
Frattura	Frakturë	Fracture	Ortopedia	Prestito adattato
Gastroenterologia	Gastroenterologji	Gastroenterology	Gastroenterologia	Prestito internazionale
Geriatria	Geriatri	Geriatrics	Geriatria	Prestito adattato
Ginecologia	Gjinekologji	Gynecology	Ginecologia	Prestito internazionale
Gravidanza	Shtatzëni	Pregnancy	Ostetricia	Traduzione diretta
Hemoglobina	Hemoglobinë	Hemoglobin	Ematologia	Prestito internazionale

Italiano	Albanese	Inglese	Area Specialistica	Tipo di Adattamento
Immunità	Imunitet	Immunity	Immunologia	Prestito adattato
Infarto	Infarkt	Heart attack	Cardiologia	Prestito adattato
Infezione	Infeksion	Infection	Infettivologia	Prestito adattato
Infermità	Invaliditet	Disability	Medicina legale	Adattamento concettuale
Infiammazione	Inflamacion	Inflammation	Patologia	Prestito adattato
Insulina	Insulinë	Insulin	Endocrinologia	Prestito internazionale
Intossicazione	Helmim	Poisoning	Tossicologia	Traduzione funzionale
Laboratorio	Laborator	Laboratory	Diagnostica	Prestito adattato
Lesione	Lezion	Lesion	Clinica	Prestito adattato
Leucemia	Leukemi	Leukemia	Ematologia	Prestito internazionale
Linfoma	Limfomë	Lymphoma	Oncologia	Prestito adattato
Malattia cronica	Sëmundje kronike	Chronic disease	Medicina interna	Traduzione diretta
Mammografia	Mamografi	Mammography	Radiologia	Prestito internazionale
Medicina preventiva	Mjekësi parandaluese	Preventive medicine	Sanità pubblica	Traduzione descrittiva
Microbo	Mikrob	Microbe	Microbiologia	Prestito adattato
Mortalità	Mortalitet	Mortality	Epidemiologia	Prestito adattato
Nefrologia	Nefrologji	Nephrology	Nefrologia	Prestito internazionale
Neurologia	Neurologji	Neurology	Neurologia	Prestito internazionale
Nutrizione	Ushqyerje	Nutrition	Nutrizione	Traduzione semantica
Obesità	Obezitet	Obesity	Endocrinologia	Prestito adattato

Italiano	Albanese	Inglese	Area Specialistica	Tipo di Adattamento
Oftalmologia	Oftalmologji	Ophthalmology	Oftalmologia	Prestito internazionale
Oncologia	Onkologji	Oncology	Oncologia	Prestito internazionale
Operazione chirurgica	Operacion kirurgjik	Surgical operation	Chirurgia	Traduzione mista
Ortopedia	Ortopedi	Orthopedics	Ortopedia	Prestito adattato
Ossigeno	Oksigjen	Oxygen	Pneumologia	Prestito adattato
Osteoporosi	Osteoporozë	Osteoporosis	Reumatologia	Prestito internazionale
Otorinolaringoiatria	ORL	Otorhinolaryngology	ORL	Sigla specialistica
Pacemaker	Pacemaker	Pacemaker	Cardiologia	Prestito diretto
Pandemia	Pandemi	Pandemic	Epidemiologia	Prestito internazionale
Paramedico	Paramedik	Paramedic	Emergenza sanitaria	Prestito adattato
Patologia	Patologji	Pathology	Patologia	Prestito internazionale
Pediatria	Pediatri	Pediatrics	Pediatria	Prestito adattato
Polmonite	Pneumoni	Pneumonia	Pneumologia	Prestito adattato
Pressione arteriosa	Tension arterial	Blood pressure	Cardiologia	Traduzione funzionale
Prognosi	Prognozë	Prognosis	Clinica	Prestito adattato
Psichiatria	Psikiatri	Psychiatry	Psichiatria	Prestito adattato
Psicologia clinica	Psikologji klinike	Clinical psychology	Psicologia	Traduzione mista
Radiografia	Radiografi	X-ray	Radiologia	Prestito adattato
Radiologia	Radiologji	Radiology	Radiologia	Prestito internazionale
Reumatologia	Reumatologji	Rheumatology	Reumatologia	Prestito internazionale

Italiano	Albanese	Inglese	Area Specialistica	Tipo di Adattamento
Ricovero	Hospitalizim	Hospitalization	Amministrazione sanitaria	Traduzione adattata
Riabilitazione	Rehabilitim	Rehabilitation	Riabilitazione	Prestito adattato
Risonanza magnetica	Rezonancë magnetike	MRI	Diagnostica	Sigla internazionale
Salute mentale	Shëndet mendor	Mental health	Psichiatria	Traduzione diretta
Sangue	Gjak	Blood	Ematologia	Traduzione diretta
Sintomo	Simptomë	Symptom	Clinica	Prestito adattato
Sistema immunitario	Sistem imunitar	Immune system	Immunologia	Traduzione mista
Terapia intensiva	Terapi intensive	Intensive care	Terapia intensiva	Traduzione adattata
Terapia occupazionale	Terapi profesionale	Occupational therapy	Riabilitazione	Traduzione funzionale
Terapia palliativa	Terapi paliative	Palliative care	Cure palliative	Prestito adattato
Tomografia	Tomografi	Tomography	Radiologia	Prestito internazionale
Trauma	Traumë	Trauma	Emergenza	Prestito internazionale
Trapianto	Transplantim	Transplant	Chirurgia	Prestito adattato
Tumore benigno	Tumor benign	Benign tumor	Oncologia	Traduzione diretta
Tumore maligno	Tumor malinj	Malignant tumor	Oncologia	Traduzione diretta
Urologia	Urologji	Urology	Urologia	Prestito internazionale
Vaccinazione	Vaksinim	Vaccination	Immunologia	Prestito adattato
Ventilazione artificiale	Ventilim artificial	Artificial ventilation	Terapia intensiva	Traduzione diretta
Virus	Virus	Virus	Virologia	Prestito internazionale
Visita medica	Vizitë mjekësore	Medical examination	Clinica	Traduzione descrittiva

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Table 3. Additional Scientific and Medical Terminology with Adaptation Type

- *(Italian–Albanian–English Comparative Analysis)*

Italiano	Albanese	Inglese	Area Specialistica	Tipo di Adattamento
Acidosi	Acidozë	Acidosis	Biochimica clinica	Prestito adattato
Adenoma	Adenomë	Adenoma	Oncologia	Prestito internazionale
Adrenalina	Adrenalinë	Adrenaline	Farmacologia	Prestito adattato
AIDS	AIDS	AIDS	Infettivologia	Acronimo internazionale
Albumina	Albuminë	Albumin	Biochimica	Prestito adattato
Analgesico	Analgjezik	Analgesic	Farmacologia	Adattamento morfologico
Angiografia	Angiografi	Angiography	Cardiologia	Prestito internazionale
Antigene	Antigjen	Antigen	Immunologia	Adattamento fonologico
Antivirale	Antiviral	Antiviral	Virologia	Prestito diretto
Apnea	Apne	Apnea	Pneumologia	Prestito adattato
Artrite	Artrit	Arthritis	Reumatologia	Riduzione morfologica
Audiometria	Audiometri	Audiometry	Audiologia	Prestito internazionale
Autoimmunità	Autoimunitet	Autoimmunity	Immunologia	Calco semantico
Bradicardia	Bradikardi	Bradycardia	Cardiologia	Prestito adattato
Calcificazione	Kalcifikim	Calcification	Patologia	Derivazione lessicale
Catatonia	Katatoni	Catatonia	Psichiatria	Prestito internazionale
Chemioresistenza	Kimioresistencë	Chemoresistance	Oncologia	Composto ibrido
Cianosi	Cianozë	Cyanosis	Clinica	Prestito adattato
Citologia	Citologji	Cytology	Patologia	Prestito internazionale
Coagulazione	Koagulim	Coagulation	Ematologia	Traduzione semplificata
Comorbidità	Komorbiditet	Comorbidity	Medicina interna	Prestito adattato
Coronarografia	Koronarografi	Coronary angiography	Cardiologia	Prestito internazionale

Italiano	Albanese	Inglese	Area Specialistica	Tipo di Adattamento
Crisi epilettica	Krizë epileptike	Epileptic seizure	Neurologia	Traduzione descrittiva
Deficit cognitivo	Deficit kognitiv	Cognitive impairment	Neurologia	Calco semantico
Degenerazione neuronale	Degjenerim neuronal	Neuronal degeneration	Neurologia	Traduzione letterale
Deidratazione	Dehidratim	Dehydration	Medicina interna	Prestito adattato
Dermatite	Dermatit	Dermatitis	Dermatologia	Riduzione morfologica
Disfunzione respiratoria	Disfunksion respirator	Respiratory dysfunction	Pneumologia	Traduzione adattata
Ecocardiogramma	Ekokardiogram	Echocardiogram	Cardiologia	Prestito internazionale
Elettrolita	Elektrolit	Electrolyte	Biochimica	Prestito adattato
Emorragia	Hemorragji	Hemorrhage	Emergenza	Prestito adattato
Encefalite	Encefalit	Encephalitis	Neurologia	Riduzione morfologica
Endocrinologia	Endokrinologji	Endocrinology	Endocrinologia	Prestito internazionale
Enterocolite	Enterokolit	Enterocolitis	Gastroenterologia	Prestito adattato
Eritrocita	Eritrocit	Erythrocyte	Ematologia	Riduzione morfologica
Esame istologico	Ekzaminim histologjik	Histological examination	Patologia	Traduzione descrittiva
Fibrosi	Fibrozë	Fibrosis	Pneumologia	Prestito adattato
Fibrillazione atriale	Fibrilacion atrial	Atrial fibrillation	Cardiologia	Traduzione mista
Gastroenterite	Gastroenterit	Gastroenteritis	Gastroenterologia	Prestito adattato
Genetica medica	Gjenetikë mjekësore	Medical genetics	Genetica	Traduzione funzionale
Glicemia	Glicemi	Blood glucose	Endocrinologia	Adattamento semantico
Hematoma	Hematomë	Hematoma	Chirurgia	Prestito internazionale
Ictus	Goditje cerebrale	Stroke	Neurologia	Traduzione concettuale
Immunoterapia	Imunoterapi	Immunotherapy	Oncologia	Prestito adattato
Insufficienza cardiaca	Pamjaftueshmëri kardiake	Heart failure	Cardiologia	Traduzione descrittiva

Italiano	Albanese	Inglese	Area Specialistica	Tipo di Adattamento
Insufficienza respiratoria	Pamjaftueshmëri respiratore	Respiratory failure	Pneumologia	Traduzione descrittiva
Iperglicemia	Hiperglicemi	Hyperglycemia	Endocrinologia	Prestito adattato
Ipertensione	Hipertension	Hypertension	Cardiologia	Prestito adattato
Ipotensione	Hipotension	Hypotension	Cardiologia	Prestito adattato
Ischemia	Ishemi	Ischemia	Cardiologia	Prestito internazionale
Laparoscopia	Laparoskopi	Laparoscopy	Chirurgia	Prestito internazionale
Leucocita	Leukocit	Leukocyte	Ematologia	Prestito adattato
Linfonodo	Nyje limfatike	Lymph node	Oncologia	Traduzione descrittiva
Malformazione congenita	Keqformim kongjenital	Congenital malformation	Pediatria	Traduzione letterale
Melanoma	Melanomë	Melanoma	Oncologia	Prestito internazionale
Metastasi	Metastazë	Metastasis	Oncologia	Prestito adattato
Monitoraggio clinico	Monitorim klinik	Clinical monitoring	Medicina interna	Traduzione mista
Morbilità	Morbiditet	Morbidity	Epidemiologia	Prestito adattato
Necrosi	Nekrozë	Necrosis	Patologia	Prestito adattato
Neurochirurgia	Neurokirurgji	Neurosurgery	Chirurgia	Prestito ibrido
Neurone	Neuron	Neuron	Neurologia	Prestito internazionale
Obiettivo terapeutico	Objektiv terapeutik	Therapeutic target	Farmacologia	Traduzione funzionale
Osteoartrite	Osteoartrit	Osteoarthritis	Reumatologia	Prestito adattato
Ossimetria	Oksimetri	Oximetry	Pneumologia	Prestito internazionale
Otite	Otit	Otitis	Otorinolaringoiatria	Riduzione morfologica
Palliativo	Paliativ	Palliative	Cure palliative	Prestito adattato
Paralisi	Paralizë	Paralysis	Neurologia	Prestito adattato
Patogeno	Patogjen	Pathogen	Microbiologia	Adattamento fonologico
Peritonite	Peritonit	Peritonitis	Chirurgia	Riduzione morfologica
Plasma	Plazmë	Plasma	Ematologia	Prestito adattato

Italiano	Albanese	Inglese	Area Specialistica	Tipo di Adattamento
Politrauma	Politraumë	Polytrauma	Emergenza	Prestito internazionale
Prognostico	Prognostik	Prognostic	Clinica	Prestito adattato
Profilassi	Profilaksi	Prophylaxis	Prevenzione	Adattamento fonologico
Radioterapia	Radioterapi	Radiotherapy	Oncologia	Prestito internazionale
Recidiva	Recidivë	Relapse	Oncologia	Prestito adattato
Referto clinico	Raport klinik	Clinical report	Diagnostica	Traduzione funzionale
Regime terapeutico	Regjim terapeutik	Therapeutic regimen	Farmacologia	Traduzione mista
Resistenza antibiotica	Rezistencë antibiotike	Antibiotic resistance	Microbiologia	Traduzione letterale
Rianimazione	Reanimacion	Resuscitation	Terapia intensiva	Prestito adattato
Screening	Screening	Screening	Prevenzione	Prestito diretto
Sepsi	Sepsë	Sepsis	Terapia intensiva	Prestito adattato
Sierologia	Serologji	Serology	Immunologia	Prestito internazionale
Sincope	Sinkopë	Syncope	Cardiologia	Prestito adattato
Sistema nervoso centrale	Sistemi nervor qendror	Central nervous system	Neurologia	Traduzione letterale
Sonda gastrica	Sondë gastrike	Gastric tube	Gastroenterologia	Traduzione descrittiva
Sottopeso	Nën peshë	Underweight	Nutrizione	Traduzione semantica
Spasmo	Spazëm	Spasm	Neurologia	Prestito adattato
Sperimentazione clinica	Eksperimentim klinik	Clinical trial	Ricerca medica	Traduzione funzionale
Stenosi	Stenozë	Stenosis	Cardiologia	Prestito adattato
Terapia farmacologica	Terapi farmakologjike	Pharmacological therapy	Farmacologia	Traduzione mista
Terapia genica	Terapi gjenike	Gene therapy	Genetica	Traduzione mista
Trombosi	Trombozë	Thrombosis	Ematologia	Prestito adattato
Tumore metastatico	Tumor metastatik	Metastatic tumor	Oncologia	Traduzione letterale
Ulcera gastrica	Ulçer gastrike	Gastric ulcer	Gastroenterologia	Traduzione mista

Italiano	Albanese	Inglese	Area Specialistica	Tipo di Adattamento
Vaccino mRNA	Vaksinë mRNA	mRNA vaccine	Biotecnologie	Acronimo internazionale
Vasodilatazione	Vazodilim	Vasodilation	Cardiologia	Adattamento semantico
Ventricolo cardiaco	Barkushe kardiake	Cardiac ventricle	Cardiologia	Traduzione descrittiva
Virologia	Virologji	Virology	Virologia	Prestito internazionale
Xerostomia	Xerostomi	Xerostomia	Odontoiatria	Prestito internazionale
Zoonosi	Zoonozë	Zoonosis	Epidemiologia	Prestito adattato

Discussion

The findings suggest the need to reconsider terminological standardization not as rigid uniformity, but rather as a dynamic system of semantic interoperability. [21] from this perspective, medical terminology becomes an instrument of integration among different linguistic systems, promoting transnational cooperation and European healthcare efficiency.

Terminological simplification also emerges as a complementary strategy to standardization. It does not imply a reduction of scientific rigor, but rather a reorganization of linguistic complexity aimed at improving comprehension, accessibility, and communicative safety.[22]

Particular relevance is attributed to the role of artificial intelligence in processes of machine translation, terminological normalization, and semantic integration within digital healthcare systems.[23] However, significant limitations persist due to semantic ambiguities, equivalence errors, and the absence of pragmatic contextualization.[24]

For these reasons, human supervision remains essential in processes of terminological and translational validation.[25]

Conclusion

The study confirms that medical terminology represents a fundamental infrastructure for the integration of European healthcare systems. Standardization and terminological harmonization

contribute to improving communicative safety, facilitating professional mobility, increasing healthcare efficiency, and supporting digital interoperability.

Artificial intelligence constitutes a strategic opportunity for the future of terminological management, provided that it is integrated with linguistic expertise and specialist supervision.

Among the principal future development lines proposed are:

- Creation of interoperable multilingual terminological ontologies
- Development of AI platforms supervised by experts
- Interdisciplinary terminological training for healthcare professionals and linguists

Medical terminology therefore represents not only a linguistic system, but also a human and ethical infrastructure capable of connecting scientific knowledge, technological innovation, and patient-centered care.

Terminological Dictionarie

Italian

- Dizionario di Medicina – Treccani
- Dizionario Medico Hoepli

Albanian

- *Fjalor i Terminologjisë Mjekësore* (Academy of Sciences of Albania)
- *Fjalori i Gjuhës Shqipe*

English

- *Dorland's Illustrated Medical Dictionary*
- *Oxford Dictionary of Medicine*

Webography

1. World Health Organization (WHO) – International health terminology
2. European Medicines Agency (EMA) – Regulatory terminology
3. European Commission – Multilingual terminology databases
4. SNOMED International – Clinical terminology standards
5. ICD Classification System

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MATHEMATICAL INTERPRETATION OF "PROMOTE GENERAL WELFARE" US CONSTITUTION LAW.
SUBTITLE:
A CONSTITUTIONAL, SCIENTIFIC, AND WELFARE-CENTERED FRAMEWORK FOR GOVERNANCE

Spiro Haxhi

De Paul University Chicago

Abstract

The U.S. Constitution's clause to "promote the general welfare" (PGW) is a measurable scientific principle, not a rhetorical flourish. This white paper introduces a mathematical model that defines PGW as differential of general welfare over time, and as a basic law of human behavior.The framework reveals a misalignment: modern governance relies on growing GDP, a metric unrelated to PGW human governing law and constitutional central goal. This misalignment is the root cause of all problems of humanity and environment. Therefor shifting from growing GDP to PGW governing strategy is the only true solution of all problems of humanity and the nature.

US CONSITUTION PREAMBLE

We the People of the United States, in
Order to form more perfect Union,
establish Justice, insure domestic
Tranquility,
provide for the common defense,
promote the general Welfare,
and secure the Blessings
of Liberty to ourselves and our Posterity, do
ordain and establish this constitution for
the United States of America.

1. Constitutional Foundation

1.1 The Mandate

The Preamble's instruction to "promote the general welfare" establishes a governing obligation: Government must produce measurable improvement in the life of the people.

1.2 The Drift Toward GDP

Over the last century, GDP replaced GWF as the dominant measure of progress. This shift:

- rewards consumption over wellbeing
- counts harmful activities as "growth"
- hides negative externalities
- incentivizes unsustainable behavior

The Constitution requires promoting GWF '∩general welfare', not growing GDP.

2. Definition of PGW "promote general welfare" law

2.1 Promote General Welfare (PGW)

PGW = Positive Change (+CH) PGW

= CH > 0

2.2 Change (CH)

Differential of general welfare over time.

CH = d(GWF)/dt

2.3 General Welfare (GWF)

Integral of general wellbeing on time.

GWF = ∫(QT)t dt

The accumulated wellbeing of a population over time.

2.4 Wellbeing at Time t (QT)_t

Wellness on twinkle time ∂t.

(QT)t=QT on ∂t

2.5 Wellness (QT)

Point of quality and time intersection. QT
= Q ∩ T

2.6 Time (T)
T = "One day"
A fundamental dimension of human experience.

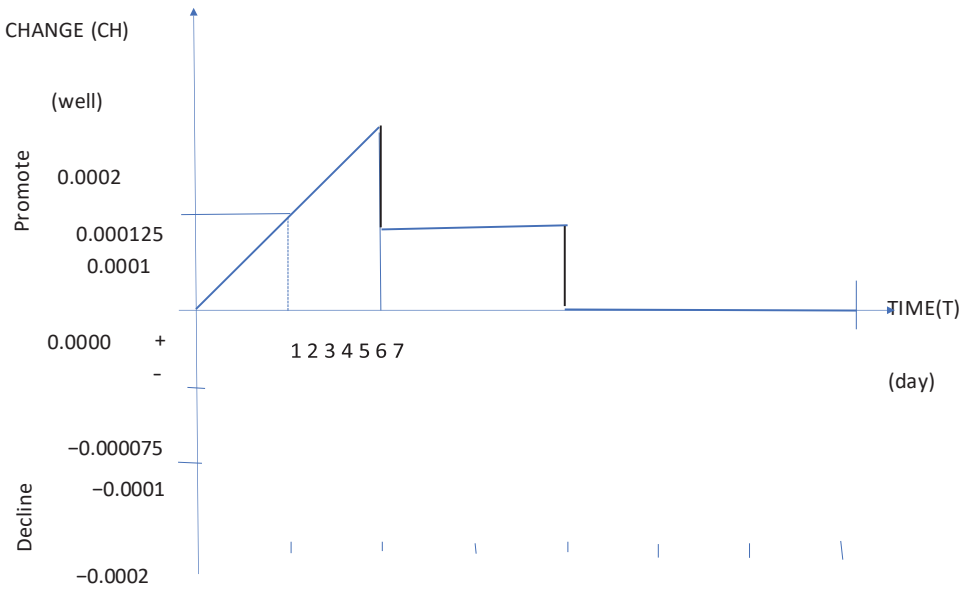
2.7 Quality (Q)

Q = +E / –E = 1 Good

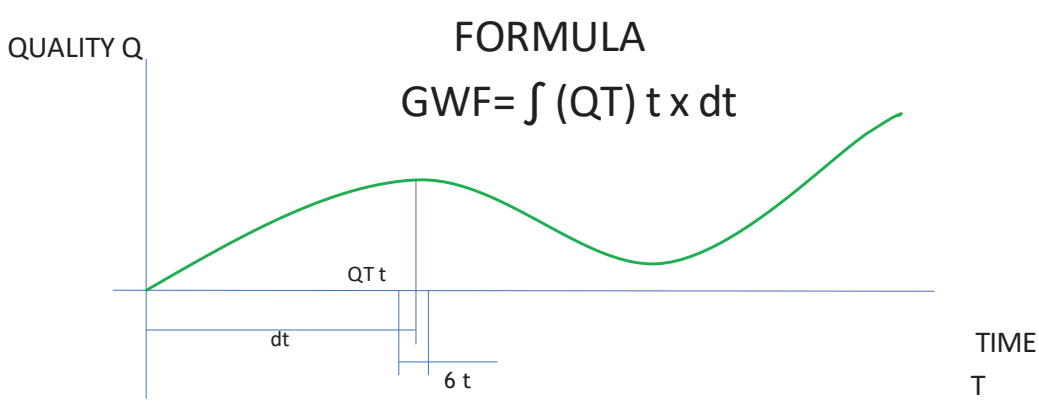
+E= Positive energy generated during human object interaction

-E=Negative energy generated during human object interaction.

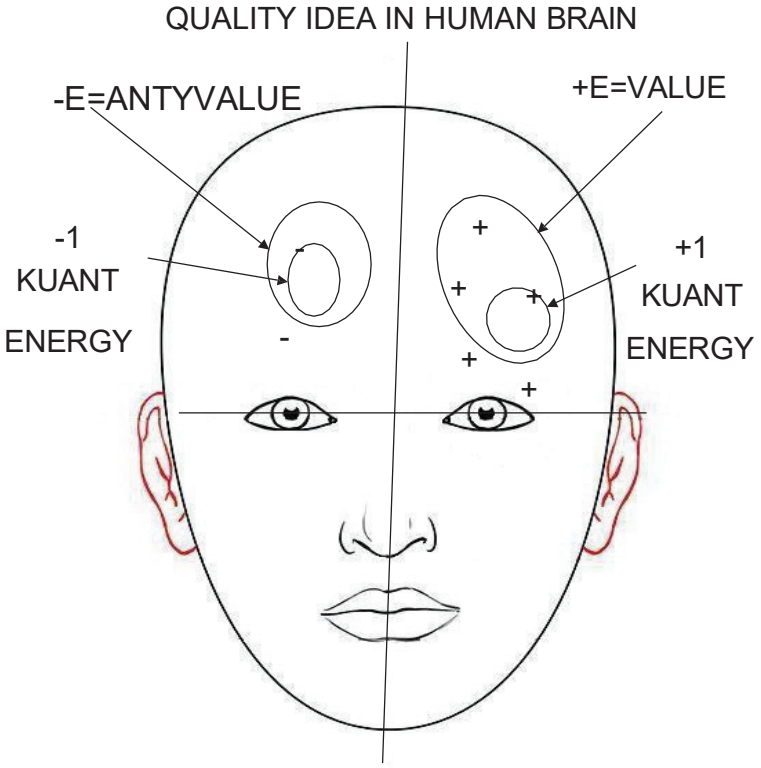
Any human being use quality to know how much good is something.
Geometric definitions:
2.1 PGW promote general welfare example.



General welfare geometric representation



Quality idea in the human mind



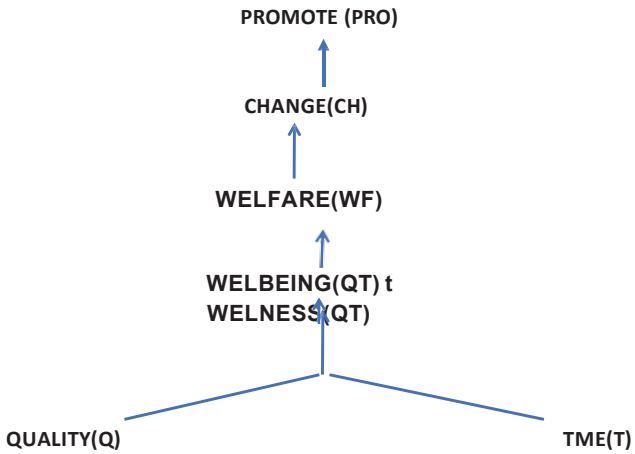
QUALITY= Q = RATIO = +E /-E

3. Key Terms and Synonyms

- Promote (P): development, progress, positive change, sustainable progress
- Change (CH): welfare speed,
- General Welfare (GWF): health, happiness, efficiency, sustainability
- Wellbeing (QT)_t: the wellness
- Wellness (QT): quality time, virtue, yield
- Time (T): dimension of life
- Quality (Q): goodness

4. Conceptual Hierarchy of the PGW System
Diagram Callout (Hierarchy Pyramid):
A vertical flow diagram showing:

PROMOTE GENERAL WELFARE SYSTEM



This hierarchy demonstrates that constitutional progress is mathematically measurable and rooted in the physics of human wellbeing.

5. Implications for Governance and Economics

5.1 Constitutional Misalignment
GDP measures production volume.
PGW measures welfare improvement.
When GDP dominates:

- destructive activities count as “growth”
- human and environmental costs are externalized

- policy incentives drift away from wellbeing

5.2 The Quality-Based Economy

A PGW-aligned system evaluates:

- quality of life
- sustainability
- positive change generation
- long-term welfare accumulation

This model transforms governance from value to quality.

6. Natural Laws Underlying Human Behavior and Welfare

Three natural laws form a unified scientific system:

Law 1: Quality Quantification

Any human being quantifies quality(Q) to know how much “good” is something

Law 2: Choose the Best

QUALITY(Q) FIRST LEADING IDEA

Q= +E/−E

1

+E= Positive energy = Velue(V)

−E= Negative energy= Antivalue(AV)

2

Q= V/AV

Q1 =V1/AV1

Q2=V2/AV2

IF Q1>Q2 ANY HUMAN BEING CHOOSE APLE 1

Between two things any human being chose the thing that has more quality(Q).

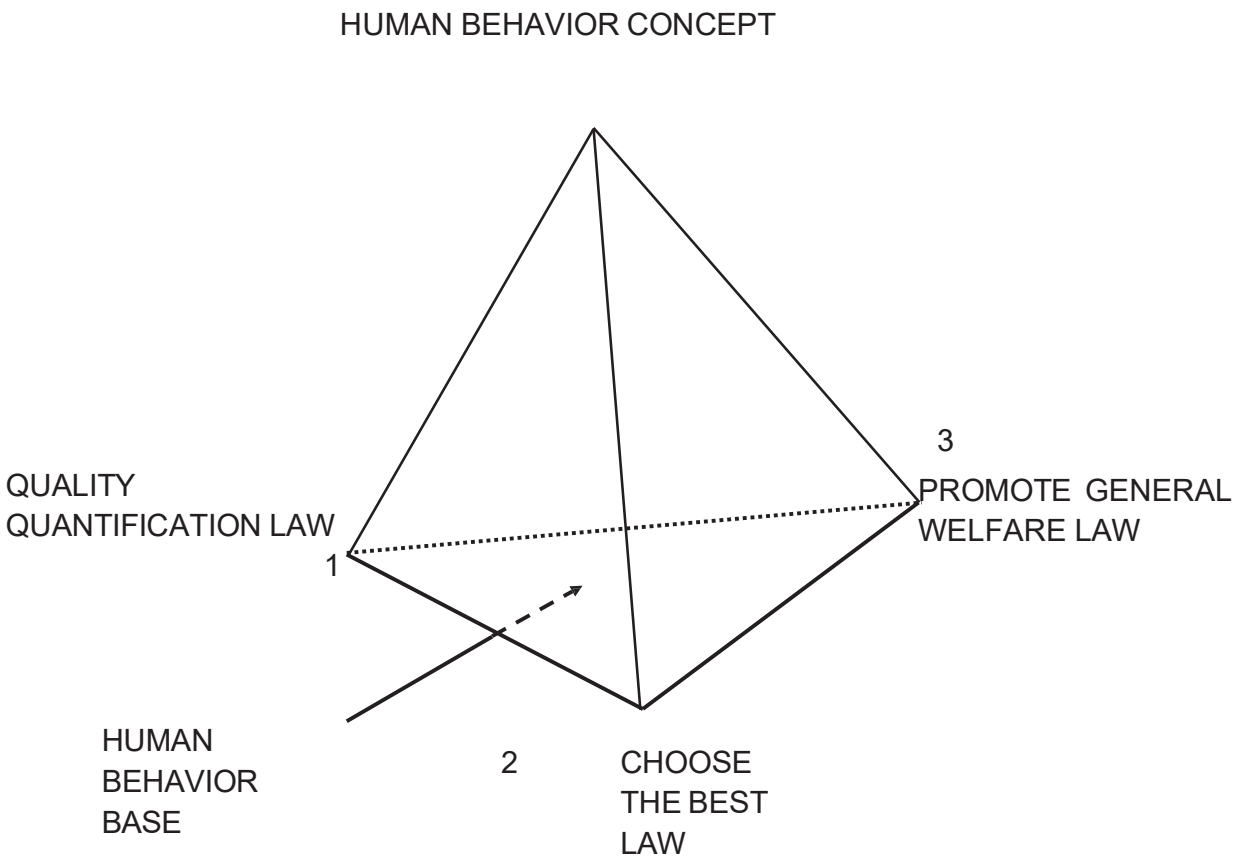
Believe that value is what human use to do choice and actions is false and root cause of all problems.

Law 3: Promote General Welfare

Promoting general welfare (PGW) leads any human action

Diagram Callout (Three-Law Triangle):

A triangle with each law at a vertex, forms true human behavior base



7. Applications and Pilot Opportunities

7.1 Policy Evaluation Framework

Policies can be scored by their effect on CH and GWF.

7.2 Business Navigator Tool

Organizations can measure their positive energy generation and optimize for quality.

7.3 Education Reform

Economics curricula can shift from GDP-centric to welfare-centric constitutional science.

7.4 Governance Strategy

Leaders can adopt an improvement-focused model aligned with PGW.

8. A Call to Action

A constitutional, mathematical, and humanitarian transformation is now possible.
Imagine a society where:

- progress is measured by wellbeing
- sustainability is a constitutional requirement
- economic success means improved quality of life
- governance aligns with natural laws of human behavior

This is the world the PGW system enables.

9. Implementing PGW model in business

We can use PGW life governing system as a mode to manage any business. In case of business we analyze cash flow to compute all metrics of the PGW
Starting from computing business wellness as ratio of revenue(R) and spending(S), Mathematically
Wellness=(QT) =(R/S)
Wellbeing=(QT)t=(R/S) t
Welfare=Integral (QT) t x dt
Change=Differential of welfare over time= d GWF t/dt

10. Join the Movement

The next step is collaborative implementation.

Pilot projects, entrepreneurial models, and policy experiments can demonstrate the power of this framework.

Join at www.savehumanitysolution.com and help build a welfare-centered future grounded in constitutional law and mathematical clarity.

TOPIC: TEACHER TRAINING AND ITS IMPACT ON STUDENT OUTCOMES IN PRE-UNIVERSITY EDUCATION

Vinjola Rota[1]

[1] Director of the "Regional Directorate of Pre-University Education", Korça, Albania

Corresponding author: vinjolarota@yahoo.com

Abstract

Background: Teacher professional development is widely recognized as a fundamental component of educational quality and an important factor in promoting student success. In contemporary education systems, teachers are expected not only to deliver content but also to facilitate learning, foster critical thinking, and respond to diverse student needs. Continuous training enables educators to update their pedagogical knowledge, adopt innovative teaching strategies, and effectively implement curriculum reforms and technological advancements.

Objective: This study aims to investigate the relationship between teacher training and student outcomes in pre-university education. Specifically, it seeks to examine whether participation in professional development activities contributes to improved student achievement and overall educational quality.

Methods: A comparative and descriptive research approach was employed using educational data from the Regional Directorate of Pre-University Education (DRAP) Korçë. The study analyzes statistical indicators related to teacher participation in the National Professional Development Program, teacher and student demographics, and student achievement data from national assessments and State Matura Examinations during the 2024–2025 period. The collected data were examined to explore potential associations between teacher professional development and student performance indicators.

Keywords: teacher training, professional development, student achievement, educational quality, pre-university education, educational outcomes.

Introduction

Teacher training constitutes one of the fundamental pillars of quality educational development and a key factor in improving student outcomes. At a time when the education system faces new pedagogical, technological, and social challenges, the role of the teacher goes beyond the traditional transmission of knowledge, evolving into a continuous process of guidance, motivation, and competency development. For this reason, investment in teachers' professional development is now considered a strategic necessity for ensuring a modern and effective education system.

Continuous teacher training directly contributes to improving the quality of teaching, as it enables educators to acquire modern pedagogical methods, adapt to curriculum changes, and utilize technology to support learning. A well-trained teacher is not only a provider of knowledge but also a mentor, guide, and promoter of critical thinking among students. Through professional development, teachers become better equipped to create a more collaborative classroom environment, manage everyday challenges effectively, and identify the individual needs of each student.

Furthermore, teacher training helps strengthen a culture of quality within educational institutions. A well-prepared and motivated teaching staff creates better conditions for inclusion, equity, and success in education. In this way, teachers' professional development should not be viewed as a formal or administrative process, but rather as a long-term investment in the future of society, since the quality of education is closely linked to the quality of those who educate future generations.

As Andreas Schleicher states: *"The quality of an education system cannot exceed the quality of its teachers."* This statement clearly emphasizes that educational improvement begins with the professional and personal empowerment of teachers, who remain the most important factor in shaping citizens and contributing to societal development.

Research Question

Does teacher training have an impact on student outcomes, and if so, how does it influence them?

1. Comparative Statistical Data for 2024 and 2025

In 2024, a total of 948[1] pre-university educational institutions operated under the jurisdiction of the Regional Directorate of Pre-University Education (DRAP) Korçë, encompassing preschool education, basic education, and upper secondary education. The data indicate that the educational system in this region is dominated by public institutions, which constitute the majority of the educational network and bear the primary responsibility for providing educational services.

In the field of preschool education, there are 579 educational institutions in operation, of which 548 are public and 31 are private[2]. This means that approximately 96% of preschool institutions belong to the public sector, reflecting the state's leading role in providing education and care for children in early childhood[3]. The presence of private institutions remains more limited and is concentrated mainly in urban areas.

In basic education, 267 educational institutions are in operation, including primary schools, nine-year schools, and combined schools. At this level as well, the public sector clearly dominates, with

[1] 2024 Public Achievement Report of DRAP Korçë
[2] 2024 Public Achievement Report of DRAP Korçë

96% of institutions being public[4]. This reflects the ongoing commitment of the public education system to ensuring students' access to quality and inclusive education in both urban and rural areas.

Meanwhile, in upper secondary education, 102 educational institutions are operating, including general secondary schools, language-oriented secondary schools, arts schools, and private or religious institutions. Of these, 91% belong to the public education system[5], demonstrating that state institutions continue to provide the primary support for education at this level[6]. Alongside them, a limited number of private institutions operate, contributing to the diversification of educational opportunities.

Overall, these data indicate that the educational network within DRAP Korçë is primarily supported by public institutions, which ensure broad access to and continuity of the educational process at all levels of pre-university education.

The number of teachers practicing their profession across all pre-university educational institutions within DRAP Korçë, including private institutions, reaches 6,847 educators[7]. This figure reflects the significance and scale of the human resources engaged in the region's educational system, ensuring the implementation of the teaching and learning process at all levels of pre-university education.

The data show that women and girls constitute the majority of the teaching workforce within the DRAP Korçë education system. Across all educational levels, 74% of teachers are women, while 26% are men[8]. This gender composition highlights the traditionally important role that women play in the education sector and in the upbringing and education of younger generations.

In primary education, the highest concentration of female teachers is observed, with 86% of educators being women and only 14% being men. This ratio is also linked to the nature of primary education, which requires a high level of pedagogical and emotional engagement in working with young children. In lower secondary and upper secondary education, a greater degree of gender balance can be observed, although women still constitute the majority of the teaching staff. In lower secondary education, 69% of teachers are women and 31% are men, while in upper secondary education the ratio is 66% women and 34% men[9].

An important indicator of the quality and organization of the educational system is the teacher–student ratio. In DRAP Korçë, this ratio is one teacher for every 9.23 students, indicating a relatively low number of students per teacher. This situation creates opportunities for greater individual attention to students, more effective monitoring of their progress, and the development of a higher-quality and more inclusive teaching and learning process. At the same time, this ratio

[4] 2024 Public Achievement Report of DRAP Korçë
[5] 2024 Public Achievement Report of DRAP Korçë
[6] 2024 Public Achievement Report of DRAP Korçë
[7] 2024 Public Achievement Report of DRAP Korçë
[8] 2024 Public Achievement Report of DRAP Korçë

also reflects the need for careful management of human resources and long-term planning of educational staff, particularly in the context of demographic changes and population movements.

In 2025, the number of teachers employed in pre-university educational institutions within DRAP Korçë, including private institutions, reached 6,846 educators[10]. This indicator reflects the human capacity of the regional education system and the importance of professional resources in ensuring the effective functioning of the teaching and learning process at all educational levels.

Of the total number of teachers, 5,067 (75%) are women, while 1,779 (25%) are men[11]. These data indicate that the teaching profession in DRAP Korçë continues to be dominated by women, who constitute the majority of the teaching staff across all educational levels. This high representation of women in education reflects not only the tradition of their engagement in the field but also the significant role they play in the development and education of younger generations.

In primary education, 2,010 teachers are employed, of whom 1,771 are women and 239 are men[12]. In percentage terms, 88% of teachers at this level are women, while only 12% are men[13]. This ratio demonstrates that primary education remains the level with the highest female representation in the teaching profession, reflecting the importance of the educational and pedagogical role involved in working with young children.

In lower secondary education, there are 3,418 teachers, of whom 2,317 are women and 1,101 are men. At this level, 67% of the teaching staff are women and 33% are men[14], indicating a more balanced gender distribution compared with primary education.

Meanwhile, in upper secondary education, 1,418 teachers are employed, of whom 979 are women and 439 are men. Women account for 69% of teachers at this level, while men represent 31%[15]. Although the gender gap remains evident, there is a gradual increase in male representation at the higher levels of education.

Another important indicator of the quality and effectiveness of the teaching and learning process is the teacher–student ratio. In DRAP Korçë, this ratio is one teacher for every 9.18 students. This indicator is considered positive, as it provides opportunities for more individualized attention to students, better monitoring of their academic performance, and the development of a higher-quality and more effective learning process. Such a ratio also contributes to creating a more favorable classroom environment and improving communication between teachers and students.

[10] 2025 Public Achievement Report of DRAP Korçë
[11] 2025 Public Achievement Report of DRAP Korçë
[12] 2025 Public Achievement Report of DRAP Korçë
[13] 2025 Public Achievement Report of DRAP Korçë
[14] 2025 Public Achievement Report of DRAP Korçë

In September 2024, for the 2024–2025 school year, a total of 77,149[16] students and children were enrolled in all educational institutions under the jurisdiction of DRAP Korçë, covering all levels of pre-university education, from preschool to upper secondary education. This figure reflects the scale and importance of the education system in the region, as well as the responsibility of educational institutions to ensure the delivery of a high-quality and inclusive educational process.

The data indicate that the gender distribution of enrolled students and children is almost balanced. Of the total number of enrollments, 51% are boys and 49% are girls[17]. The difference between the two groups is relatively small, with 487 more boys than girls. This ratio demonstrates that the education system in DRAP Korçë ensures broad and equal access to education for both genders, reflecting adherence to the principles of equality and inclusion in education.

The high number of enrolled students and children also highlights the importance that communities and families place on education as a fundamental factor in personal and social development. At the same time, these data emphasize the need for continued investment in educational infrastructure, human resources, and improvements in teaching conditions in order to meet the needs of a substantial number of students across all levels of pre-university education.

Furthermore, the analysis of enrollment indicators assists educational institutions and administrative authorities in better planning educational policies, allocating resources more effectively, and designing measures aimed at improving the quality of education in the region.

In September 2025, for the 2025–2026 school year, a total of 72,952[18] students and children were enrolled in all educational institutions under the jurisdiction of DRAP Korçë, covering all levels of pre-university education, from preschool to upper secondary education. This figure demonstrates the continued broad operation of the regional education system and highlights the important role educational institutions play in ensuring the education and development of younger generations.

According to statistical data, the gender distribution of enrolled students and children is almost perfectly balanced. Approximately 50% of those enrolled are boys and 50% are girls[19], while the difference between the two groups is very small, with 652[20] more girls than boys. This indicator reflects equal participation of both genders within the education system and demonstrates that access to education continues to be inclusive and free from gender-based disparities.

Analysis of the data by educational level shows that the largest proportion of students are enrolled in basic education, which constitutes the core component of the DRAP Korçë education system. A considerable number of children also attend preschool education, indicating the growing

[16] 2024 Public Achievement Report of DRAP Korçë
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importance of early childhood education and increasing family awareness of the role this level plays in children's development. Meanwhile, upper secondary education continues to hold a significant role in the academic and professional development of young people.

Compared with the previous school year, a decrease in the total number of enrolled students and children can be observed. This change may be associated with demographic factors, population migration trends, or shifts in the structure of the school-age population within the region. Nevertheless, the education system continues to maintain broad participation and effective organization across all levels of pre-university education.

2. The Impact of Training on Quality Improvement

The statistical data analyzed in the first section serve as an important indicator for the planning and management of educational policies. They assist the responsible institutions in the more efficient allocation of human and infrastructural resources, as well as in the development of strategies aimed at improving the quality of education and addressing future demographic challenges.

The National Professional Development Program has created significant opportunities for enhancing the professional capacities of teachers and support staff in pre-university educational institutions during the 2023–2024 and 2024–2025 school years. The program was designed as an essential mechanism for improving the quality of teaching and strengthening the professional competencies of educational personnel, in line with the requirements of contemporary education and emerging pedagogical challenges.

The program provided mandatory training for in-service teachers in all public pre-university educational institutions, focusing on key subject areas such as Primary Education, Albanian Language and Literature, Mathematics, and the Sciences, including Physics, Chemistry, and Biology. In addition to teachers, school leaders, psycho-social service professionals, and school safety officers also participated in the program, reflecting a comprehensive approach to the professional development of the education system.

The training sessions were organized at the Regional Directorate of Pre-University Education (DRAP) level in cooperation with regional public universities, specifically the Fan S. Noli University and the Aleksandër Xhuvani University. This inter-institutional collaboration contributed to ensuring the academic and professional quality of the training modules, while also adapting them to the actual needs of teachers and educational institutions.

During the period from March to November 2024, a total of 3,707[21] teachers, representing 83% of all teachers in the subject profiles of Primary Education, Albanian Language and Literature, Mathematics, Physics, Biology, and Chemistry, participated in training activities. This figure represents a significant indicator of teachers' broad engagement in professional development and

their commitment to the continuous improvement of pedagogical and subject-specific practices. The training contributed to strengthening professional competencies, promoting the use of contemporary teaching methods, and increasing the effectiveness of classroom instruction.

Particular importance was also given to the professional development of school leaders and psycho-social service personnel. In total, 583[22] school leaders and specialists from this service, representing 85%[23] of their respective group at the DRAP level, were trained in the module on conflict management and communication within pre-university educational institutions. This training aimed to strengthen skills in managing challenging situations, improving institutional communication, and fostering a safer and more collaborative school environment.

Overall, 55%[24] of in-service teachers in pre-university educational institutions within DRAP Korçë participated in the National Professional Development Program. Through this program, teachers benefited from free, high-quality professional training in both pedagogical and subject-specific competencies, directly contributing to the improvement of educational quality and the provision of a more modern, effective, and student-centered educational service.

The National Professional Development Program continued to play an important role during the 2024–2025 school year in improving the quality of pre-university education and strengthening the professional capacities of educational personnel in DRAP Korçë. The program provided mandatory training for in-service teachers in all public pre-university educational institutions, with the objective of developing pedagogical and subject-specific competencies in accordance with the demands of contemporary education.

The training programs were delivered in key subject areas, including Primary Education, Albanian Language and Literature, Mathematics, Social Sciences—comprising History, Geography, and Civic Education—as well as the Sciences, specifically Physics, Chemistry, and Biology. In addition to teachers, school leaders, psycho-social service professionals, and school safety officers also participated in the program, ensuring a comprehensive and inclusive approach to the professional development of educational staff.

The program was implemented through collaboration with regional public universities, specifically the Fan S. Noli University in Korçë and the Aleksandër Xhuvani University in Elbasan. This collaboration contributed to ensuring the professional and academic standards of the training activities, as well as adapting them to the specific needs of educational institutions and teachers.

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During the period from March to November 2025, a total of 3,886[25] teachers were trained, representing 77%[26] of all teachers in the profiles of Primary Education, Albanian Language and Literature, Mathematics, History, Geography, Social Sciences, Physics, Biology, and Chemistry. This high level of participation demonstrates teachers' commitment to continuous professional development and the improvement of teaching practices. The training activities contributed to strengthening methodological skills, promoting the use of contemporary teaching approaches, and enhancing the quality of classroom instruction.

Particular attention was also given to school leaders and psycho-social service personnel. In total, 533 school leaders and specialists from this service, representing 76% of their respective group at the DRAP level[27], were trained in the module on conflict management and communication within pre-university educational institutions. This training aimed to improve the school climate, strengthen institutional communication, and enhance the capacity to manage challenging situations and social issues within school environments.

Overall, 60% of in-service teachers[28] in pre-university educational institutions within DRAP Korçë participated in the National Professional Development Program. Through this program, teachers benefited from free, high-quality professional training focused on the development of both subject-specific and pedagogical competencies, thereby contributing directly to the improvement of educational quality and the provision of a more effective, modern, and student-centered educational service that responds to contemporary needs and developments.

Teacher training should not be viewed merely as a formal or administrative process, but rather as a strategic investment in the quality of education and the future of students. In an education system that strives for continuous improvement, the professional development of teachers remains one of the most important factors in ensuring modern, effective, and learner-centered teaching practices.

A trained teacher is better equipped to employ innovative teaching methods, foster critical thinking, creativity, and collaboration among students, and successfully address the pedagogical and social challenges of the modern era. Through continuous training, teachers enhance their professional competencies and adapt to changes in curricula, technology, and learning approaches.

The higher the quality and sustainability of teachers' professional development, the greater and more consistent the outcomes of the education system will be. Investment in training not only improves teacher performance but also contributes to better student achievement, strengthens a positive school climate, and supports the development of a more inclusive and higher-quality education system for all.

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Teacher training represents one of the most important strategic factors for improving educational quality and increasing student achievement. In the context of ongoing pedagogical, technological, and social developments, the education system requires professionally prepared teachers who are capable of responding to contemporary challenges and ensuring a high-quality, modern teaching and learning process.

Continuous teacher training should be viewed as a long-term investment in the development of both education and society. A trained teacher is more capable of applying modern teaching methods, creating a more motivating classroom environment, and supporting the development of students' competencies more effectively. Professional training enhances the quality of teaching by enriching teachers' subject knowledge, pedagogical expertise, and methodological skills, making lessons more understandable, interactive, and outcome-oriented.

A direct impact of teachers' professional development can also be observed in students' performance on national assessments and the State Matura Examination. When teachers improve their professional skills and implement contemporary teaching, learning, and assessment methods, students tend to achieve higher results and demonstrate stronger academic performance. This contributes not only to students' individual success but also to the improvement of overall educational quality indicators within the education system.

Teacher training also contributes to strengthening teachers' professional and didactic competencies, enabling them to manage the teaching and learning process more effectively, adapt instructional methods to students' needs, and utilize technology as a tool for learning. Another important aspect is the proper implementation of the curriculum, as training programs provide teachers with a deeper understanding of educational standards, learning objectives, and contemporary curricular approaches.

In addition, professional development has a positive impact on increasing objectivity in student assessment. Training programs help teachers use more accurate and transparent assessment instruments, thereby ensuring fairness and reliability in measuring student achievement.

Training also plays an important role in fostering a culture of collaboration among teachers. Through professional development activities, opportunities are created for the exchange of experiences, discussion of successful practices, and the development of a stronger and more collaborative professional community. This collaboration contributes positively to the professional climate within schools and supports the continuous improvement of teaching quality.

Overall, teacher training is a key factor in ensuring the sustainability of educational outcomes. The better prepared and more motivated teachers are, the higher the quality of education will be and the greater the opportunities for developing capable, critical-thinking citizens who are well prepared to face future challenges.

A comparison of the State Matura Examination results between 2024 and 2025 indicates an overall improvement in student performance in several of the core examinations, representing a positive

indicator of the quality of the teaching and learning process within the educational institutions of DRAP Korçë.

In the Albanian Language and Literature examination, the average grade increased from 6.74[29] in 2024 to 7.10[30] in 2025. This improvement reflects a higher level of student achievement in linguistic, analytical, and interpretative competencies, as well as more effective efforts in developing communication skills and critical thinking.

A positive increase is also evident in the Mathematics examination, where the average grade rose from 6.34[31] in 2024 to 6.50[32] in 2025. Although mathematics remains one of the most challenging subjects for students, this improvement demonstrates progress in the acquisition of knowledge and the development of logical reasoning and problem-solving skills. The improvement in results may also be linked to efforts to enhance teaching methodologies and implement more contemporary instructional approaches.

In the Foreign Language examination, the average grade was 6.81[33] in 2025, compared with 7.49[34] in 2024. Although a decline can be observed compared with the previous year, the results remain at a satisfactory level and indicate the continued development of students' linguistic and communicative competencies in foreign languages.

Meanwhile, in the elective examination, the average grade was 7.10[35] in 2025, compared with 7.45[36] in 2024. Although this result represents a slight decrease, it remains positive and reflects good student performance in subjects related to their academic and professional orientation.

Overall, the comparative analysis of the State Matura Examination results highlights improvements in core subjects such as Albanian Language and Mathematics, while performance in Foreign Languages and the elective examination remains at a satisfactory level. One of the key factors contributing to this improvement has been the National Professional Development Program and the increased level of teacher training.

Continuous teacher training has contributed to strengthening teachers' professional and pedagogical competencies, improving teaching methodologies, and promoting the use of more effective learning and assessment techniques. Through professional development, teachers have become better prepared to implement the curriculum, identify students' needs, and enhance the quality of the teaching and learning process. As a result, these improvements have been positively

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reflected in students' achievements on national examinations and in the sustainability of educational outcomes.

Conclusions

Teacher training is a significant factor in improving the quality of education and enhancing student performance. The analysis of educational system indicators and State Matura Examination results demonstrates that the continuous professional development of teachers has a direct impact on improving the quality of the teaching and learning process and on raising student achievement.

First, teacher training has a positive effect on student outcomes. Trained teachers employ more contemporary teaching methods, apply more effective assessment techniques, and create a more motivating learning environment. This is reflected in improved performance on national assessments and the State Matura Examination.

Second, training contributes to enhancing the quality of teaching. Professional development helps teachers update their subject-specific and pedagogical knowledge, utilize innovative classroom approaches, and adapt the teaching process to the needs and abilities of their students.

Another important aspect is the increase in teacher motivation. Participation in professional development programs strengthens teachers' professional confidence, encourages greater engagement, and fosters a culture of continuous improvement within educational institutions. Teachers feel more valued and better prepared to address the challenges of the educational process.

Furthermore, training helps teachers adapt to changes in educational programs and new curriculum requirements. In an education system characterized by continuous development, the ability to respond effectively to pedagogical, technological, and methodological changes is essential for ensuring high-quality and contemporary education.

In conclusion, investment in teacher training and professional development remains a strategic necessity for strengthening the education system and ensuring better and more sustainable outcomes for students and society as a whole.

CHRONIC HYPERINSULINEMIA MASKED AS A NEUROPSYCHIATRIC DISORDER: A CASE OF INSULINOMA IN THE UNCINATE PROCESS OF THE PANCREAS TREATED WITH PANCREATICODUODENECTOMY

Vrenos Hodaj, Arben Baboci, Erti Ismahili, Erald Vasili

Department of Technical Medical Sciences
Barleti University Polyclinic, Tirana, Albania

Corresponding author: v.hodaj@umb.edu.al

Abstract

Insulinoma is a rare pancreatic endocrine tumor that is typically sporadic, solitary, and less than 2 cm in diameter. Fewer than 5% of insulinomas are larger than 3 cm. Ninety percent or more of all insulinomas are benign.

This study reports on a 33-year-old woman admitted in our clinic with lightheadedness, chills and shakiness. The onset of the symptoms was from 2 years ago. This symptom improved after eating of candy or fruit juice. Initial laboratory testing revealed blood glucose level in 30-40 mg/dl. The patient was admitted for management for hypoglycemia. Blood tests evidenced high insulin and c-peptide levels despite low plasma glucose level. MRI revealed pancreatic mass. She underwent enucleation of mass, and the surgical pathology was consistent with insulinoma. Conclusion: Proper management for timely treatment of a patient with insulinoma involves complex medical teamwork consisting of physicians from various specialties: endocrinology, internal medicine, surgery, pathology, medical imaging, and oncology. The case we present represents a typical example of a pancreatic insulinoma that remained undiagnosed for approximately two years and was initially treated as a neuropsychiatric disorder. A 33-year-old woman experienced recurrent syncopal episodes and progressive weight gain, which were misattributed to lifestyle factors for two years. A dedicated biochemical evaluation for hyperinsulinemia at our clinic revealed a glucose level of 26 mg/dL with elevated insulin and C-peptide levels. The central question is not only how the patient was misdiagnosed, but why the appropriate tests were not requested and what changes in clinical practice could prevent such diagnostic delays.

Keywords
Insulinoma, pancreatic neuroendocrine tumor, endogenous hyperinsulinemia, pancreaticoduodenectomy, non-diabetic hypoglycemia, diagnostic delay

Introduction

Insulinoma is the most common functional neuroendocrine tumor of the pancreas; however, its incidence is very low (1–4 cases per million people per year), contributing to frequent diagnostic delays.

Symptoms are divided into:

- **Adrenergic:** sweating, tremor, hunger
- **Neuroglycopenic:** confusion, behavioral changes, loss of consciousness

Whipple's triad remains the cornerstone of clinical suspicion, although it often does not lead to appropriate hormonal investigation.

Diagnosis

Biochemical criteria include:

- Glucose < 55 mg/dL
- Insulin ≥ 3 μU/mL
- C-peptide ≥ 0.6 ng/mL

C-peptide is essential to distinguish endogenous insulin production from exogenous insulin administration.
The gold standard test is a 72-hour fasting test when spontaneous episodes are not captured.

Treatment

The primary treatment is surgical.

- Enucleation is preferred for small tumors
- Resection (Whipple procedure) is indicated for difficult locations

Medical therapy is reserved for cases where surgery is not feasible.

Table 1.

Symptom Clusters in Insulinoma by Pathophysiological Mechanism

Neurogenic (Adrenergic / Cholinergic) Neuroglycopenic (CNS Glucose Deprivation)
Tremor, palpitations, tachycardia, anxiety
Diaphoresis, hunger, paresthesia, circumoral

Tingling Blurred vision, diplopia, cognitive impairment
Personality change, amnesia, confusion Seizure,
stupor, loss of consciousness

Biochemical Evaluation

Table 3. Fasting Biochemical Results During Symptomatic Episode
Parameter Result Reference Range
Fasting blood glucose 26 mg/dL ↓↓ 70–100 mg/dL
HbA1c 4.84% 4.0–5.6%
Fasting insulin 26.3 µU/mL ↑↑ < 3 µU/mL during hypoglycemia
C-Peptide 3.64 ng/mL ↑↑ 0.6–2.0 ng/mL

Case Presentation

A 33-year-old woman presented to Barleti University Polyclinic for final diagnostic evaluation. Her medical history revealed a two-year period of episodic weakness, excessive sweating, dizziness, and loss of consciousness. Symptoms occurred mainly during fasting or physical activity. The patient had gained approximately 20 kg and reported persistent hunger. Multiple emergency visits failed to establish a diagnosis. In one instance, glucose was measured at approximately 60 mg/dL, but insulin and C-peptide were not assessed, and the patient was not

referred for endocrinological follow-up. The patient was later contacted and advised to present fasting for further evaluation with suspicion of pancreatic insulinoma. On the day of admission, she developed clinical hypoglycemia prior to blood sampling, which resolved after intravenous glucose administration.

Laboratory findings:

- Glucose: 26 mg/dL
- Insulin: 26.3 µU/mL
- C-peptide: 3.64 ng/mL

These findings confirmed autonomous insulin secretion (endogenous origin).

Abdominal MRI identified a 20 × 16.7 mm lesion in the uncinate process of the pancreas, consistent with a neuroendocrine tumor. Due to its challenging location, enucleation was not performed; instead, a pancreaticoduodenectomy (Whipple procedure) was carried out.

The patient was discharged on postoperative day 7 with normal glucose levels and no complications.

Results

- Endogenous hyperinsulinemia confirmed, including postoperative biopsy
- Single pancreatic tumor identified
- Successful surgical intervention
- Full recovery without complications
- Normalization of glucose levels

This case represents a complete biochemical, radiological, and surgical management of insulinoma.

Conclusions

Insulinoma is often misinterpreted as a neuropsychiatric or cardiac disorder because clinicians rarely consider it in non-diabetic patients with hypoglycemia.

Diagnostic tests are simple and inexpensive:

- Blood glucose
- Insulin
- C-peptide

For clinicians: any non-diabetic patient with unexplained hypoglycemia should be tested for insulin and C-peptide during the episode.

For surgeons: tumor location (not size) determines the surgical approach. In the uncinate process, pancreaticoduodenectomy is often the appropriate choice.

Insulinoma is curable but requires multidisciplinary awareness.

Final Conclusion

Insulinoma is one of the most curable tumors in medicine, but it requires:

- Clinical vigilance
- Early diagnosis
- Appropriate surgical treatment

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Pathogenesis of