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Albania's Diplomatic Journey: Fan Noli's Role in Albania's International Recognition

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Abstract

This research paper delves into the historical context and diplomatic efforts that led to the recognition of Albania as a sovereign state on the global stage. The article focuses on the pivotal role played by Fan Noli in advocating for Albania's international recognition and sovereignty. The methods employed in this academic analysis include historical research, diplomatic analysis, and examination of primary sources related to Albanian politics and diplomacy during the early 20th century. By studying the diplomatic strategies, actions, and contributions of Fan Noli, the article aims to highlight the significance of his political-diplomatic activities in shaping Albanian foreign policy.

The article discusses the challenges faced by Albania, which was under the control of various foreign powers post-World War I, and the strategic efforts made to secure its territorial integrity and sovereignty. It emphasizes the importance of diplomatic negotiations and advocacy, particularly in international forums like the League of Nations, in asserting Albania's place among civilized nations. Through a detailed examination of historical events and diplomatic interactions, the article provides insights into the evolution of Albanian diplomacy and the instrumental role played by figures like Fan Noli in securing international recognition for the Albanian state and government.

Overall, the paper employs a combination of historical analysis, diplomatic studies, and research methods to shed light on the diplomatic endeavors that paved the way for Albania's recognition as an independent and sovereign nation on the global diplomatic stage.

Keywords: *Albania, Fan Noli, sovereingnty, diplomatic efforts, historical analysis*.

Introduction

Albania's enduring presence as a recognized entity in the global political arena for over a century underscores the nation's established legal status. The pivotal date of December 17, 1920, marks a significant milestone in the diplomatic narrative of Albanian politics, representing a crucial turning point. The journey leading to this pivotal event in Albanian state history exemplifies the strategic maneuvers and diplomatic acumen of key figures, with particular recognition given to the political-diplomatic endeavors of Fan Noli by historians, both locally and internationally. Fan Noli's role in securing Albania's international recognition was a multifaceted and challenging endeavor. While Fan Noli's contribution to Albania's international recognition is often praised, it is important to consider opposing viewpoints on this matter. Some historians argue that Albania's international recognition was a result of a confluence of factors, including geopolitical interests and power dynamics among the global powers at the time. According to this approach, attributing Albania's international recognition solely to Fan Noli's diplomatic endeavors oversimplifies a complex and multifaceted historical process. Also, their arguments add that while Fan Noli played a role in the diplomatic efforts, it was ultimately the changing geopolitical

landscape and the shifting interests of major powers that led to Albania's international recognition. They point to the interventions and involvement of various global actors, such as the United States, Italy, and other European powers, as significant factors in the recognition of Albania as an independent state.

It is important to acknowledge these opposing arguments in order to gain a comprehensive understanding of the intricate dynamics that contributed to Albania's international recognition. While Fan Noli's efforts were undoubtedly significant, they were just one piece of a larger geopolitical puzzle that shaped Albania's diplomatic journey. Noli's diplomatic expertise and steadfast stance are evident in his official declarations, especially during the rigorous procedural discussions in Geneva. His scrutiny of Albania's bid for full League of Nations membership as an equal member among civilized nations showcased Noli's assertive voice and innovative approach. His interventions on the international stage in Geneva signaled a notable shift in Albanian foreign policy and diplomacy, challenging conventional diplomatic norms that had marginalized Albania from active engagement in diplomatic processes. Researcher Bashkurti's identification of the exclusion of Albanians from diplomatic processes before 1920 underscores the significant impact of historical diplomatic hurdles on Albania's global involvement. Bashkurti's analysis highlights the systemic barriers that hindered Albanian participation and representation in the international diplomatic arena (Bashkurti, 2005, 250), prompting a critical reassessment of the historical context influencing Albania's diplomatic position and the imperative to address disparities in diplomatic relations.

Throughout Fan Noli's diplomatic efforts, he navigated intricate power dynamics and persistent challenges in advocating for Albania's international recognition. His unwavering commitment to securing a position for Albania among the global community was characterized by astute negotiation skills and strategic alliances with influential international actors. In addition to the complexities of geopolitical interests, Noli's diplomatic journey also reflected the internal struggles and conflicts within Albania itself. The interplay between domestic politics and external pressures further underscores the intricate nature of Albania's international recognition. Noli's ability to navigate these internal and external dynamics showcased not only his diplomatic prowess but also his understanding of Albania's position in the broader global context. Moreover, the evolving landscape of global power dynamics during that period added another layer of complexity to Albania's diplomatic journey. The interplay of interests among major powers and their impact on smaller nations like Albania highlighted the intricacies of international relations at the time. Noli's role in effectively engaging with these complex dynamics speaks to his strategic foresight and determination in positioning Albania on the global stage. As historians continue to explore and analyze the factors contributing to Albania's international recognition, it becomes increasingly evident that Fan Noli's diplomatic endeavors were a significant component of a multifaceted historical process. His contributions, while not occurring in isolation, played a crucial role in shaping Albania's diplomatic narrative and its eventual international recognition. Noli's strategic interventions not only reshaped Albania's diplomatic strategies but also paved the way for the country's increased recognition and active engagement on the global diplomatic stage.

The situation in Albania at the end of 1918 reflected a complex power dynamic, with multiple foreign forces exerting control over the territory. The presence of

Italian, French, Serbian, and Greek forces, surrounding in a "strategic line" Albania (Milo, 1992, 68), created a challenging strategic environment, further emphasizing the complex historical backdrop against which Noli sought to secure Albania's international recognition (Mai, 2003). The fragmentation of Albanian sovereignty and the imposition of foreign occupations during World War I not only complicated the political and social landscape but also set the stage for intense power struggles and rivalries among neighboring states vying to assert their influence in the region. This complex historical backdrop created a challenging environment for the Albanian people. The Albanian response to this volatile situation was characterized by a strategic approach to diplomacy and advocacy. Despite not being directly involved in the Great War, and not having allied with either the victors or the defeated (AMPJ, 1921), the Albanians understood the importance of defending their legal-international subjectivity.

Noli skillfully engaged with the international community, emphasizing Albania's unique position and advocating for its recognition as an independent and sovereign state. Despite the challenging environment marked by competing foreign interests, his strategic diplomacy and determination were instrumental in garnering support for Albania's international recognition.

Albanian's engagement with international forums such as the Peace Conference in Paris, the League of Nations, and the Paris Ambassadors Conference demonstrates their proactive efforts to secure recognition and support for their national interests. Overall, the Albanian experience in the aftermath of World War I illustrates the complexities of navigating a contested geopolitical environment and the importance of strategic diplomacy in safeguarding national sovereignty and interests (Guy, 2012).

Legal Rebuttal to the Secret Pact of London at the Geneva Panel

Amid the tumultuous aftermath of World War I, as the Great Powers convened the Peace Conference on January 18, 1918, to reshape the world order, (Duka, 2006, 101) Albania found itself at a critical juncture. The nascent state, led by political figures and patriotic entities, embarked on a relentless pursuit to defend its territorial claims and assert its sovereignty (Bernstein, 1934, 9).

Fan Noli, embracing the mantle of diplomat with an innate grace, took center stage as the official voice for Albania, navigating the convoluted corridors of power at an international panel in Geneva (Krisafi, 2023). His adroit deployment of lobbying diplomacy was emblematic of a sophisticated understanding that diplomatic finesse was pivotal to maneuvering the complex matrix of international relations. Driven by a profound commitment to Albania's national aspirations, Noli leveraged his intellectual and political acumen, actively engaging with influential figures, including President Wilson of the United States a Nobel Peace Prize laureate and architect of the new world paradigm of self-determination (Puto, 2009, 292; Bernstein, 1934).

As European powers geared up for the inaugural proceedings of a pacifist architecture designed to secure lasting peace, Albania, under the guidance of its emerging authorities post the Congress of Lushnja, initiated a bold bid for inclusion in this new European international structure. On October 12, 1920, with a Memorandum to the Secretary General, Eric Drummond, official Tirana expressed a desire to join the League of Nations (AMPJ, 1920). This strategic move, grounded in seated aspirations

for statehood and informed by an acute understanding of the evolving diplomatic landscape, exemplified Albania's diplomatic vision.

Upon their strategic arrival in Geneva, a mere three days prior to the convening of the League of Nations Assembly's inaugural session, Chief Delegate Fan Noli and his retinue, comprising the diplomatic corpus of the Government of Tirana, were met with a formidable challenge (AMPJ, 1920). In an elucidatory communication back to official Tirana, Noli delineated the efforts undertaken by delegates of Albania's neighboring nations, who were vigorously attempting to obfuscate the Albanian request by invoking procedural technicalities specifically, allegations of non-compliance with the registration deadlines stipulated by the League. During a series of prelude discussions, Noli canny marshaled his rhetorical and negotiation skills to secure a favorable consensus from a cohort of delegates, notably of United Kingdom, France, Switzerland, and Japan (Jorgaqi, 2002, 96). By effectively advocating for the Albanian cause, Noli not only surmounted the procedural hurdle but also reinforced Albania's sovereign ambitions on the international stage, setting a precedent in the annals of diplomatic tenacity and the pursuit of national self-determination within the convoluted dynamics of the period (Austin, 2000, 49).

After the Albanian negotiating team passed through complicated procedural hurdles, they faced a significant challenge the Secret Treaty of London. This clandestine agreement, devised by several Great Powers during the chaos of World War I, is often cited in international law as a pivotal example of the legitimacy or illegitimacy of an international legal action. The treaty, which created spheres of influence at the expense of smaller countries like Albania, become a focal point of contention for Albania's diplomatic efforts. For a political treaty to gain international repute and binding force, it must be acknowledged and sanctioned by the collective orchestration of the principal diplomatic actors of the time. This principle resoundingly consolidates the essence of international law, which, in the crucible of inter-state relations, necessitates consensus and mutual accord as the bedrock of its authority and efficacy (Hill, 1928). Noli argued incisively, how then could the Secret Pact of London possess any tangible juridical impact upon Albania's sovereignty, when it conspicuously lacked the imprimatur of the wider international diplomatic community?! The argument thus pivoted not merely on the procedural formalities of treaty legitimacy but on the fundamental tenets of international legal theory and the entrenched norms that govern the recognition of state sovereignty and the determination of national borders. Noli, by indicting the unilateral and exclusionary nature of the Pact at hand, unambiguously challenged the ethical and legal underpinnings of the post-war territorial settlements. He meticulously unraveled the diplomatic fabric that sought to constrain Albania's rightful claims, all the while championing a recalibrated approach to inter-state agreements one that inherently demands equitability, transparency, and a multilateral endorsement reflective of an evolving international legal order. Through this lens, Albania's plight for membership, as argued by Noli, reflected larger structural contentions within the body of international law itself.

In the discourse on the legal-international validity of the London Pact, 1915, Noli was faced with a prevailing absurd position that conflict or wartime occupation could undermine the juridico-international subjectivity of a state. Noli submitted that the very existence of such turmoil should not be a pretext to negate the established legal-international standing of Albania. Adhering to this line of reasoning, the international

recognition of Albania was presented not merely as a procedural formality but as a geostrategic imperative essential to the Balkan region's stabilization and pacification. He critiqued the counterarguments posited by representatives of the neighboring Greek and Serbian governments. These stakeholders, motivated by their respective national agendas, lodged objections to the legal effect of the decisions made during the Ambassadors' Conference of 1913, suggesting that the clandestine Pact of London abrogated their precedents. Such an approach attempted to defy the legal precedent set forth by the prior decisions and sought to reevaluate the Albanian question through the prism of post-war international decision-making, advocating that the provisions of the Pact should be weighted with greater prominence. The stance of Athens and Belgrade was that the Secret Treaty's provisions should hold sway; however, Noli and his delegation, through a sophisticated interpretation of legal principles and precedents, refuted such claims. They articulated that under no interpretation could the Treaty of London usurp the legal-institutional fabric laid by the Ambassadors of London. Not only was Albania's territorial integrity underpinned by the resolutions formulated during the Ambassadors' Conference, but this integrity was materially actualized through the pragmatic efforts of the appointed International Commissions, tasked with border delimitation (AQSH, 1920).

From Noli's Memorandum, it could be discerned that political treaties birth legitimacy via consensus within the "nucleus of European diplomacy". Noli underscored that despite the heterogeneity of interests and the sovereignty exerted by non-native administrations, the extant constitutional system devised, accepted, and buttressed by the sextet of Great Powers of the time obligated formal adherence to an ordained legal framework, ensuring the diplomatic decisions' legality (AMPJ, 1920). In the sphere of international relations, Noli's arguments illuminated the salient principle that the sanctity and continuity of international legal order pivot on the mutual recognition and adherence to such established frameworks. The memorandum advanced by the Albanian delegation thus invoked the enduring normative force of the decisions of the Great Powers as instrumental in safeguarding Albania's legal continuity as a sovereign entity, implying an inextricable linkage between such legal frameworks and the imperative of maintaining regional stability. In constructing his defense of Albania's legal status, Noli meticulously dissected attempts to subordinate Albania's territorial sovereignty to provisional agreements like that of the Secret Pact of London a treaty which, by its very nature, was conceived outside the conventional multilateral consensus and thus lacked the unassailable legitimacy conferred by the collective endorsement of the international community. Noli's defense, therefore, threaded through the interstices of legal and diplomatic rationale, affirming that geopolitical accords cannot be capriciously discarded or superseded by unilateral agreements contrived without the inclusive ratification by the concerned international constellation. Noli's perspicacious contention was that the integrity and stability of international law are predicated upon its recognition by a consensus of the principal diplomatic actors and that this very recognition provides the bulwark against the ebb and flow of parochial national interests. Noli's approach to the diplomatic dispute can be seen as championing the foundational tenets of modern international law tenets which assert the imperatives of collective security, sovereign equality, and the maintenance of peace as paramount objectives transcending isolated interests. Memorandum of official Tirana stood as an appeal to the universal legal conscience

of the League of Nations (Puto, 2001, 56-57), urging that the dissolution of such a multilateral legal consensus would signal not just a detriment to Albania, but a retrograde step for the emerging international legal order. Noli's appeal functioned as a reminder to the global decision-makers at the League of Nations that the legal instruments ratified in the past are not merely documents of convenience but embodiments of the shared values and intentions that uphold the international legal architecture.

Through this prism, the Memorandum sought to cement Albania's territorial and sovereign claims as congruent with the overarching imperatives of legal consistency and peace preservation, guided by the historically constituted protocols recognized by the preeminent global actors. Furthermore, Noli emphasized the principle of *pacta sunt servanda* the notion that treaties and agreements, once made, bind the parties and must be executed in good faith. This principle undergirds the modern international legal system and is instrumental in affirming that covenants, once enforced, constitute a legal standard that cannot be arbitrarily disregarded or substituted without the concurrence of the established international institutions and norms (AQSH, 1920; AMPJ, 1920). Hence, Noli's discourse was not only a robust defense of Albania's immediate interests but also served as a principled stand for the established norms of international law which underscore the importance of honoring the legitimate expectations derived from the existing multilateral agreements. At its core, Noli's argument was a staunch advocacy for the rule of law in international relations, asserting that each state, regardless of its size or power, is entitled to the preservation of its sovereignty and borders as previously established by the concerted determination of the international community.

Media Diplomacy and European Advocacy for Albania

Fan Noli's strategic engagement with the press and influential European figures was underpinned by his comprehension of the broader socio-political dynamics at play during the nascent stages of the League of Nations. He recognized the vital role of public opinion and the sway held by skepticism from powerful states toward the inclusion of smaller nations such as Albania within the League's framework. Noli capitalized on the "Journal de Geneve" as a platform to elucidate Albania's rightful claim to international legal personality and foreground the merits of Albania's application for League membership. His interview aimed to construct a compelling narrative (Milo, 2013, 506), one imbued with the twin objectives of enlisting solidarity from European power brokers and discrediting the counter-narratives propagated by the Balkan states that threatened to erode Albania's territorial integrity. By leveraging this public forum, he rebutted the pernicious rhetoric and designs that sought to realign regional boundaries at Albania's expense, in flagrant violation of the *erga omnes* obligations those norms of international law that are owed towards all the international community of states. Noli's strategic advocacy through media not only aimed at shaping the cognitive perceptions of the European officials and the public but also demonstrated an acute understanding of the importance of rallying support from notable and influential Europeans who could bolster Albania's position.

In this contex, the advocacy of Paul d'Estournelles de Constant, a Nobel laureate, and Justin Godart was exemplary in this regard, as their public endorsement in "Journal

des Debats" provided a persuasive and authoritative voice in support of Albania's cause (AQSH, 1920) Their articles, which were strategically designed to reach and influence pivotal figures such as Paul Hymans, the President of the League Assembly, underscored the crucial narrative that Albania's integration was a matter of European significance. This argument positioned Albania not as an outlier but as an intrinsic part of the European community deserving full recognition and inclusion (Kolaneci, 2023).

In gratitude for the unwavering support that figures like Godart provided, Noli's correspondence from the "Monopole" hotel in Geneva reflects the personalization of the diplomatic endeavor. The letter to Senator Godart, as cited, epitomizes the emotive and heartfelt appreciation of a statesman who valued the instrumental assistance rendered to his nation's cause. Noli's articulation of thanks was more than just an acknowledgment (Rama, 2005, 19). It symbolized the alliance between Albania and its supporters, encapsulating the significance of solidarity in the pursuit of national objectives on the international stage. The profound sentiments conveyed through Noli's letter resonate with a deeper strategic awareness. They reflect an understanding that the battle for international recognition and legitimacy is fought not only in the chambers of diplomatic negotiation but also within the realms of public discourse and personal relationships. Noli's adeptness in this dual arena of international relations a synthesis of formal and informal diplomacy illustrated his comprehension of the multifaceted nature of international law and the importance of perception and narrative in shaping its outcomes.

European allies' interventions added a layer of legitimacy and urgency to Albania's quest, challenging the status quo and countering the biases that were prevalent in some quarters of European decision-making bodies. Moreover, the public nature of this support, articulated through widely read publications such as the "Journal de Geneve" and the "Journal des Debats", (Kolaneci, 2023) served a dual function:

- *Firstly*, it raised Albania's profile among the European public and official circles, fostering an environment in which Albania's right to nationhood and membership in the League of Nations could be more broadly recognized and accepted.
- *Secondly*, it put pressure on the League's decision-makers to act in accordance with the principles of self-determination and justice that the League itself professed to uphold.

In this context, Noli's strategic outreach and the work of his allies can be seen as a foundational effort in the construction of Albania's international identity. These efforts exemplified how smaller nations could effectively navigate the labyrinth of early 20th-century geopolitics, exploiting avenues of influence and perception to assert their sovereignty and secure their place within the international community. Noli's engagement with media and diplomacy was not merely a reflection of his statesmanship but a case study in international relations, demonstrating how principled advocacy, when combined with strategic communication, can galvanize support and bring about real change in the global order.

In the annals of international law and diplomacy, Noli's approach stands as a testament to the power of narrative and the importance of crafting a discourse that resonates with the values and sensibilities of the time. It underscores the enduring relevance of building coalitions of support and the critical role that influential third party endorsements can play in the battle for recognition and legitimacy of a state.

Noli's alliance with key Europeans, his adeptness in engaging with the press, and his ability to articulate a vision of Albania's place within the European community were not mere tactics. They represented a sophisticated understanding that the path to securing Albania's national interests lay as much in the court of public opinion as it did in the diplomatic corridors of power (Cockburn, 2012). Through the creation of this multi-faceted approach, Noli effectively signaled to the leaders and the general populace of Europe that Albania's aspirations were grounded in the same principles that guided the League itself. His communication strategy therefore was a deliberate attempt to align Albania's mission with the normative objectives of the League.

The resonance of Noli's appeal and the solidarity from his European allies demonstrate how normative arguments, when coupled with skilled diplomacy and strategic messaging, could effectively challenge prevailing power dynamics and shift perceptions. The backing of Albania by figures of high moral authority and political influence, d'Estournelles de Constant and Godart, provided potent ammunition in the fight to validate Albania's sovereign claims. It showed that the efforts of small states to gain recognition and establish their place in the international system could be greatly enhanced through strategic partnerships and advocacy beyond their national borders. Fan Noli's legacy in this regard offers valuable lessons for modern diplomacy. It underscores that while political and legal mechanisms are essential components in a state's quest for recognition, the cultivation of a positive narrative and forging strategic alliances are equally critical. In a world where perception often informs policy, visibility, and a well-articulated case can significantly impact a state's success in international affairs.

In reflecting upon Noli's endeavors and the eventual acceptance of Albania into the League of Nations, it becomes clear that his efforts and those of his allies laid important groundwork. By utilizing various platforms for discourse and persuasion, by building a coalition of support that transcended national boundaries, and by appealing to the principles upon which international law and cooperation are premised, Noli made an indelible contribution to Albania's position on the global stage. Noli's diplomacy serves as a reminder of the enduring power of advocacy that appeals both to legal principles and to the broader aspirations of international cooperation and the protection of state sovereignty. In sum, Fan Noli's legacy in diplomatic strategy reveals the enduring lesson that the successful navigation of international diplomacy by smaller states is reliant on a multifaceted approach one that weaves together legal validity, persuasive narrative, and transnational alliances into a cohesive and compelling argument for recognition and inclusion.

Legitimacy Contested: The Tirana Government's Case at the League

During the pivotal discussions in Geneva regarding Albania's candidacy for membership in the League of Nations, Fan Noli faced the critical task of advocating for the recognition of the Government of Tirana, established by the Congress of Lushnja. Aware of the complex diplomatic environment and the interventions by neighboring states like Greece and the Kingdom of Serbs, Croats and Slovenes, Noli understood that the path towards recognition would be fraught with challenges. His cautious optimism was reflective of a realistic assessment of the difficulties that lay ahead.

On November 23, as Albania's chief delegate, Noli was put to the test by the Special Commission, which probed the legitimacy of the government he represented (AQSH, 1920). The crux of the issue revolved around whether the Government of Tirana was adequately recognized as the legitimate *de jure* government of Albania. Apart from submitting the Memorandum and all relevant documentary evidence (Krisafi, 2023; AMPJ, 1920), Noli's defense was multifaceted, stressing both legal and practical elements to establish that government of Tirana was the rightful representative of the Albanian state. The researcher Arben Puto emphasizes the argumentative finesse Noli displayed during these deliberations. In response to questions of recognition by other states, he first highlighted the Government of Tirana's *de facto* recognition, as evidenced by its diplomatic engagements and treaties with Italy, Serbia, and Greece. These interactions, he argued, implicitly acknowledged the legitimacy and the existing governance of Albania by these nations (Puto, 2009, 285-289).

Noli pointed to the official actions of Italy, a major power with prior interests in Albania, which carried significant weight in international relations. Accreditation of the Minister Plenipotentiary in Tirana from Rome, and, more importantly, the public renunciation by Italian Prime Minister Giovanni Giolitti of any mandate over Albania, serves as a de jure endorsement of Albania's sovereignty. Giolitti's declaration respected the territorial integrity of Albania, aligning with the recognition by the six Great Powers back in July 1913 (AQSH, 1920). Noli's arguments did not stop, he outlined a sophisticated structure of Albanian self-administration, illustrating the existence of a hierarchical governance system that extended its reach throughout the nation within the boundaries set by the 1913 London Conference (AMPJ, 1920). Assuredly, Noli's diplomatic efforts went beyond mere assertions of state autonomy. His persuasive endeavors aimed to establish Albania's status as an independent and self-sufficient entity capable of fulfilling the obligations and responsibilities of a sovereign nation within the international community. Noli's argumentation, interweaving the notions of self-determination, historical legitimacy, and functional governance, sought to affirm Albania's right to statehood not merely on the basis of external recognition but also through its intrinsic national capacities and demonstrated political structures. By emphasizing the self-governing bodies functioning effectively across Albania, Noli provided concrete evidence of the nation's ability to administer its own affairs, a prerequisite for recognition as a sovereign state.

By highlighting previous commitments and international agreements that acknowledged Albanian sovereignty, Noli reinforced the notion that Albania's statehood was not a new or untested claim but one that had been recognized and engaged with by the international community, including some of the very powers involved in its current adjudication. Noli's diplomatic strategy was a blend of highlighting both the legal precedents and the functional reality of Albania's government. He understood that solidifying Albania's place in the League of Nations meant going beyond historical treaties and official acknowledgments, it required demonstrating Albania's ongoing and active fulfillment of state functions. The argument Noli presented to the League's commission aimed to evoke a recognition that the Albanian state was more than a theoretical entity or a geographic territory caught between Great Powers. Instead, it was a functioning polity with a legitimate government that had managed to maintain order, enter into diplomatic relationships, and assert its sovereignty despite the dynamic upheavals of the post-World War I

era. This was the essence of the case that Noli strived to make to affirm that Albania, as represented by the Government of Tirana, was not only deserving of recognition but was already functioning as a member of the international system, adhering to the principles upon which the League of Nations was founded (AMPJ, 1920). Noli employed a judicious mix of legal, political, and practical arguments to illustrate Albania's readiness and eligibility for membership in the League of Nations. His efforts were not simply about gaining a seat at the table. The government of Tirana was seeking to guarantee Albania's place in the society of nations as an equal, sovereign state whose rights and sovereignty had to be respected within the international order. The totality of Noli's representation was therefore a case not only for the *de jure* recognition of the Albanian state but also for its functional legitimacy and its conformity to the norms of state behavior expected by the international community. Ultimately, Noli's representation did not only seek the recognition of the state by the League of Nations. It invited the League to look past the political maneuvers of the day and to see Albania as a nation with a legitimate government that was actively looking to engage with the rest of the world in a spirit of peace and collaboration, fully aligned with the principles upon which the League itself was founded.

Albania's Entry into the League: A Diplomatic Victory

The session at the end of November, during the League of Nations' review of Albania's membership, brought to the forefront the complexities and competing geopolitical interest characteristic of international decision-making bodies. Central to the discourse was the delineation of borders a critical factor in adjudicating Albania's membership. Determining clear and stable borders was indispensable for Albania to affirm its sovereignty and legalize its government in the face of international scrutiny. It is necessary to reflect on historical implications of border demarcation as an instrument of international law and diplomacy. The creation and ratification of borders by international commissions, particularly in the fluid aftermath of World War I, were standard mechanisms employed to facilitate a new international order aiming to stabilize Europe's fragmented geopolitical landscape. Albania's endeavor to achieve international recognition of its borders and therefore sovereignty should be contextualized within the framework of this international legal praxis.

The Greek government's opposition to Albania's membership was founded on the argument that the borders between the two nations lacked definitive demarcation, citing inadequacies of the Florence Protocol which they claimed provided only a rough cartographic framework. This assertion, filed through a memorandum with the League, suggested that without a formal, bilateral ratification of the borders, the issue remained in flux. This narrative was echoed by the Serbian delegation, positing that Albania's indeterminate borders and the lack of universal recognition of its government reduced it to a nascent entity rather than a fully-endowed state eligible for League membership (Krisafi, 2014, 101).

Noli's strategic recourse to these assertions was firmly rooted in the historical commissions established by the confabulations of the Great Powers, which were incontrovertibly responsible for the delineation of Albania's frontiers. The rebuttal presented by the Albanian delegation, therefore, did not simply rest on the defensive infrastructure of diplomatic rhetoric, rather, it was an invocation of the established legal

framework of the era. Specifically, he underscored that the delimitation process was executed by representatives delegated by the Great Powers themselves to International Commissions tasked with territorial demarcation (AQSH, 1920). This framework was characterized by the League of Nations' role in overseeing the reconfiguration of post-war borders, buttressed by the legal understanding that treaties and protocols implemented by the collective authority of the Great Powers carried the hallmark of international approbation. Noli emphasized that the establishment and recognition of Albania's borders followed these very protocols arguably. Noli's challenge to the Athenian and Serbian contentions was not merely an exercise in diplomatic posturing but a profound assertion of Albania's nascent statehood grounded in the principles of the collective determination of borders by the prevailing legal instruments and the recognized authorities of the time (Bernstein, 1934).

The discourses of French and British representatives Viviani and Fisher pertaining to Albania's League of Nations candidacy in December reflected broader geopolitical considerations and the politics of power balance. Their approach suggests that the inclusion of Albania into the League of Nations would challenge the established hierarchy of the Great Powers. They advanced the argument that decision on Albania's membership should be postponed, mirroring the approach suggested for the Baltic states, until Albania's political and legal status could be conclusively determined. Representatives to other countries echoed this stance, reflecting a broader reluctance to hastily extend the League's membership without thorough consideration of a nation's sovereignty and territorial integrity. On the other side of the debate, Pagliano, the Italian representative, articulated a rationale for delaying Albania's membership but simultaneously sought to distance Italy from any perception of opposition to Albania's eventual inclusion in the League. Pagliano underscored Italy's liberal philosophy and its adherence to the principles of justice, while potentially aiming to maintain Italy's influence in the region.

The opposition led by the French and British delegates leveraged the ambiguity surrounding Albanian sovereignty and territorial integrity. The Chinese representative supported this viewpoint, arguing that the criteria for League membership, state sovereignty, and territorial sovereignty, as established in the League's covenant, were not satisfactorily demonstrated by Albania (Milo, 2013, 508). Surprisingly, this opposition seemed to disregard Albania's pre-World War I status. Albania had been recognized *de jure* as a sovereign state by the Great Powers in 1913, yet now the very powers calling for a postponement appeared to be backtracking on previous commitments and recognition, signaling a shift influenced by the political landscape of the post-war era.

This reticence to affirm Albania's statehood revealed a paradox within international relations: the selective and often politicized nature of state recognition. The argument posed by the opposition to Albania's membership reflected broader tensions between the universal principles espoused by international organizations and the realpolitik considerations of Great Power politics. The case of Albania underscored a fundamental question: Would the League of Nations uphold the premise of collective security and equality of nations, or would it succumb to the geopolitical interests and pressures exerted by its most influential members? Albania's situation represented a microcosm of the challenges facing smaller, less influential nations in achieving full recognition and participation in the global diplomatic arena. Notably,

the arguments for postponing Albania's membership also touched upon a concern for procedural and legal consistency. The case of the Baltic states was evoked, hinting at a pattern or a principle of cautious enlargement, which could be seen as an effort to maintain the integrity and coherence of the League's membership criteria. The opposition to Albania's statehood, however, faced a contradiction in neglecting the legal recognition Albania had enjoyed prior to World War I. This ambiguity could be interpreted as selective adherence to international law, with the implication that recognition granted by the Great Powers was revocable or subject to reevaluation based on in light of changing political dynamics.

In this context, the assiduous representation by Fan Noli, bolstered by the unequivocal arguments in the December 9, 1920 memorandum (AMPJ, 1920), was instrumental in challenging the prevailing ambivalence. The memorandum meticulously documented Albania's legitimate claim to statehood, reinforcing its eligibility for League membership through a compilation of historical evidence and current acts of statehood. Complementing Noli's endeavors, Lord Robert Cecil's contribution emerged as a pivotal element in Albania's favor. As the rapporteur for Albania's application and a respected figure in the Assembly, his stance carried considerable weight. During the 28th plenary session of the League on December 17, 1920, Lord Cecil would ardently argue that Albania's statehood had never legally lapsed. He contended that military occupation, such as that experienced by Albania during World War I, did not negate Albania's sovereignty. By this logic, he reasoned that if occupation invalidated a nation's statehood, then nations like Belgium and Serbia (Puto, 2003, 343), both of which had also been occupied during the war but were present at the League, would have to have their status questioned as well. Lord Cecil's argument was both a strong legal stance and a pointed statement on the principles of self-determination and continuity of statehood in the face of foreign occupation. His support for Albania was indeed significant, and Noli recognized Lord Cecil's zealous advocacy as instrumental in the push for a prompt and favorable outcome for Albania's request (AMPJ, 1920). Moreover, Canadian representative Newton Rowell lent his voice to the chorus of support, insisting that Albania deserved a place in the League based on its fulfillment of membership criteria. Rowell encouraged a decisive vote in favor of Albania's acceptance, leaning on the founding principles of the League which championed openness and fairness.

The persuasive efforts of Noli and the strong arguments put forth by advocates such as Lord Cecil and Newton Rowell culminated in the historic decision by the League of Nations. The Assembly, facing a turning point, was compelled to consider the broader implications of denying a nation like Albania, which fulfilled the necessary criteria, from becoming a member of the international community. The narrative had shifted from one of doubt and hesitance to recognition and support, emphasizing the legal precedent that statehood and sovereignty should not be considered invalidated by foreign occupation. This perspective resonated with the Assembly, as it was not only legally sound but also aligned with the League's principles of self-determination and equitable treatment of nations. When the time came for the decision-making body of the League to cast its vote, the extensive groundwork laid by proponents of Albania's membership influenced the outcome. Despite the initial resistance and calls for postponement, the Assembly was persuaded by the forceful legal reasoning.

On December 17, 1920, during the League's 28th plenary session, a decisive vote

took place. To the relief of Noli and the many who had campaigned alongside him, the outcome was favorable. The League of Nations Assembly cast its votes at 11:30, approving Albania's candidacy with a significant majority 35 votes in favor to just 7 abstentions. Albania was admitted as a full member of the League of Nations. This decisive outcome underscored the legitimacy of Albania's claim to statehood and its right to participate as an equal among the family of nations. This admission solidified Albania's sovereignty on the international stage and provided the young nation with a platform to seek collaboration and support within the global community. As Noli reflected in a 1958 interview (Puto, 2010, 210), his greatest political achievement indeed lay in the triumph of securing Albania's place in the League. This accomplishment was not simply about gaining a seat at the table. It was about safeguarding Albania's future as an independent nation.

Conclusion

The scholarly analysis of Albania's diplomatic journey towards recognition at the League of Nations, orchestrated by Fan Noli, elucidates a seminal episode in the annals of international diplomacy. This study has offered an appraisal of the polyvalent nature of sovereignty, demonstrating Noli's diplomatic endeavour that intricately interwove the solid legal and political argumentation, diplomatic engagement, and historical legitimacy to substantiate Albania's inherent capacity to operate as a sovereign nation. Noli's engagement in Geneva epitomizes a microcosm of the challenges and aspirations emblematic of emergent nations in the tumultuous post-war era. His adept synthesis of de jure legitimacy and de facto governance underscored the legal and operational dimension requisite for international recognition, while simultaneously navigating the complex matrix of great power politics.

This research contributes to the academic discourse by providing a nuanced portrait of sovereignty and the legitimization process within intergovernmental institutions. The narrative crafted by Noli, and the eventual recognition of Albania, serve as an archetype for understanding the symbiosis between state capabilities and the global juridical framework. Furthermore, the findings of this study possess a trans-temporal pertinence, offering enduring insights into the mechanisms by which states assert their presence and secure their standing within the international order. The implications of this historical narrative resonate beyond the specifics of Albania, informing contemporary theoretical debates on sovereignty, international law, and the vital role of diplomacy in the recognition of states.

In synthesizing the salient themes of this research, it is evident that Fan Noli's exemplar of statecraft remains a critical analytical lens for scholars examining the continual evolution of state sovereignty and the intricacies of global governance.

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Analyzing the Interplay Between Energy Consumption Economic Growth and Carbon Emissions

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Abstract

The goal of this study is to explore the relationships between energy consumption, GDP growth, and emissions levels, as well as the main drivers of Carbon Emissions by examining both short-run and long-run dynamics. The increased presence of carbon dioxide influences the global climate system in potentially dramatic and irreversible ways. The issue is surrounded by a lot of uncertainties regarding the causes and effects and the extent of these effects, but also uncertainties on political behavior and commitments of all the included actors. Although the disputes regarding "contribution" to CO_2 emission levels and arguments on how to distribute the burden for reducing atmosphere pollution all the countries share the same potential devastating consequences if no measures are taken.
The global energy system faces a dual challenge: the need for more energy and less carbon. In other words, mitigating the growing environmental concerns and tackling the increasing energy demand. The objThe main reason for studying the relationship between carbon emissions, energy consumption, renewable energy and economic growth is that they play an important role in the current debate on environmental protection and sustainable development. This study was implemented for 24 developed economies for almost half a century period.

Keywords: Emissions, Energy Consumption, Renewable Energy.

1. Introduction

The need for more energy and less carbon is the dual challenge of the global energy system. Higher living standards drive increases in energy demand, partly offset by substantial gains in energy intensity (BP, 2019). The increased presence of carbon dioxide influences the global climate system in potentially dramatic and irreversible ways (Trebilcock, 2014). There are a lot of uncertainties regarding the causes and effects and the extent of these effects, but also uncertainties on political behavior and commitments of all the stakeholders. The main issue is regarding "contribution" to CO_2 emission levels and arguments on how to distribute the burden for reducing atmosphere pollution all the countries around the world share the same potential devastating consequences if no measures are taken. The escalating energy consumption poses a significant threat to the global ecosystem leading to increasingly prolonged droughts, rising sea levels, and more frequent occurrences of heatwaves, all of which have profound negative impacts on the environment. Similarly, the pursuit of economic growth has resulted in environmental degradation, often as a consequence of development and industrialization in both developing and developed nations. Economic growth relies on various factors, some of which can have adverse effects on the environment, including unsustainable exploitation of natural resources, environmental pollution, and climate change (Phimphanthavong, H. 2013). While industrialization has played a significant role in fostering economic growth by

expanding the production of goods and services, improving living standards, and enhancing societal well-being, it has also resulted in a pressing issue: the escalation of greenhouse gas emissions.

The Western Balkan Countries, comprising Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia are on their roadmap towards integration with the European Union and are making a lot of efforts to enhance the living standards of their population, making it crucial to observe the links between their economic growth, energy consumption patterns and carbon emissions.

The WB countries are Signature to the Paris Agreement, the most important Treaty on climate change, and also participants to the United Nations Conference of the Paris parties on Climate Change. According to the Paris agreement, global warming must be limited to 1.5°C, greenhouse gas and emissions must peak before 2025 at the latest and decline 43% by 2030, while countries commit to transition away from fossil fuel. In a world where the consequences of climate change are becoming more noticeable, and while the EU directives focus on five dimensions: security of supply, fully integrated internal energy markets, energy efficiency, decarbonization of the economy and innovation and competitiveness supporting breakthrough in low carbon, this paper sets the ground for investigating how Albania may achieve a harmonious coexistence between economic prosperity and environmental safekeeping. Given the rapid global economic growth resulting in increased energy consumption, understanding the relationship between these variables is essential to ensure a balance between energy consumption, economic growth and CO2 emissions. The objective of this paper involves investigating the causal effects of energy consumption and production of GDP on the emissions level, for Albania. The paper is organized in five sections. The second provides a literature review on the relationship between economic growth, energy consumption, population and carbon emissions. Section three describes methodology to be developed and the data used. Section four presents the empirical findings along a discussion upon them. Section five concludes, providing policy implications.

2. Literature review

The literature has been mainly developed for the developing and emerging economies, as a rationale that countries have been more and more challenged to meet their increasing demand for energy by producing more, while at the same time facing the issue of greenhouse gas (GHG) emissions. In this context, either because of increased awareness or improved data availability and measurement techniques, a subject of research found way in the resource economics, with the focus on the causal convergence of carbon emission with macroeconomic indicators, specifically energy consumption and economic growth. The empirical literature in the field has aimed at quantifying elasticities of the energy consumption and generation to the carbon emission levels, along the causal relationship of energy consumption to economic growth. They employ relatively large panel data investigated under econometric propositions that allow for the dynamic properties of the variables involved. There are quite a few studies that focus on China's causal relationship of CO_2 emission, energy consumption (often decoupled in oil and coal) and economic growth involving times series of 30 up to 54 years of observations (Chang, 2010; Jalil and Feridun, 2011; Zhang

and Cheng, 2009), being the world's largest emitter of greenhouse gases. They all find long-run bidirectional causality among the GDP and energy consumption, as well as the latter and GHG emissions. The same is confirmed by Wang et al. (2011) panel estimation of 28 Chinese provinces, and also when comparatively analyzed along with India. Both these countries have been developed rapidly, being responsible for a higher increasing share of GHG emissions (Rissman et al., 2020).
Govindaraju and Tang (2013) and Jayanthakumaran et al. (2012) however find that the causal relationship between the above discussed variables for India is not as strong as in China. This could be attributed to the coal-dominated energy mix in China (Fan and Xia, 2012; Sinton and Fridley, 2000) against the low energy consumers of large number of micro-enterprises in India Jayanthakumaran et al. (2012). With a unidirectional causality from electricity consumption to economic growth confirmed in Shiu and Lam (2004), reducing CO_2 emissions may handicap China's economic growth to some degree (Wang et al., 2011) if the country fails to meet energy efficient alternatives. Other studies focus on one country times series, confirming the strong bidirectional causality running between income, energy consumption and emissions in Brasil during 1980-2007 (Pao and Tsai, 2011), and long-run causal relationship from per capita energy consumption, per capita real income, openness and financial development to per capita carbon emissions in Turkey during 1960-2007 (Ozturk and Aravci, 2013). On the causal dynamics between emissions, nuclear energy, renewable energy, and economic growth was investigated by (Apergis. N. et al., 2010, 2011a, 2011b). Omri, A. (2013) investigated the relationship between CO2 emissions, energy consumption and economic growth nexus in MENA countries using some simulationus equation.
Recently, several studies have focused on understanding the link between energy consumption, economic growth and CO2 emissions (Yildirim, H 2017). In this paper, we contribute in adding an investigation on the above discussed indicators relationship for Albania countries setting the ground for a further analysis on the WB countries and their impact on CO2 emissions. Many studies, have focused on different periods and countries, while using different energy usage proxy variables. This has given rise to some inconsistencies in the findings and results across these studies (Dogan, E.et al.,2017). After gathered knowledge from the empirical literature developed on the links between carbon emissions, macroeconomic and energy indicators, the following section explains in details the methodology performed further in this paper analysis.

3. Data and Methodology

3.1 Methodology

We follow the methodology of the above discussed literature that highlight the casual relationship between economic growth and energy consumption population on one side, and CO_2 emissions and energy consumption on the other. The objective of this study was to investigate the influence of energy consumption and macroeconomic indicators on CO2 emissions. To achieve this, quantitative data was obtained from the World Bank's World Development Indicators.
To achieve aim of this study, the dependent variable is CO2 emissions (assumed to be caused or
influenced by other macroeconomic factors), energy consumption, economic

growth, population as can be seen in the table below.

Table 1. Dependent and independent variable summary
Dependent and independent variable synopsis.
Name Description Eviews Code

Variables	*Description*
CO_2 emissions	CO_2 emissions in kilo tonne (kt)
Energy consumption	Energy use (kg of oil equivalent per capita)
Economic growth	GDP growth (annual %) GDP
Population	Population total POP

The independent variables are briefly described below:
GDP growth (% annual): It measures a country's economic performance, which is determined by
its annual percentage growth from one year to the next. There has been an increase in CO2
emissions due to growth through urbanization and industrialization. Hence, we expect a positive relationship between the variables. This variable has also been used in previous literature (Yildirim, H.H.,2017).
Energy consumption (kg of oil equivalent per capita): It measures the energy use that is obtained through fossil fuel from oil and coal. The unit of measurement for energy use was taken to be kg of oil equivalent per capita,which measures energy consumption per capita of the population of a country. If there is an increase in energy consumption, the CO2 emission level is expected to increase also. Thus, we expect a positive relationship between the variables. This positive relationship has been investigated from (Esso, L.J. and Keho, Y., 2016).
Population: This variable accounts for the total number of people living in a country at a point in
time. An increase in a country's population will give rise to an increase in deforestation, land clearances for commercial and/or agriculture purposes and energy use (fossil fuel), significantly adding to CO2emissions. For this reason, we do expect a positive relationship between the variables (Zhang and Cheng, 2009). In our investigation Population as a variable is omitted from the model due to its negative coefficient and observed negative impact on CO2 emissions.

The regression model as stated below:

$$Y_t = \beta_0 + \beta_1 x_t + \beta_2 x_t \ldots\ldots\ldots \beta n x_t + u_t \quad (1)$$

Y=Dependent variable
x=Independent variable
β0=Constant
β1, β2, βn=Coefficient of x1, x2 and xn respectively.
uit =error term
t=Time

$$(CO2)\, t = \beta 0 + \beta 1 GDPt + \beta 2 ENRGY\_CONSCt + \beta 3 POPt + uit \quad (2)$$

The study variables were altered to take into consideration the natural logarithm for estimation. The investigation was carried out using Eviews 12 software.
Where t = 1990, …., 2021, the period under investigation, denotes the time period, and u is the serially uncorrelated error term with mean zero. First, unit root tests to determine the stationary properties of the time series of the examined variables is considered. The general form of the model considered for unit root testing is as follows:

$t = 1, \ldots, 49;$ $i = 1, \ldots, 24$ (3)

$\rightarrow y_{it} = (1-\rho)\alpha_i + (1-\rho)\delta t + \rho y_{i,t-1} + \varepsilon_{it}$ $|\rho|<1$

Or $\rho=1$

That meaning that the possibility of either an autoregressive model with a fixed effect or a random walk with drift is considered. The unit root tests usually vary in several dimensions: the degree to which they allow for the heterogeneity; serial correlation, heteroskedasticity and robustness to non-normality among others (Hall and Mairesse, 2002).

3.2 Data

As it is explained in the database, the carbon emissions reflect only those through consumption of oil, gas and coal for combustion related activities, not allowing for other sources of carbon emissions, or for emissions of other greenhouse gases. In Appendix A1.3 there is an increase in the Co2 emission in Albania in the recent years. Table 1 gives the summary statistics. Energy Consumption is expressed in million tones oil equivalent.

Table 1. Descriptive statistics of variables

Variable	Mean	S D	Min	Max	Jarque-Bera
CO_2 emissions	3679.658	1251.486	1479.160	6060.500	2.3762(0.05)
Energy consumption	628.8193	149.2204	384.5950	896.4378	2.5808(0.05)
Economic gro wth	3.002	8.661662	-28.002	13.32233	40.452 (000)

Table 1 revealed that the data P-value, which stands at 0 is less than the significant levels of 1%, 5% and 10% proposed for the study. Hence, we reject the null hypothesis (H0).

Table 2. Result of Correlation Matrix

	CO2 Emissin	Energy Usage	GDP Growth
CO2 Emission	1	0.930074	-0.237437
Energy Usage	0.930074	1	-0.471692
GDP growth	-0.237437	-0.471692	1

The table 2 revels that there exist a positive relationship between the study varibales and CO2 The highest value emerges from Energy consumption.

Granger Causality results

Given that a long-run relationship exists between the study variables based on the co-integration test results, a further test was carried out using the Granger causality test. The Granger causality test focuses on examining and assessing if any causal relationship exists among the study variables as can be shown in Table 3. The study outcome is in line with Yang and Zhao (2017) finding. From table 3 it can be concluding that Energy Usage causes CO2 emission, with 10% significance. GDP Growth Causes Energy usage at 1% level of significance. GDP Growth causes CO2 emission at 10% level of significance. In the Table A1.1 from the Granger Causality test we can see that there is a bidirectional causal relationship between GDP Growth and CO2 emission in Albania. As economies grow and industrialize, there is typically an increase in production and consumption of goods and services. Many industrial processes and energy-intensive activities rely on fossil fuels, such as coal, oil, and natural gas, which release CO2 emissions when burned for energy. Therefore, as economic activity expands, so does the demand for energy, resulting in higher CO2 emissions.

Economic growth is closely linked to energy consumption as can be seen from Granger Causality test revealed from our investigation. This can be explained from the fact that as economies expand, there is a greater need for energy to power factories, businesses, transportation, and households. While renewable energy sources are growing, fossil fuels still dominate the global energy mix. The combustion of fossil fuels for energy production releases CO2 into the atmosphere, contributing to overall emissions. Economic growth especially in the case of Albania which is facing a rapid development in the construction sector, the construction of infrastructure such as roads, buildings, and transportation networks, being these projects energy-intensive and may require the use of materials like cement and steel, which have significant carbon footprints associated with their production processes. Moreover, the global trade and globalization have led to increased production and transportation of goods across borders. This has implications for CO2 emissions, as the transportation sector, particularly maritime shipping and aviation, relies heavily on fossil fuels.

Table 3. Granger Causality Test

Null Hypothesis	Observation	F-statistic	Probabiltiy
Energy Usage does not Granger Cause CO2 Emission and vice versa		2.35965	0.1215
	24	59.7606	6.897
GDP Growth does not Cause CO2 and Vice versa	29	1.84477	0.1798
		2.68846	0.0884
GDP Growth does not cause Energy Usage and vice versa	24	1.1329	0.0010
		2.42100	0.1157

4. Empirical estimation and results

All the study variables are positively significant at significance levels of 1%, 5% and 10%

significance. This is because all the study variables' P-values are lesser than 0.01, 0.05 and 0.10, respectively except population which resulted with a negative sign, as can be shown in the table A1.2 which is a snapshot of the results of E-Views software.

Hence, on average, holding the other variables constant, an increase in GDP will result in an increase in CO2 emissions. Also, an increase in energy consumption by 1% will result in a 0.88% increase in CO2 emissions. while a 1% increase in population will decrease CO2 emissions as shown in Table A2.1, it may be credited to several factors; Albania is a country 99% Hydro generation, and transitioning towards cleaner energy sources such as other renewable energy like PV and Wind, reducing reliance on fossil fuels and subsequently lowering CO2 emissions despite population growth as well as investments in energy efficiency measures, such as upgrading infrastructure, implementing energy-saving technologies, and promoting conservation practices, can help mitigate CO2 emissions even as population rises. Furthermore, Table 4 revealed a 91% R-squared with little or slight difference to the adjusted R-squared of 91%. This shows how the variance in the dependent variables can be explained using the independent variables. Hence, most of the CO2emission (i.e., 91%) is explained by the study independent variables. Further assessment of the independent variables' total performance (i.e., a test of overall significance) was carried out using the F-statistic to test if all the study independent variables coefficient is equal to zero.

$H0 = \beta1 = 0, \beta2 = 0, \beta3 = 0, \beta4 = 0$ (4)

H1 = At least one of $\beta4$, 0.

At a significance level of 5%, the null hypothesis is rejected because at least one of the coefficients is not equal to zero.

βn, is not equal to zero.

Table 4. Estimation results

CO2

Variable	Coefficent	Std.Error	t-Statistic	Prob.
Energy Usage	8.824459	0.570891	15.45736	0.00000
GDP Growth	37.40276	9.835123	3.802978	0.00000
c	1981.643	381.0127	-5.200989	0.00000
R-squared	0.917141		Mean dependent variable	3769.658
Adjusted R-squared	0.909935		S.D dependent var	1251.486
S.E of regression	375.5804		Akaike info critetrion	14.80299
Sum squared resid	3244395		Schwartz critetrion	1494815
Log likelihood	-189.4389		Hannan-Quinn criter.	14.84479
F-statistic	127.294		Durbin-Watson stat.	1.949933
Prob(F-statistic)	0			

5. **Conclusions and policy implications**

The main reason for studying the relationship between carbon emissions, energy consumption, and economic growth is that they play an important role in the current debate on environmental protection and sustainable development. This study was

implemented via OLS with the help of Eviews Software. Empirical results showed long-run bidirectional causality between carbon emissions and GDP growth. In this context, a more detailed analysis is further needed in order to break down the period analyzed into the three proposed periods to account for economic structural breaks. Moreover, effects of different economic sectors need to be taken into consideration to investigate energy efficiency in multidimensional humankind activities.

With an acknowledged necessity to reduce GHG emissions from every sector of the global economy, supply-side technologies that include energy efficiency such as power generation seem to have positively impacted the process of decarbonization. Moreover, the finding that the bi-direction causal relationship between renewable energy generation and CO_2 emissions are found to be significant in the long-run but not in the short-run, raises importance of the advancements of policy taking measures for reducing climate carbonization. As Trebilcock (2014) emphasizes, innovation in energy technology must be at the center of any successful decarbonization effort.

While the OECD countries have improved their performance in renewable energy generation effective in reducing CO2 emissions, the same effort should be followed by much of the world and especially from WB and Albania. Otherwise, isolated actions would only lead to a redistribution of the overall produced emissions with minor effects in the atmosphere, impacting all in return.

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Appendices

Appendix 1

Figure A1.1 Renewable energy produced from OECD and non-OECD countries (around the world) during last half century
Source: BP (2019)
Note: Renewable energy includes gross generation from renewable sources including wind, geothermal, solar, biomass and waste

Figure A1.2 Carbon Emission from energy generation for OECD countries during last half century
Source: BP (2019)

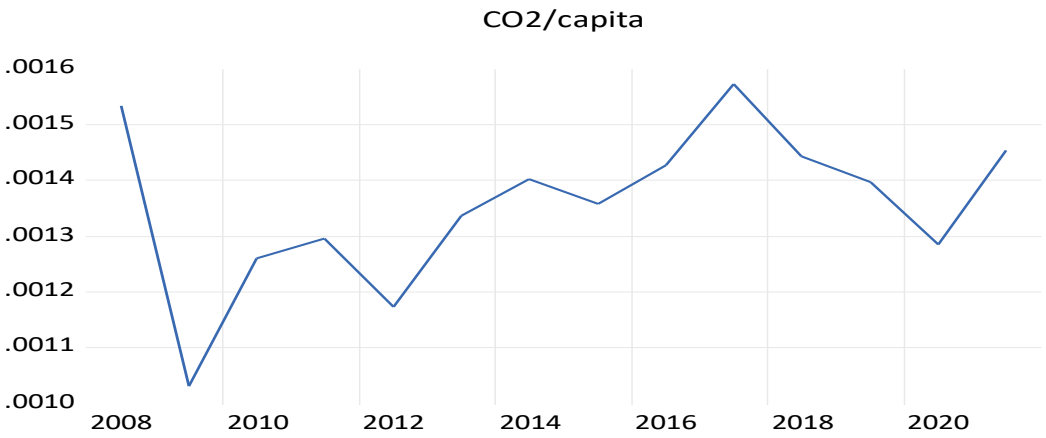

Figure A1.3 Carbon Emission from energy generation Albania
Source: WB (2019)

Table A1.1

Pairwise Granger Causality Tests
Date: 04/17/24 Time: 12:00
Sample: 1990 2023
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
GDP_GROWTH does not Granger Cause CO2_EMISSION__KT_	29	1.84477	0.1798
CO2_EMISSION__KT_ does not Granger Cause GDP_GROWTH		2.68846	0.0884

Table A1.2

Dependent Variable: CO2 EMISSION KT
Method: Least Squares
Date: 04/17/24 Time: 19:18
Sample (adjusted): 1990 2015
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ENERGY USAGE	8.638645	0.825562	10.46395	0.0000
GDP GROWTH	34.73275	13.09034	2.653312	0.0145
POPULATION TOTAL	-0.000274	0.000864	-0.317561	0.7538
C	-1018.085	3059.036	-0.332812	0.7424

R-squared	0.917519	Mean dependent var	3679.658
Adjusted R-squared	0.906271	S.D. dependent var	1251.486
S.E. of regression	383.1444	Akaike info criterion	14.87534
Sum squared resid	3229591.	Schwarz criterion	15.06889
Log likelihood	-189.3794	Hannan-Quinn criter.	14.93108
F-statistic	81.57574	Durbin-Watson stat	1.948705
Prob(F-statistic)	0.000000		

Exploring the relationship between academic stress and mental health

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Abstract

This study examines the relationships between academic stress and mental health among students, using Pearson correlation to analyze the relationship between these two variables. The goal was to understand whether academic stress affects students' mental health and if this impact is statistically significant. The analysis was based on a sample of 143 students who reported their experiences with academic stress and mental health through a detailed survey in Google Forms. The results of the Pearson correlation showed a positive but not strong relationship between academic stress and factors derived from Factoral analysis, where the correlation coefficient *r* ranged from .164 to .366, indicating that while academic stress may be related to these factors, the connection is not strong. This suggests that other factors outside of this study may play a role in the level of academic stress of students. Regarding the direct relationship between academic stress and mental health, the correlation value was -.151, which is not statistically significant, indicating the absence of a clear and direct link between these two aspects in the studied group. Descriptive statistics for academic stress show a wide range of levels, with an average of 32.9371 and a standard deviation of 4.30888, reflecting the diversity of academic stress experiences among students. Moreover, mental health was also analyzed through descriptive statistics, where values ranged from 31 to 70, with an average of 52.9371 and a standard deviation of 7.71063, showing a wide range of mental health experiences in the studied population. The use of Google Forms as a data collection method served as an effective tool to reach a sample of 143 students, which might be considered an acceptable compromise between the statistical ideal and practical limitations but can be regarded as an efficient way that minimizes bias. Ultimately, this study sheds light on the complex and indirect relationship between academic stress and mental health, showing that more research is needed to fully understand these interactions and to identify potential interventions that could help improve students' well-being.

Keywords: academic stress, mental health, stress level, sources of stress, mental well-being.

Introduction

Background

Investigating the link between academic stress and mental health is both crucial and timely, given the persistent pressures impacting students and pedagogues at all educational levels. A comprehensive understanding of this relationship necessitates examining a broad spectrum of influencing factors and trends. The relevance of studying this connection has been heightened by the pandemic, which introduced new challenges like remote learning, altering the educational landscape significantly. This research is pivotal for numerous reasons: it enhances awareness of the challenges students face, demystifies aspects of mental health, spearheads the creation of supportive strategies and programs, enables the pinpointing of specific intervention needs for students, boosts academic performance, and fosters a culture of healthy learning. Ultimately, this not only assists students in managing stress more effectively but also

contributes to forging a more resilient and healthy society.

Research Questions and Hypotheses

This study seeks to address the following research questions through statistical analysis and findings:

1. What is the relationship between academic stress and the prevalence of mental health disorders among students?
2. Are there differences in the experiences of academic stress and its effects on mental health among students based on demographic factors such as gender?

Hypotheses

Hypothesis 1. Higher levels of academic stress are positively correlated with a higher prevalence of mental health disorders among students.

Hypothesis 2. There are differences in the levels of academic stress experienced by male and female students.

Hypothesis 3. The workload of academic programs correlates positively with students' stress levels.

Hypothesis 4. Exam anxiety correlates positively with the level of academic stress.

Hypothesis 5. Uncertainty about the future correlates positively with the level of academic stress.

Hypothesis 6. Motivation from pedagogues is negatively correlated with the levels of academic stress among students.

Literature Review

Definition of Academic Stress

Academic stress is a type of stress experienced by students during their studies, closely linked to the pressure to achieve good results, the substantial number of assignments, and the limited time available to complete them, as well as the challenges of adapting to a new social and academic environment. This stress can manifest in various forms, including anxiety, reduced motivation, feelings of overload, and general mental health issues such as sleep disturbances. Academic stress can be defined as the psychological pressure students feel to meet their academic demands.

Academic Stress and Mental Health

Research in the field of academic stress and mental health consistently shows a clear link between the pressures of academia and mental health problems such as depression and anxiety, highlighting the need for support and stress management strategies for students. For instance, studies by Córdova Olivera et al. (2023) and Chen, Wang, and Yang (2024) have found that academic stress significantly impacts student well-being and increases depression levels, especially during challenges like the COVID-19 pandemic, underscoring the importance of interventions designed with a clear understanding of how specific issues differently affect males and females and the ongoing support from educational institutions. The study by Barbayannis et al. (2022) discovered a strong connection between academic stress and the mental well-being of college students, indicating that higher levels of stress are associated with poorer mental well-being, with more pronounced effects among women, non-binary

students, and those in their upper years of study. Meanwhile, Hart's study (2019) emphasizes the importance of resilience as a mediator in the relationship between depression and academic performance, suggesting that fostering resilience and social support can help prevent negative mental health outcomes such as depression and anxiety in students. This research also highlights the impact of perceptions of social support in coping with academic and social stressors, underlining the need for targeted interventions to support students, especially those from minority groups. The study by Chyu and Chen (2022) found that academic stress negatively affects the mental health of adolescents in Hong Kong, but unexpectedly, it also increased their engagement in school, showing that stress can enhance participation in school activities despite its negative mental consequences. This study also notes different impacts of stress on girls and boys, emphasizing the importance of ongoing family and school support to help students cope with the challenges of academic stress.

Sources of Academic Stress

The study by Prowse, Sherratt, Abizaid, Hellemans, Patterson, and McQuaid (2021) revealed that the COVID-19 pandemic has had a more significant negative impact on the academic performance and mental health of female students, with higher use of social networks as a coping mechanism resulting in higher stress levels and more negative effects on their academic performance compared to males; while substance use as a coping mechanism showed more significant negative impacts among males. On the other hand, the study by Reddy, Menon, and Thattil (2018) emphasized that academic stress is a part of students' lives, particularly adolescents, identifying various sources of stress such as personal incompatibility and fear of failure, with gender differences in experiences of academic stress.

Various studies have addressed how academic stress, especially during exam periods, affects student performance. The study by Putwain and Daly (2014) analyzes how exam anxiety impacts exam performance and finds that high anxiety is associated with poorer exam outcomes, suggesting that reducing anxiety could improve performance. Ahmad, Gul, and Zeb (2022) in their study analyze university students' experiences around exam stress and identify five main categories contributing to their stress: study pressure, time management, teacher behavior, a sense of competition, and the complexity of the study material. These factors negatively impact students' concentration and the quality of their work, harming their academic performance. Bueno's report (2021) examines how assessment methods and exams affect students' study behavior, highlighting that the stressful pressure of exams can negatively impact the learning process and memory consolidation. However, well-integrated assessments can protect and even enhance learning. Meanwhile, Kumari and Jain (2014) discovered that high stress during exams, due to lack of preparation and information, leads to high levels of anxiety affecting students' academic performance. The study shows a clear link between exam stress and anxiety, without significant differences between students at different educational levels. Lastly, Pompilus (2021) confirms that excessive stress has a negative effect on academic performance, making it difficult for students to concentrate and learn effectively. The study by Vogel and Schwabe (2016) examines the impact of stress on learning and memory, finding that stress can have complex effects on students' learning processes. They find that while stress can enhance memory under certain specific circumstances, it typically has a

negative impact on the ability to learn and retain new information. These findings suggest the need for learning environments that minimize stress to maximize classroom learning efficiency, highlighting the importance of a careful approach to stress management in education.

Further studies have analyzed the effects of the heavy academic workload, including how this load contributes to academic stress and affects student performance. In their study, Misra and McKean (2000) explored the impact of academic workload on student stress. Their findings indicated that a heavy academic load increases stress levels, which negatively affects academic performance and students' well-being. Their study shows that a heavy academic workload raises stress levels among students and negatively affects their time management and overall satisfaction. They found that students facing high academic pressure spend less time on enjoyable activities, reducing their quality of life. The study by Nonis, Hudson, Logan, and Ford (1998) observed the relationship between course load and academic performance. Results suggested that excessive workload can lead to decreased academic performance due to the spread of students' limited cognitive resources across a wide range of tasks. These studies show that it is crucial for educational institutions to balance the demands placed on students to minimize the negative effects of a heavy academic load and to improve their performance and well-being. Moreover, understanding how students perceive and experience their academic load can help in developing more effective support strategies and interventions.

Future uncertainty is a significant theme studied in educational psychology and career management, which relates to the sense of uncertainty individuals feel about their professional and personal futures. This feeling can influence many aspects of a student's life, including motivation, engagement in school, and overall psychological well-being. In their study, Lent and Brown (2006) explore how career theories can assist in understanding and managing future uncertainty among students. Their theories suggest that career counseling and developing skills for planning and preparing for the future can help reduce uncertainty and improve students' well-being. The study by Steel, Schmidt, and Shultz (2008) analyzes the effects of future uncertainty on students' performance and motivation. The authors found that uncertainty increases with a lack of clarity about career goals and paths, which can lead to decreased motivation and academic performance. These studies highlight the importance of addressing future uncertainty as a key factor affecting student well-being and success. Identifying strategies that address this uncertainty, such as career preparation and the development of professional clarity, is vital to supporting students in facing challenges and achieving their educational and professional goals.

The factor of motivation from pedagogues encompasses the role that teaching, and teacher behavior play in motivating students to learn and achieve academic success. This factor is crucial for understanding how methods of interaction and support from pedagogues directly impact student engagement and performance. The study by Ryan and Deci (2000) addresses the importance of intrinsic motivation and how pedagogues can influence it. Their findings show that support for autonomy from educators helps increase students' intrinsic motivation, positively affecting their engagement and academic performance. The study by Skinner and Pitzer (2012) observes how supportive teaching practices, such as involving students in decision-making and providing immediate feedback, impact student motivation. They found

that a supportive classroom environment is associated with higher levels of student engagement and motivation. In his study, Hattie (2008) emphasizes the significant impact of the teacher on students, noting that educators who can create strong connections with their students and use effective teaching techniques have a substantial influence on their academic outcomes. He suggests that good teachers can positively affect students' well-being and performance through proactive and supportive engagement. These studies show that motivation from educators is a decisive factor in enhancing student performance and well-being. The ability of pedagogues to build supportive and motivating relationships with students is essential for fostering a productive and engaged learning environment.

Materials and methods

Procedure

This study was designed as a correlational research aiming to determine the relationship between stress levels and mental well-being among a specific group of students. Data were collected over a short period from March to April 2024, using a structured electronic survey that included questions about students' stress levels and mental well-being. The study utilized Pearson correlation strategy to assess the impact of stress-inducing factors on the experienced academic stress levels of students and to evaluate the relationship between stress levels and participants' mental well-being. Data relevant to each participating student were collected and analyzed for this purpose.

Participants

The study population included students from four faculties at the "Ismail Qemali" University of Vlora. Participants were selected through a controlled process aimed at ensuring a broad and fair representation of the studied population. Participants were informed about the purposes and procedures of the study.

Study sample

The study employed a probability sampling method, with simple random selection. A total of 143 students participated in the study, consisting of 139 females (F) and 4 males (M), 74 were single, 66 were married, and 3 were divorced. The majority, 44, were second-year Master of Science students, 43 were first-year Master of Science students, and 25 were second-year Bachelor students. Out of the participants, 107 were from the Faculty of Humanities, among whom 73 had never failed an exam, and 55 had failed one or two times. Additionally, 91 students expressed satisfaction with their learning environment, and 37 expressed great satisfaction. A total of 140 students also expressed satisfaction with their home environment.

Instruments

In this study, data collection was facilitated through an online questionnaire divided into four sections, comprising a total of 71 questions. *The first section* required students to report demographic information including gender, marital status, level of study, faculty, history of academic failure, satisfaction with the learning environment, and satisfaction with the home environment. *The second section* assessed the

students' stress levels using the Perceived Stress Scale (PSS 10) developed by Cohen, Kamarck, & Mermelstein (1983). This scale consists of 10 items related to the perception of stress. Individual scores on the PSS 10 can range from 10 to 50, where a lower score indicates a lower level of perceived stress and vice versa, higher scores indicate a higher level of perceived stress. Students responded to the Likert scale questions of PSS 10 across 5 categories ranging from 1) Never , 2) Almost Never, 3) Sometimes, 4) Often to 5) Very Often. *The third section* utilized the Warwick-Edinburgh Mental Well-being Scale (WEMWBS),[1] to measure levels of mental well-being, where students described their mental well-being experiences over the past two weeks. *The fourth section* employed a newly developed scale to identify factors influencing the level of experienced academic stress, structured with 40 questions. Students responded to these 40 Likert scale questions across 5 categories, ranging from "Strongly Disagree" to "Strongly Agree".

Administration of Instruments

This study focuses on identifying factors that influence students' academic stress levels and the impact of these stress levels on mental well-being. The questionnaire was distributed to Bachelor and Master's students at "Ismail Qemali" University of Vlorë. Students assessed their perceptions and experiences related to each item concerning academic stress using a 5-point Likert scale. The questionnaire was completed online by the students.

Data Collection

Data were collected using a structured questionnaire to assess the levels of stress and mental well-being among students. Google Forms was utilized for data collection due to its ease of use and wide accessibility, which aided in efficiently achieving a considerable sample size. Thus, the study had a robust database to begin analysis and make assessments about the relationships between stress levels and identified stress sources, as well as to evaluate the impact of stress levels on the mental well-being of students. On average, it took students about 10 minutes to complete the questionnaire.

Measurement of Academic Stress Level

The primary explanatory variable is the academic stress level. The Academic Stress Level (ASL) was used as a continuous variable in this study. Based on student perceptions, academic stress was measured by the 10-item Likert type PSS scale. This scale is evaluated on five levels, with higher scores indicating greater stress.

Measurement of Mental Well-being

The level of mental health was measured using the Warwick-Edinburgh Mental Well-being Scale (WEMWBS). This Likert-type scale includes 14 items across 5 categories ranging from 1) Never to 5) All the Time. Higher scores indicate a higher level of students' mental well-being.

Data Analysis

The Statistical Package for the Social Sciences (SPSS version 16 for Windows XP) was utilized by researchers to analyze the data collected from the application of a

1 "The Warwick-Edinburgh Mental Well-being Scale was funded by the Scottish Government National Programme for Improving Mental Health and Well-being, commissioned by NHS Health Scotland, developed by the University of Warwick and the University of Edinburgh, and is jointly owned by NHS Health Scotland, the University of Warwick and the University of Edinburgh.

self-administered questionnaire designed to measure the impact of stress-inducing factors on the increase of students' stress levels. Data analysis was performed using statistical methods such as descriptive statistics, inferential analyses, factor analysis, and Pearson correlation. Factor analysis was used to identify the structure of factors influencing stress levels and mental well-being. Correlations among factors were analyzed to assess their relationships and the impact of these factors on academic stress levels. Additionally, bivariate Pearson correlation was employed to measure the relationship between stress levels and mental well-being. To assess the relationships between the variables (Gender) and (Academic Stress Level - ASL) of students, the Independent-Sample t-test, a parametric test requiring certain parametric data assumptions, was used. The Independent-Sample t-test requires equal variances for the deviations of male (M) and female (F) respondents.

Statistical Analysis

Factoral Analysis

Factor analysis utilized the Extraction Method: Principal Component Analysis (PCA), and the Rotation Method: Varimax with Kaiser Normalization. It was considered in the study that a factor with fewer than five items generally indicates a weak and unstable factor and was not included. Factors with five or more items with strong loadings (≥ .30) following Wolman's (1973) standards were accepted as desirable and indicative of a strong factor (Costello & Osborne, 2005).

Reliability and Validity of the Instrument.

Validity: Exploratory (EFA) or confirmatory factor analysis (CFA) were used in the study to evaluate the Factoral structure and confirm the construct validity of the Likert scale.

Reliability: The study implemented Cronbach's Alpha reliability test for the Academic Stress Factors (ASF) scale, for the four factors derived from the factor analysis, for the PSS 10 scale, as well as for the Warwick-Edinburgh Mental Well-being Scale (WEMWBS).

Results

Descriptive and Statistical Analysis Results

Descriptive analysis of the stress levels experienced by students was conducted to determine the overall distribution of this variable. The results of the Perceived Stress Scale (PSS 10) ranged from 10 to 50. Based on a sample of N = 143 students, the stress level (Table 3.1) was found to vary from a minimum of 10 to a maximum of 42, with an overall mean of $\mu = 32.9371$ and a standard deviation SD ($\sigma = 4.30888$). This indicates a high tendency of stress among the participants, as well as a relatively homogeneous distribution around this mean. This standard deviation suggests a relatively compact distribution of stress level values around the mean, indicating that most participants experience stress levels within a narrow range. The level of standard deviation indicates moderate variability in stress experiences among students, with most reporting similar stress experiences.

Table 3.1. **Descriptive Statistics of the academic stress level**

	N	Minimum	Maximum	Mean	Std. Deviation
Academic Stress Level	143	10.00	42.00	32.9371	4.30888
Valid N (listwise)	143				

Results on the Descriptive Analysis of Mental Well-being Levels

The study included a total of 143 students, providing a clear overview of their mental well-being levels. The values of mental well-being levels among students (Table 3.2) varied significantly, ranging from a minimum of 31 to a maximum of 70. This indicates a wide range of mental well-being experiences within this group. The average mental well-being level is $\mu = 52.9371$, suggesting that, overall, students report a relatively positive level of mental well-being. The standard deviation of the data SD ($\sigma = 7.71063$) indicates a relative variability in the participants' mental well-being experiences, but with a relatively tight clustering around the mean value. This study provides a clear snapshot of the mental well-being levels among a group of 143 students, utilizing analytical methods to describe and better understand the distribution and characteristics of the data.

Tabela 3.2. **Descriptive Statistics of the level of mental well-being**

	N	Minimum	Maximum	Mean	Std. Deviation
The level of mental well-being	143	31.00	70.00	52.9371	7.71063
Valid N (listwise)	143				

Results of the Factor Analysis

Factor analysis was conducted to identify the structure of academic stress factors based on the 40 items of the Likert scale. The adequacy of the sample selection was assessed using the Kaiser-Meyer-Olkin (KMO) value, which was found to be .897, indicating high suitability of the data for factor analysis (Table 3.3). The homogeneity of the correlation matrix was verified through Bartlett's Test of Sphericity, where the chi-square value was 3992.355 with 780 degrees of freedom (df) and a significance level (Sig.) of .000, confirming the presence of sufficient correlations among the variables to proceed with factor analysis. At the conclusion of the analysis, four factors were identified that explain 59.535% of the total variance, representing the main components of academic stress sources among students. These results indicate a clear Factoral structure and contribute to a better understanding of the aspects that influence academic stress in students. *Results of the Reliability Analysis of the Scale (ASF) and Factors*

The Cronbach's Alpha value (Table 3.4) for the scale (ASF) was $\alpha = .940$, with 40 items,

indicating that the internal consistency of the scale is very good. This confirmed that the reliability of the various items on the scale reached the level required by assessment standards.

Table 3.3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.897
Bartlett's Test of Sphericity	Approx. Chi-Square	3992.355
	df	780
	Sig.	.000

Factor 1: Academic Program Workload (APW). This component consists of 14 items, with an internal consistency (Cronbach's Alpha) of α = .926, explaining 34.518% of the observed variance.

Factor 2: Exam Anxiety (EA). Comprising 11 items, this component has an internal consistency of α = .918 and accounts for 11.119% of the observed variance.

Factor 3: Uncertainty about the Future (UF). Made up of 9 items, this component has an internal consistency of α = .910 and explains 7.952% of the observed variance.

Factor 4: Motivation from Pedagogues (MP). This component, consisting of 6 items, has an internal consistency of α = .887 and explains 5.946% of the observed variance.

The results indicate that the reliability of the stress instrument used is high. The coefficient provides confidence to proceed with the statistical analysis of the data.

Reliability Results for the PSS 10 Scale

The results revealed that the Cronbach's Alpha value for the PSS 10 scale was α = .563 with 10 items, indicating that the internal consistency of the scale is at the minimum accepted level for social sciences. This confirmed that the reliability of the various items on the scale reached the level required by assessment standards (Table 3.4).

Reliability Results for the Mental Health Scale (WEMWBS)

The results (Table 3.4) showed that the Cronbach's Alpha value for the WEMWBS scale was α = .851 with 14 items, indicating that the internal consistency of the scale is very good. This confirmed that the reliability of the various items on the scale reached the level required by assessment standards.

Table 3.4. Reliability Statistics of Factors and scales

	Cronbach's Alpha	N of Items
General scale of 40 items	.940	40
F1. Academic Program Workload	.926	14
F2. Exam Anxiety	.918	11
F3. Uncertainty about the Future	.910	9
F4. Motivation from Pedagogues	.887	6
PSS 10 Scale	.563	10
Scale (WEMWBS)	.851	14

The Relationship Between Academic Stress and Mental Health

Results for Hypothesis 1

H1. Higher levels of academic stress are positively correlated with a higher prevalence of mental health disorders among students.

Regarding the relationship between stress levels and mental health (Table 3.5), the Pearson correlation coefficient is -.151, indicating a negative relationship between academic stress and mental well-being. However, this value is not statistically significant as the Sig. (2-tailed) value is .071, which is above the conventional threshold of .05 for statistical significance. This means that there is insufficient evidence to assert that there is a linear relationship between the level of academic stress and the mental health of students in this study.

Table 3.5. Correlation of the stress level with mental well-being

		Nivelstres	Nivelmireqenie-mendore
Academic Stress Level	Pearson Correlation	1	-.151
	Sig. (2-tailed)		.071
	N	143	143
The level of mental well-being	Pearson Correlation	-.151	1
	Sig. (2-tailed)	.071	
	N	143	143

Results for Hypothesis 2.

H2: There are differences in the levels of academic stress experienced by male and female students.

In our study (Table 3.6), we observed that the 4 male participants experienced an average stress level (μ) of 30.5000, with a standard deviation (SD) of σ = 5.00023 and a standard error of the mean (S.E.M) of 2.53311. Similarly, the 139 female participants experienced an average academic stress level (μ)= 33.0072, with a standard deviation (SD) of σ = 4.28597 and a standard error of the mean (S.E.M) of .36353.

Table 3.6. Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Academic Stress Level	M	4	30.5000	5.06623	2.53311
	F	139	33.0072	4.28597	.36353

The study applied the Independent-Samples t-Test and found (Table 3.7) that the variances between the groups are equal (Sig = .603). This led to the use of the "Equal variances assumed" row where t(141) = -1.149 and Sig. (2-tailed) = .253, indicating that there is no statistically significant difference between male and female groups in terms of stress levels. The mean stress difference between the groups is only -2.50719, with a 95% confidence interval for this difference ranging from 1.80798 to -6.82237.

Table 3.7 Independent Samples Test. Comparison of Means

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Academic Stress Level	Equal variances assumed	.271	.603	-1.149	141	.253	-2.50719	2.18277	-6.82237	1.80798
	Equal variances not assumed			-.980	3.125	.397	-2.50719	2.55907	-10.47031	5.45592

Relationship Between Academic Stress and Various Factors

The results indicate a relationship between academic stress and several different factors, with Pearson correlation coefficients ranging from .164 ~ .366. This suggests a positive but not very strong relationship between the level of academic stress and these factors. Correlation values in this range indicate that while academic stress may be associated with these factors, the relationship is not particularly strong.

Results for Hypothesis 3:

H_3: The workload of academic programs correlates positively with students' stress levels.

As seen in (Table 3.8), the bivariate correlation between Academic Stress Level (ASL) and F1, Academic Program Workload (APW), is significant at the .01 level (2-tailed). The bivariate correlation coefficient is r = .225 (Weak or undefined).

Results for Hypothesis 4.

H_4. Exam anxiety correlates positively with the level of academic stress.

As seen in (Table 3.8), the bivariate correlation between (ASL) and F2, Exam Anxiety (EA), is significant at the .01 level (2-tailed). The bivariate correlation coefficient is r = .257 (Weak or undefined).

Results for Hypothesis 5.

H_5. Uncertainty about the future correlates positively with the level of academic stress..

As seen in (Table 3.8), the bivariate correlation between (ASL) and F3, Uncertainty about the Future (UF), is significant at the .01 level (2-tailed). The bivariate correlation coefficient is r = .366 (Weak).

Results for Hypothesis 6

H_6. Motivation from pedagogues is negatively correlated with the levels of academic stress among students.

As seen in (Table 3.8), the bivariate correlation between (ASL) and F4, Motivation from pedagogues (MP), is not statistically significant. The Sig. (2-tailed) is .051 > .05, thus p > .05. The bivariate correlation coefficient is r = .164 (Weak or undefined).

Discussion

The results of the descriptive and statistical analysis of the stress levels experienced by students show a range of stress from 10 ~ 42, with an average mean of 32.9371 and a standard deviation of 4.30888. This outcome indicates that students experience a high level of stress, as the average is close to the maximum value of the scale. The relatively low standard deviation suggests a compact distribution of values around the mean, implying that the majority of students experience stress levels that are relatively similar and consistent. The moderate variability in stress experiences among students suggests that despite individual differences, the stress experienced by students is concentrated within a narrow range.

Based on the results of the descriptive analysis of students' mental well-being levels, the study provides a broad overview of the mental well-being experiences of a group of 143 students. The results indicate a range of mental well-being levels from 31 ~ 70, suggesting considerable diversity in experiences in this aspect. The average mental well-being level of 52.9371 indicates that, generally, students report a relatively positive level of mental well-being. The standard deviation of the data, 7.71063, reflects moderate variability in students' mental well-being experiences, but with a relatively tight clustering around the mean value. This analysis provides a solid foundation for better understanding and describing the level of mental well-being among the students involved in the study.

Table 3.8. Correlations between (ASL) and 4 academic factors

		Academic Stress Level	F1. Academic Program Workload	F2. Exam Anxiety	F3. Uncertainty about the Future	F4. Motivation from Pedagogues
Academic Stress Level	Pearson Correlation	1	.225**	.257**	.366**	.164
	Sig. (2-tailed)		.007	.002	.000	.051
	N	143	143	143	143	143
F1. Academic Program Workload	Pearson Correlation	.225**	1	.571**	.576**	-.166*
	Sig. (2-tailed)	.007		.000	.000	.047
	N	143	143	143	143	143
F2. Exam Anxiety	Pearson Correlation	.257**	.571**	1	.657**	-.057
	Sig. (2-tailed)	.002	.000		.000	.498
	N	143	143	143	143	143
F3. Uncertainty about the Future	Pearson Correlation	.366**	.576**	.657**	1	-.013
	Sig. (2-tailed)	.000	.000	.000		.878
	N	143	143	143	143	143
F4. Motivation from Pedagogues	Pearson Correlation	.164	-.166*	-.057	-.013	1
	Sig. (2-tailed)	.051	.047	.498	.878	
	N	143	143	143	143	143

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The results for Hypothesis 1 indicate that while a positive correlation between high levels of academic stress and the prevalence of mental health disorders among students was expected, the Pearson correlation coefficient resulted in -.151, which is not statistically significant (Sig. = .071). This suggests that there is no strong link indicating that high levels of stress directly contribute to the manifestation of mental health disorders in this study group. There is insufficient evidence to confirm a linear relationship between high academic stress and poor mental health. The result suggests that, contrary to initial assumptions, academic stress does not have a direct and strong impact on students' mental health as predicted. This finding underscores the need for a more detailed and complex analysis to better understand the interactions between academic stress and mental health factors, suggesting that other factors not considered in this study may play a role in this dynamic. These study findings contradict those of Barbayannis et al. (2022), who found a strong correlation between academic stress level and mental well-being; the higher the stress, the poorer the well-being. Similarly, the findings contrast with those of Chen, Wang, and Yang (2024), who identified a clear link between academic stress and increased depression among students during the COVID-19 pandemic. The findings also oppose those of Chyu and Chen (2022), who discovered that academic stress has a significantly negative impact on adolescents' mental health. Furthermore, the findings challenge those of Córdova Olivera et al. (2023), who concluded that self-perceived stress is a major influencer of mental health among university students, establishing a clear connection between high levels of academic stress and poor mental conditions.

The results for Hypothesis 2, examining differences in the level of academic stress experienced between male and female students, present an interesting panorama. Males (n=4) had an average stress level of 30.5000 with a standard deviation of 5.00023, whereas females (n=139) reported an average stress level of 33.0072 with a standard deviation of 4.28597. These figures suggest that females experience slightly higher levels of academic stress compared to males. However, statistical analysis through the Independent-Samples t-Test indicates no significant difference between the groups. The t-value is -1.149 and the Sig. (2-tailed) is .253, which is greater than the customary significance threshold of .05. This demonstrates that, despite slight variations in average stress levels, these differences are insufficient to assert significant gender differences in experiencing academic stress. Moreover, the average stress differences between the groups are only -2.50719, with a 95% confidence interval for this difference ranging from 1.80798 to -6.82237, adding to the argument suggesting a lack of substantial differences between males and females in terms of academic stress. These study findings contrast with those of Reddy et al. (2018), who identified gender differences in stress experiences in their study.

The discussion of the relationship between academic stress and various identified factors presents a panorama of positive, yet relatively weak, links. Pearson correlation coefficients ranging from .164 to .366 suggest that while there is a positive relationship between academic stress and various factors such as academic program load, exam anxiety, and future uncertainty, these relationships are not strong. Specific analysis of Hypotheses 3, 4, and 5 shows that academic program load, concern about the future, and fear of failing exams are positively linked to academic stress. The coefficients, although significant at the .01 level, indicate that these relationships are relatively weak (r = .225, r = .257, and r = .366 respectively). This suggests that while

factors like workload and exam anxiety contribute to academic stress, their impact is not as substantial as to cause profound changes in stress levels. These findings align with those of Misra and McKean (2000); Nonis, Hudson, Logan, and Ford (1998), who found that heavy academic loads increase stress levels; Kumari et al. (2014), who discovered that college students experience high stress during exams due to lack of preparation, study style, and lack of information. The study findings also corroborate those of Lent and Brown (2006), who found that career counseling and skill development for planning and preparing for the future can help reduce uncertainty. Further findings align with those of Steel, Schmidt, and Shultz (2008), who determined that the effects of future uncertainty impact students' performance and motivation. On the other hand, Hypothesis 6, suggesting that motivation from teachers negatively correlates with academic stress, was not found to be statistically significant. The correlation coefficient ($r = .164$) indicates a weak relationship that does not reach the level of statistical significance ($p > .05$). This may suggest that the impact of teacher motivation on reducing academic stress may not be as clear as expected, or that other factors may interfere in this relationship. This finding contradicts those of Ryan and Deci (2000); Skinner and Pitzer (2012), and Hattie (2008), who emphasized the positive impact of teacher-student interactions and motivational teaching techniques on student outcomes.

Conclusions

The study found that while academic stress does not demonstrate a clear and strong correlation with mental health disorders among students, levels of mental well-being exhibit a broad range of experiences, with a relatively positive average level. These findings suggest the need for further research to explore the relationships between these factors more deeply and to develop appropriate supportive strategies for students. The descriptive analysis findings indicate variability in mental well-being experiences, but with a generally positive trend. This data and analysis can serve as a foundation for further research and the development of policies or programs aimed at improving mental well-being in the studied population. Thus, it can be concluded that the study indicates students experience high levels of academic stress and a considerable diversity in mental well-being experiences. Generally, they report a positive level of mental well-being, but there is moderate variability that should be considered.

Therefore, further research is necessary to better understand this relationship. This could involve the use of more advanced statistical models and further research to identify and analyze other factors that may impact students' mental health. In this way, the study underscores a need for a more in-depth and intricate approach to addressing and understanding the interactions between academic stress and mental health.

Finally, the results of Hypothesis 2 suggest that while there may be slight average differences in academic stress levels between male and female students, these differences are not statistically significant. This may imply that factors other than gender have a more significant impact on students' experiences of academic stress.

In conclusion, although the results show weak links between academic stress and the studied factors, they provide a basis for further research that could focus more on the

impact of these and other factors on academic stress. This could assist in developing enhanced strategies for stress management in academic settings.

Study Limitations

The sample size may be a limitation that could have influenced the results of this study. Researchers provide suggestions for future research that could expand and deepen the understanding of the relationship between stress levels and mental well-being.

Recommendations

Recommendations

The findings of this study suggest the need to develop and implement appropriate strategies and programs that address the specific challenges related to academic stress and mental well-being in academic settings, to improve the health and well-being of students. This could include initiatives such as counseling programs, stress management training, and activities designed to strengthen social support among students. For those at higher risk, individual counseling and stress reduction strategies are necessary. To address the impact of academic stress on the mental health of university students, educational institutions, parents, and policymakers might consider several key recommendations:

1. Revising assessment systems: Educational institutions should review and reform assessment systems to reduce pressure and promote a more supportive learning environment. This could involve implementing more formative assessments that provide constructive feedback and allow skill development, rather than tests based solely on results and final grades.

2. Educating parents and society: Developing educational programs for parents and society at large about the pressures caused by high academic expectations. These programs can help create a better understanding of the impact of academic stress on mental health and encourage healthier support for academic achievements.

3. Training pedagogues: Training pedagogues to develop skills in stress management and use techniques that reduce academic anxiety. Educators should be trained to create an encouraging and supportive learning environment, including the use of teaching methods that promote student participation and autonomy in learning.

4. Support and mental health services: Developing dedicated mental health programs and services within universities, such as school-facilitated counseling, peer-led support groups, and easy access to mental health professionals. These services can provide immediate help for students experiencing high stress and help prevent long-term negative effects on mental health.

5. Promoting work-study-life balance: Encouraging students to engage in extracurricular activities, such as sports, arts, and volunteering. These activities not only help reduce stress but also provide a healthy outlet for energy and help in the development of a richer, more rounded identity.

6. Focusing on life skills development: Integrating training that helps students develop important life skills, such as time management, effective communication, and conflict resolution. These skills are essential for navigating the challenges of university life and reducing feelings of overload and uncertainty.

By following these recommendations, a healthier and more supportive environment can be created for students, minimizing academic stress and promoting a more positive higher education experience.

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Enlargements of Γ-regular semigroups

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Abstract

In this paper we present quasi-ideals, the natural partial order and basic properties of enlargements in a Γ-regular Semigroup. We have defined an enlargement of a Γ-regular Semigroup. Our first result provides a useful alternative characterisation of enlargements. The idea used to prove the last part of one of theorems presented here is the basis of an important technique for inverse pair. Finally we present the behaviour of enlargements under homomorphisms. The main aim of this paper is to find out the structure of Γ-regular Semigroups and their properties.

Keywords- Γ-regular semigroup, quasi-ideal, partial order, enlargement, inverse pair, homomorphism.

Introduction

We introduce a class of regular extensions of Γ-regular semigroups, called enlargements that may be used to analyse a number of questions in Γ-regular semigroup theory. The paper is divided into two short sections. Section 1 is a preliminary in which the result from Γ-regular semigroup theory needed to understand this paper are presented. In section 2, we provide an alternative characterisation of enlargements and give some examples of enlargements in Γ-regular semigroup theory. We present the bahaviour of enlargements under the homomorphisms.

1. Γ-regular semigroups, quasi-ideals and the partial order

In the article "On Γ-semigroup – I, the notion of Γ-semigroup is given for the first time.

Definition 1.0. *Let* $M = \{a, b, c, ...\}$ *and* $\Gamma = \{x, y, z, ...\}$ *be two non-empty sets. Then M is called a Γ-semigroup if,*

(1) $axb \in M$

(2) $(axb)yc = ax(byc)$

for all $a, b, c \in M$ *and all* $x, y \in \Gamma$.

In this paper Green's analogous relations in $\Gamma-$ are defined in . They are denoted by $\mathcal{L}, \mathcal{R}, \mathcal{H}, \mathcal{D}$ and $\mathcal{J}$. Regarding Green's relations, we will use articles[2], [3], [4], [5].

In the article [6], the notion of the quasi-ideal in Γ-semigroup is given.

Definition 1.1. *A non-empty set Q of a* $\Gamma-$*semigroup M is called quasi-ideal of M if* $Q\Gamma M \cap M\Gamma Q \subseteq Q$.

The collection of all quasi-ideals of M is denoted by $Q(M)$.

Definition 1.2. *The right [left] ideal of a $\Gamma-$semigroup M is a non-empty set I of M such that $I\Gamma M\subset I$ ($M\Gamma I\subset I$). If I is a left and right ideal of M, we call I simply an ideal of M.*

The following theorem is true.

Theorem 1.3. *A non-empty set Q of a $\Gamma-$semigroup M is a quasi-ideal of M if and only if Q is an intersection of a left and right ideal of M.*

Proof. Let Q be a quasi-ideal of a $\Gamma-$semigroup M. Then $Q\cup Q\Gamma M$ is a right ideal of M. Indeed,

$$(Q\cup Q\Gamma M)\Gamma M\subseteq Q\Gamma M\cup(Q\Gamma M)\Gamma M\subseteq Q\Gamma M\cup Q\Gamma M$$
$$\subseteq Q\cup Q\Gamma M.$$

Analogously, it is shown that $Q\cup M\Gamma Q$ is a left ideal of M.

It is clear that $Q\subseteq(Q\cup Q\Gamma M)\cap(Q\cup M\Gamma Q)$, therefore it remains to prove the opposite inclusion. Let a be an element of the intersection $(Q\cup Q\Gamma M)\cap(Q\cup M\Gamma Q)$. We have $a\in Q$ or $a\in Q\Gamma M\cap M\Gamma Q\subseteq Q$, since Q is a quasi-ideal of M. Thus the inclusion $(Q\cup Q\Gamma M)\cap(Q\cup M\Gamma Q)\subseteq Q$ is true.

Conversely, let R and L be a right ideal and left ideal of a $\Gamma-$semigroup M, respectively. We notice that $R\Gamma L\subseteq R$ and $R\Gamma L\subseteq M\Gamma L\subseteq L$. Hence, $R\Gamma L\subseteq R\cap L$, so $R\cap L$ is non-empty. Now, we may write:

$(R\cap\Gamma)\Gamma M\cap M\Gamma(R\cap L)\subseteq R\Gamma M\cap M\Gamma L\subseteq R\cap L$.

Thus, $R\cap L$ is a quasi-ideal of M.

Definition 1.4. [1] *An element a of a $\Gamma-$semigroup M is regular if $a\in a\Gamma M\Gamma a$, where $a\Gamma M\Gamma a=\{(axb)ya/b\in M;x,y\in\Gamma\}$.*

A $\Gamma-$semigroup M is regular if every element of M is regular.

A quasi-ideal Q is regular if every element of Q is regular.

The following theorem gives us a series of characterizations of quasi-ideals when M is a $\Gamma-$regular semigroup.

Theorem 1.5. *The following conditions in a $\Gamma-$semigroup M are equivalent.*

(1) *M is regular*

(2) *For every right ideal R and left ideal L of M, we have $R\Gamma L=R\cap L$*

(3) *Everey quasi-ideal Q of M, has the form*

$$Q=Q\Gamma M\Gamma Q$$

(4) *For every right ideal R and left ideal L of M we have:*

(a) $R\Gamma R=R$; (b) $L\Gamma L=L$; (c) $R\cap L=R\Gamma L$ *is a quasi-ideal of M.*

Proof. (1) $\Rightarrow$ (2) $R\Gamma L\subseteq M\Gamma L\subseteq L$, since L is a left ideal.

$R\Gamma L\subseteq RLM\subseteq R$, since R is a right. Consequently, we find $R\Gamma L\subseteq R\cap L$.

Supose M is regular. Let $a\in R\cap L$. Since M is regular, for an element $a\in M$, exist $b\in M$ and $x,y\in\Gamma$ such that $a=(axb)ya=ax(bya)$. Now we have $a=(ax)bya\in axL\subseteq R\Gamma L$.

Since $R \cap L \subseteq R\Gamma L$, we have $R \cap L = R\Gamma L$.

(2) $\Rightarrow$ (1) Let $a \in M$. Now, $L = a \cup M\Gamma a$ is a left ideal and $R = M\Gamma a \cup a$ is a right ideal of M. We write

$$L = L \cap M = M\Gamma(a \cup M\Gamma a) = M\Gamma a \cup M\Gamma(M\Gamma a)$$
$$\subseteq M\Gamma a \cup M\Gamma a = M\Gamma a.$$

In the same way we show that $R \subset a\Gamma M$.

Then we have:

$$a \in L \cap R \subseteq (M\Gamma a) \cap (a\Gamma M) = (a\Gamma M)\Gamma(M\Gamma a)$$
$$\subseteq a\Gamma(M\Gamma M)\Gamma a \subseteq a\Gamma(M\Gamma a),$$

thus, a is regular. Whence M is regular.

(1) $\Rightarrow$ (3) Let $a \in Q$. Since a is regular we have

$a \in a\Gamma M\Gamma a \subseteq Q\Gamma M\Gamma Q$, pra $Q \subseteq Q\Gamma M\Gamma Q$.

On the other side we find

$$Q\Gamma M\Gamma Q \subseteq Q\Gamma M \text{ and } Q\Gamma M\Gamma Q \subseteq M\Gamma Q,$$

Thus we proved the equality

$$Q = Q\Gamma M\Gamma Q.$$

(3) $\Rightarrow$ (1) From the equality $Q = Q\Gamma M\Gamma Q$ it is quite clear that for every element $a \in Q$, we have $a \in a\Gamma M\Gamma a$, so a is regular.

(1) $\Rightarrow$ (4) Let a be any element of R . Since M is regular, we have

$$a \in a\Gamma M\Gamma a \subseteq (R\Gamma M)\Gamma R \subseteq R\Gamma R,$$

hence, $R \subseteq R\Gamma R$. The inclusion $R\Gamma R \subseteq R$ is clear, thus the equality $R = R\Gamma R$ holds. Analogously, it is shown the equality $L\Gamma L = L$. Now, let us show that $R\Gamma L = R \cap L$ is a quasi-ideal of M. It is clear that $R\Gamma L \subseteq R \cap L$ $(*)$, so the intersection $R \cap L$ is non-empty. Now we have

$$(R \cap L)\Gamma M \cap M\Gamma(R \cap L) \subseteq R\Gamma M \cap M\Gamma L \subseteq R \cap L,$$

thus $R \cap L$ is a quasi-ideal of M.

Let $a \in R \cap L$. Since a is regular, we have

$a = axmya$, with $x, y \in \Gamma$ and $m \in M$.

We write,

$$a = ax(mya) = axb \in R\Gamma L, \text{ since } mya \in L.$$

We showed the inclusion $R \cap L \subseteq R\Gamma L$ and $(*)$ imply $R \cap L = R\Gamma L$.

(4) $\Rightarrow$ (2) It is obvious. In the meantime (2) $\Leftrightarrow$ (1). Thus we have (4) $\Rightarrow$ (1).

Let M be a $\Gamma-$semigroup and A, B two non-empty sets of M. We define the multiplicaton $A\Gamma B$ in this way

$$A\Gamma B = \{a\gamma b / a \in A, b \in B; \gamma \in \Gamma\}.$$

We implement this multiplication in the set of quasi-ideals $\Theta(M)$ and we have the following theorem.

Theorem 1.6. *A $\Gamma-$semigroup M is regular if and only if $Q(M)$ is a $\Gamma-$regular semigroup respected to the multiplication of subsets of M.*

Definition 1.7. *Let M be a $\Gamma-$semigroup and $a \in M$. Let $b \in M$ and $x, y \in \Gamma$. For an element b we call that it is a (x, y) inverse of a if $a = (axb)ya$ and $b = (bya)xb$. In this case we write $b \in V_x{}^y(a)$.*

Theorem 1.8. *Let M be a $\Gamma-$regular semigroup, $a = (axb)ya, b \in M$ and $x, y \in \Gamma$ such that $b \in V_x{}^y(a)$. Then*

(1) *axb and bya are idempotents*

(2) *$a\mathcal{R}axb\mathcal{L}a, a\mathcal{L}bya\mathcal{R}a$*

Proof. (1) Let we show that axb is idempotent. We have

$$axb = [(axb)ya]x[(bya)xb] = (axb)y\big[ax[(bya)xb]\big]$$
$$= (axb)y\big[ax[by(axb)]\big] = (axb)y\big[[(axb)ya]xb\big] = (axb)y(axb).$$

In the same way we show that also bya is idempotent.

(2) Since a is regular, we have $(a)_r = a\Gamma M$. An element axb by (1) is idempotent, therefore it is regular, thus $(axb)_r = (axb)\Gamma M$.

Let azm be any element in $a\Gamma M$. We have

$azm = \big((axb)ya\big)zm = (axb)y(azm) \in (axb)\Gamma M$, so $(a)_r \subseteq (axb)_r$. Since the inclusion $(axb)_r \subseteq (a)_r$ is clear, we have the equality $(a)_r = (axb)_r$, thus $a\mathcal{R}axb$.

It is easly shown that $(a)_l = M\Gamma a$ and $(bya)_l = M\Gamma(bya)$. If $mz(axb)$ is an element in $(axb)_l$ we have $mz(bya) = (mzb)ya \in M\Gamma a = (b)_l$, thus $(bya)_l \subseteq (a)_l$.

This and the clear inclusion $(a)_l \subseteq (bya)_l$ imply $(bya)_l = (a)_l$, thus $a\mathcal{L}bya$.

In the same way we show that $axb\mathcal{L}b$ and $bya\mathcal{R}b$.

Theorem 1.9. *Let M be a $\Gamma-$semigroup. An element $a \in M$ is regular if and only if $(a)_r = eyM$ for any idempotent $e = eye \in M, y \in \Gamma$.*

Proof. If an element $a \in M$ is regular we have $a = (axb)ya$ with $b \in M; x, y \in \Gamma$. We see $(axb)y(axb) = [(axb)ya]xb = axb$, so, axb is idempotent, for $x \in \Gamma$. If we denote $e = axb$ we have $e = eye, y \in \Gamma$ and $a = eya$.

Since a and e are regular elements we have $(a)_r = a\Gamma M$ and $(e)_r = e\Gamma M$. If azm is any element in $(a)_r$ we find

$$azm = [(axb)ya]zm = (eya)zm = ey(azm) \in e\Gamma M,$$

thus $(a)_r \subseteq e\Gamma M = (e)_r$. This and the clear inclusion $(e)_r \subseteq (a)_r$ imply $(a)_r = (e)_r = eyM$.

Conversely, assume $(a)_r = eyM$, where $e = eye, y \in \Gamma$. Since $(a)_r = a \cup a\Gamma M$ implies $a = eym$ for any $m \in M$ and $e = a$ or $e = a\delta b$ for any $\delta \in \Gamma$ and $b \in M$. Now, $e\gamma a = e\gamma(e\gamma m) = (e\gamma e)\gamma m = e\gamma m = a$. Hence, $a = e\gamma a = (a\delta b)\gamma a$, thus a is regular.

Theorem 1.10. Let M be a $\Gamma-$semigroup. If $a = ax(bya)$ with $b \in M$ and $x, y \in \Gamma$, is a regular element of M, then $(a)_r = axM$ and $(a)_l = Mya$.

Proof. We know that $(a)_r = a\Gamma M \cup a$. Since $a = (axb)ya = ax(bya) \in a\Gamma M$ it follows that $(a)_r = a\Gamma M$. Let $a\gamma m$ be any element of $a\Gamma M$. We have

$a\gamma m = [(axb)ya]\gamma m = [ax(bya)]\gamma m = ax[(bya)\gamma m] \in axM$, so $a\Gamma M \subseteq axM$.

Since the inclusion $axM \subseteq a\Gamma M$ is clear, we have $(a)_r = axM$.

In the same way we show that $(a)_l = Mya$.

Theorem 1.11. *Let M be a $\Gamma-$regular semigroup and $a \in M$. Let also $e = exe$ and $f = fyf$ be two idempotents such that $e\mathcal{R}a\mathcal{L}f$. Then, there exists a unique $b \in V_y{}^x(a)$ such that $ayb = e$ and $bxa = f$.*

Proof. Since $e\mathcal{R}a$, we have $e\Gamma M = a\Gamma M$. Then, there exist $\gamma_1, \gamma_2 \in \Gamma$ and $c, d \in M$ such that $e = a\gamma_1 c$ and $a = e\gamma_2 d$. Now, we have

$$exa = ex(e\gamma_2 d) = (exe)\gamma_2 d = e\gamma_2 d = a.$$

Also, since $a\mathcal{L}f$, we have $M\Gamma a = M\Gamma f$. Then, it follows that $a = m_1\delta_1 f$ and $f = m_2\delta_2 a; m_1, m_2 \in M; \delta_1, \delta_2 \in \Gamma$. We write, $a = m_1\delta_1 f = m_1\delta_1(fyf) = (m_1\delta_1 f)yf = ayf$.

Let $b = f\gamma_1 c$. Then, we have $ayb = ay(f\gamma_1 c) = (ayf)\gamma_1 c = a\gamma_1 c = e$. Therefore $(ayb)xa = exa = a$.Also $(bxa)yb = [(f\gamma_1 c)xa]yb = \Big[[(m_2\delta_2 a)\gamma_1 c]xa\Big]yb = \Big[\big[m_2\delta_2(a\gamma_1 c)xa\big]\Big]yb = [(m_2\delta_2 e)xa]yb = [m_2\delta_2(exa)]yb = (m_2\delta_2 a)yb = fyb = fy(f\gamma_1 c) = (fyf)\gamma_1 c = f\gamma_1 c = b$. Thus $b \in V_y{}^x(a)$. We have also

$$bxa = (f\gamma_1 c)xa = [(m_2\delta_2 a)\gamma_1 c]xa = [m_2\delta_2(a\gamma_1 c)]xa$$
$$= (m_2\delta_2 e)xa = m_2\delta_2(exa) = m_2\delta_2 a = f.$$

Thus, b satisfies the equalities $bxa = f$ and $ayb = e$.

Now, let we show the uniqueness. Assume that there exists $b' \in V_y{}^x(a)$ such that $ayb' = e$ and $bxa = f$. Then, we find

$$b' = (b'xa)yb' = b'x(ayb') = b'x(ayb) = (b'xa)yb = (bxa)yb = b.$$

An imprtant tool in the study of $\Gamma-$regular semigroups is *the natural partial order*. Let M be a $\Gamma-$regular semigroup. We define Green's relations through principal ideals. The inclusion order of principal ideals brings an order of equivalence classes.

$L_a \leq L_b$ if $M\Gamma a \subseteq M\Gamma b$

$R_a \leq R_b$ if $a\Gamma M \subseteq b\Gamma M$

$J_a \leq J_b$ if $M\Gamma a\Gamma M \cup a\Gamma M \cup M\Gamma a \subseteq M\Gamma b\Gamma M \cup b\Gamma M \cup M\Gamma b$.

The set of idempotents of a $\Gamma-$semigroup M will be denoted by $E(M)$. When A is a subset of M, then $E(A) = A \cap E(S)$.

Definition 1.12. *Let M be a $\Gamma-$regular semigroup. We define $a \leq b$ if and only if $R_a \leq R_b$ and $a = exb$, for any $e \in E(R_a), x \in \Gamma$. If e and f are idempotents, then $e \leq f$ if and only if there exist $x, y \in \Gamma$ such that $exe = e, fyf = f$ and $e = exf = fye$.*

In [26] it is shown that the fulfillment of the conditions of the definition above of $E(M)$ implies that we are going through with a partial order.

Theorem 1.13. *Let a and b be two elements of a $\Gamma-$regular semigroup M. Then, the following conditions are equivalent*

(1) $a \leq b$

(2) *For every $f \in E(R_b)$ there exists $e \in E(R_a)$ such that $e \leq f$ and $a = exb$, for any $x \in \Gamma$*

(3) *For every $f \in E(R_b)$ there exists $e \in E(R_a)$ such that $e \leq f$ and $a = bya$, for any $y \in \Gamma$*

(4) $R_a \leq R_b$ *and* $a = byf$ *for any* $f \in E(L_a), y \in \Gamma$

Proof. (1)$\Rightarrow$(2) Let $f \in E(R_b)$, so, $f = fyf, y \in \Gamma$. Since $f \in R_b$ it follows $fyM = (b)_r$. Since $a \in R_a$, there exists $e \in R_a$, with $e = exe, x \in \Gamma$, such that $a\Gamma M = exM \subseteq f\Gamma M = fyM$. Now, there exists $m \in M$ such that $e = fym$. We have

$$e = fym = (fyf)ym = fy(fym) = fye.$$

Since $e \in R_a, f \in R_b$, we have $(e)_r = (a)_r$ and $(f)_r = (b)_r$. This implies $e \leq f$ and $e = exf$.

(2)$\Rightarrow$(1) Since $f \in E(R_b)$ and $e \in E(R_a)$ it follows that $(e)_r = (a)_r$, $(f)_r = (b)_r$. Since $e \leq f$, that is to say $(e)_r \subseteq (f)_r$ it follows that $(a)_r \subseteq (b)_r$, thus $R_a \leq R_b$. This and $a = exb$, for any $x \in \Gamma$, both imply $a \leq b$. Thus, we showed that (1)$\Leftrightarrow$(2).

Analogously, it is shown that (1)$\Leftrightarrow$(3).

(1)$\Rightarrow$(4) Let $a = (azc)ta$ be a regular element of a $\Gamma-$semigroup M. We have $(a)_l = Mta$. Let $mta; m \in M, t \in \Gamma$ be an element of $(a)_l$. We have also $a = exb$ for any $e \in E(R_a), x \in \Gamma$. Then $mta = mt(axb) = (mta)xb \in Mxb \subseteq (b)_l$. Thus, we found that $(a)_l \subseteq (b)_l$, which implies that $L_a \leq L_b$.

Let M be a $\Gamma-$regular semigroup in which the partial order $\leq$ is defined. Then $(M, \leq)$ is called *poset*. If $(M, \leq)$ is a poset, then a subset A of M is called *ordered ideal* if $a \leq b \in A$ implies $a \in A$. The subset $[b] = \{a \mid a \in A \text{ and } a \leq b\}$ is called an ordered principal ideal of M. The following result shows that when a $\Gamma-$regular subsemigroup is an ordered ideal relying on idempotents.

Theorem 1.14. *Let N be a $\Gamma-$regular subsemigroup of a $\Gamma-$regular semigroup M. Then $E(N)$ is an ordered ideal of $E(M)$ if and only if N is an ordered ideal of M.*

Proof. Let $E(N)$ be an ordered ideal of $E(M)$ and assume $a \leq b$ in N. We have that if $f \in E(R_b) \cap N$, then there exists $e \in E(R_a)$ such that $e \leq f$ and $a = exb$, for any $x \in \Gamma$. By assumption $e \in N$, thus $a \in N$.

The converse is clear.

Definition 1.15. *Let M be a $\Gamma-$regular semigroup. The trace production of two elements $a, b \in M$ denoted by $a \circ b$, is*

$$a \circ b = axb \in R_a \cap L_b \text{ with } x \in \Gamma.$$

The following theorem is true.

If e and f are idempotents of a $\Gamma-$semigroup M, then the *sandwich* set of e and f, denoted by $S(e, f)$, is defined

$$S(e,f) = \{\, h \in E(S) \mid \left(f\gamma_1 h\right)\delta_1 e = h \text{ and } \left(e\gamma_2 h\right)\delta_2 f = e\gamma f;\ \delta_1, \delta_2, \gamma, \gamma_1, \gamma_2 \in \Gamma \,\}.$$

If M is regular, then sandwich sets are always non-empty. It is not difficult to show that $h \in S(e,f)$ if and only if $h \in E(S) \cap f\Gamma V\left(e\gamma_2 f\right)\Gamma e$.

Theorem 1.16. *Let M be a $\Gamma-$regular semigroup.*

(1) *a o b exists if and only if there exist $x \in V(a)$ and $y \in V(b)$ such that $x\gamma a = b\gamma y, \gamma \in \Gamma$*

(2) *Let $a, b \in M, a' \in V(a), b' \in V(b)$ and $h \in S(a'\gamma a, b\delta b')$. Then*

$$a\gamma_1 b = \left(a\gamma_2 h\right) \bullet \left(h\gamma_3 b\right) \text{ and } b'\gamma_4 h\gamma_5 a' \in V\left(a\gamma_6 b\right), \text{ with } \gamma, \delta, \gamma_i \in \Gamma.$$

(3) *Let $a_1, \ldots, a_n \in M, a'_1 \in V(a_1)$ and $a'_n \in V(a_n)$. Then*

$$V\left(a_1\gamma_1 a_2 \ldots \gamma_n a_n\right) \cap a'_n \Gamma S \Gamma a'_1 \neq \emptyset.$$

A useful result is the following theorem.

Theorem 1.17. *Let M be a $\Gamma-$regular semigroup.*

(1) *If $b\mathcal{D}b'$, then for every $a \leq b$, there exists $a'\mathcal{D}a$ such that $a' \leq b'$*

(2) *$M\Gamma a\Gamma M \subseteq M\Gamma b\Gamma M$ if and only if there exists b' such that $a\mathcal{D}b' \leq b$.*

2. Basic properties of enlargements

In this section we present some basic properties of an enlargement of a $\Gamma-$regular semigroup raising naturally some related problems.

Definition 2.0. *Let M be a $\Gamma-$regular semigroup. M is said to be an enlargement of a $\Gamma-$regular semigroup S if $S\Gamma M\Gamma S = S$ and $M\Gamma S\Gamma M = M$.*

This is equivalent to saying that $S \in V(M)$ in the $\Gamma-$semigroup $Q(M)$ of all quasi-ideals of M. More generally, we say that a $\Gamma-$regular semigroup M is an enlargement of a $\Gamma-$regular semigroup S if there is an embedding $i: S \to M$ such that M is an enlargement of $i(S)$.

We are giving a series of alternative characterizations of enlargements as follow. Let S be a $\Gamma-$regular semigroup of a $\Gamma-$regular semigroup M.

We shall refer to the following three properties:

(F_1) $E(S)$ is an order ideal of $E(M)$

(F_2) If $a \in M$ and for some $a' \in V(a), a'\gamma a = a\gamma a' \in S, \forall \gamma \in \Gamma$, then $a \in S$

(F_3) For each $e \in E(M)$, there exists $f \in E(S)$ such that $e\mathcal{D}f$.

Theorem 2.1. *Let S be a $\Gamma-$regular subsemigroup of a $\Gamma-$regular semigroup M.*

(1) *S is a quasi-ideal of M if, and only if, (F_1) and (F_2) hold.*

(2) *M is an enlargement of S if, and only if, S is a quasi-ideal of M and (F_3) holds.*

Proof. Let S be a quasi-ideal of M. Since S is a $\Gamma-$regular subsemigroup, we have $S = S\Gamma M\Gamma S$. (F_1) holds: let $f \leq e \in E(S)$. We have $exe = e, fyf = f$ and $f = fye = exf, x, y \in \Gamma$. Then

$$f = exf = ex(fye) \in S\Gamma M\Gamma S = S.$$

Thus $f \in E(S)$.

(F_2) holds: Let $a \in M$ and $a' \in V(a)$, with $a'\gamma a = a\gamma a'$, for each $\gamma \in \Gamma$, belong to S. Then $a = (asa')ta$ dhe $a' = (a'ta)sa', s, t \in \Gamma$.

Now, we have $a = (asa')ta' = (asa')t\left((a'ta)\delta a'\right)$

$$= (asa')t\left(a't(a\delta a')\right) \in S\Gamma M\Gamma S = S.$$

To prove the converse, suppose that (F_1) and (F_2) hold. We have to show that $S = S\Gamma M\Gamma S$. Since the inclusion $S \subseteq S\Gamma M\Gamma S$ is clear, then we have to show the converse inclusion $S\Gamma M\Gamma S \subseteq S$. Let $(u\gamma m)\delta w \in S\Gamma M\Gamma S$, for some $u, w \in S; \gamma, \delta \in \Gamma, m \in M$. Choose $u' \in V(u) \cap S$ and $w' \in V(w) \cap S$. Then there exists $c \in V\big((u\gamma m)\delta w\big) \cap w'\Gamma M\Gamma u'$, thus $c = \big(w'\gamma_1 n\big)\gamma_2 u'$, for some $n \in M; \gamma_1, \gamma_2 \in \Gamma$. It is clear that

$$\big((n\gamma m)\delta w\big)zc \leq u\gamma_3 u' \text{ dhe } c\gamma_3\big((u\gamma m)\delta w\big) \leq w'\gamma_4 w.$$

By (F_1), $\big((n\gamma m)\delta w\big)zc, c\gamma_3\big((u\gamma m)\delta w\big) \in S$. Thus by (F_2), we have that $(u\gamma m)\delta w \in S$.

(2) Let prove the converse. Suppose that S is a quasi-ideal of M (in fact, it is enough to assume that S is an order ideal of M), and that $M = M\Gamma S\Gamma M$. Since S is a $\Gamma-$regular subsemigroup of M and quasi-ideal of M, we have $S\Gamma M\Gamma S = S$. We only need to show the inclusion $M \subseteq M\Gamma S\Gamma M$.

We consider the case when S is a regular quasi-ideal of a $\Gamma-$regular semigroup M but (F_3) it is not necessary to be true.

We define

$$\xi_M(S) = \{\ m \in M \mid m\mathcal{D}s, \text{ për ndonjë } s \in S\ \}.$$

We have the following result

Theorem 2.2. *Let S be a regular quasi-ideal of a $\Gamma-$regular semigroup M. Put $M' = \xi_M(S)$.*

Then

(1) *M' is an order ideal of M.*

(2) *$M' = M\Gamma S\Gamma M$.*

(3) *M' is a $\Gamma-$regular subsemigroup of M.*

(4) *M' is an enlargement of S.*

The proof of the last part of one of theorems above gives us an important method to find inverse pairs .

Theorem 2.3. *Let M be an enlargement of S. Then, for each inverse pair (a, a') in M, there exist inverse pairs (b, b') and (c, c') in M and an inverse pair (s, s') in S such that*

$$a = b\ o\ s\ o\ c', b\gamma_1 b' = a\delta_1 a', s\delta_2 s' = a'\gamma_2 a, b'\gamma_3 b = s\delta_3 s', c'\gamma_4 c = s'\delta_4 s.$$

Theorem 2.4. *Let M be an enlargement of S containing a regular quasi-ideal T. Put $S' = \xi_M(T) \cap S$. Then $\xi_M(T)$ is an enlargement of S' and T.*

Theorem 2.5. *Let M be an enlargement of a $\Gamma-$regular semigroup S.*

(1) *For any $Q \in Q(S)$ we have that $Q\Gamma M\Gamma Q \in Q(M)$.*

(2) *For any* $Q \in Q(S)$ *we have that* $Q\Gamma M\Gamma Q = Q$.

(3) *If* $Q \in Q(M)$ *and* $Q \subseteq S$, *then* $Q \in Q(S)$

(4) $Q(M)$ *is an enlargement of* $Q(S)$.

We now turn to the bahviour of enlargements under homomorphisms.

Theorem 2.6. (1) *Let* M *be an enlargement of* S *and let* $h: M \to N$ *be a surjective homomorphism,* N *is a* $\Gamma-$*regular semigroup. Then* N *is an enlargement of* $h(S)$

(2) *Let* M *be an enlargement of* S *and* S *be an enlargement of* N. *Then* M *is an enlargement of* N.

In $\Gamma-$semigroups, Green's analogue realtions are defined. Two problems arise for enlargements of $\Gamma-$semigroups:

1. If we have an enlargement S of a $\Gamma-$semigroup M, which is the relationship between green's relations $\mathcal{L}, \mathcal{R}, \mathcal{H}, \mathcal{D}, \mathcal{J}$ in M and Green's relations $\mathcal{L}, \mathcal{R}, \mathcal{H}, \mathcal{D}, \mathcal{J}$ in S ?

2. If S is an enlargement of M and we have $\mathcal{J}(M) = \mathcal{D}(M)$, does $\mathcal{J}(S) = \mathcal{D}(S)$ hold ? What about the converse ?

Conclusion

In this paper we have studied Γ-regular semigroups in general and we have done a special study on enlargements of Γ-regular semigroups which constitutes a novelty in this paper an will be the subject of further study. We have treated some important issues on Γ-regular semigroups and we have given some basic properties on enlargements of Γ-regular semigroups rasing some problems that naturally arise related to them. All the notions we presented here and the prop[erties associated with them help us to define the structure of Γ-regular semigroups.

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Evaluation of the performance of health service under the influence of environmental pollution using the DEA method

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Abstract

This study analyses the evaluation of health service performance related to the negative effects of environmental pollution that causes premature death as well as the years of life lost.
The average pollution of the natural environment (PM2.5) for the countries of the European region included in the study is 18.5 (micrograms per cubic meter) (average for 2014-2019) and 17.77 (micrograms per cubic meter) in 2021 (the post-Covid period).
The average of premature death related to environmental pollution is 111.3 (rate) and 110.47 (rate) respectively for the period 2014-2019 and the year 2021, while the average of years of life lost caused by environmental pollution is 1216.57 (rate) and 1102.21 (rates) respectively for both periods. The above indicators require special and in-depth analyzes and studies with the aim of improving performance in increasing health service indicators. The study included 19 countries in the European region (5 countries in the Western Balkans and 14 other countries). The evaluation of the health performance was done using the DEA method (non-parametric method) with goals oriented according to the harmonization and special groups between different variable input-output factors. The study presents the results by identifying the distinct influences of the factors for each country in the region together with the corresponding conclusions according to each grouping. The study presents an analysis related to both time periods, (2014-2019 before Covid and for the year 2021 after Covid).

Keywords: Evaluation, performance, health service, environmental pollution, DEA method.

Introduction

In real life, the human population in terms of well-being and health is daily faced with the open exposure of environmental pollution. These environmental pollutions have very negative effects on years of life lost. The assessment of the health performance in the continuity of the progress and the responsive managerial effectiveness of the governments and instances should be measured and evaluated in the comparative regional aspects to draw attention to the problematic recognitions and the review of the visionary picture for the increase of health care. The aim of the study is to measure and evaluate the general picture that appears for the effectiveness of the health performance, for 19 countries in the European region (out of 47 independent countries that Europe has) and also in the Western Balkans in relation to the regional unity in this relative competitiveness assessment. The selection of the sample of 19 countries in the study was based on their regional geographic proximity and the parameters of social, economic and health development. In this paper, we also aim to identify the evaluations of positive experiences as a whole as well as between EU and non-EU member countries, bringing a performance evaluation approach based on the application of the DEA method. Performance evaluations and the measurement of relative technical efficiency according to each goal are first related to the optimization of the growth of health care indicators. The study covers the time period 2014-2019 (pre-Co-

vid 19) and 2021 post-Covid to see and evaluate the progress and effectiveness of the health care response. In the values of the variable sizes of the factors, there is a linear correlative relationship between them. In order to clearly evaluate the significance of the impact of variable factors related to health performance, the study aims to:

- To identify and evaluate the health service performance by measuring the relative technical efficiency related to the negative effects of environmental pollutants for each country in the region.
- To distinctly evaluate the influence of each variable factor based on the application of the DEA method.
- To reflect the evaluations for each time period by giving the rankings for each applied model with the corresponding conclusions.

In relation to the goals presented above, the following hypotheses are also given:
H1: Distinct influences are observed between countries within the region as well as between EU and non-EU member countries.
H2: The impacts on the evaluation of the health performance differ conditioned by the density of the dimensionality of the number of doctors, nurses per 10,000 inhabitants in the evaluation of the relative technical efficiency measurement between countries and regions.
H3: The assessment of health performance is clearly felt between countries and regions as shown by the measurement of technical efficiency for the two different time periods.
The interest of the study is also connected with the submission of relevant conclusions and suggestions as well as with the truth of the submitted hypotheses, to attract the managerial attention of the respective institutions. The analysis of the study is given by evaluating the results of each presented model related to the input/output groups, which are conditioned and with the correlative relations between the variable factors presented in Table 2. The presentation of this study constitutes an alternative method for a more cognitive evaluation study for the impacts of each factor related to health care indicators for reducing the negative effects of environmental pollutants. The study contributes to applications for the evaluation of the improvement of the growth of health care indicators.

Literature review

The conventional models of the DEA method, presented for the first time in 1978 [1] and their further "enrichment" are given in the various applications implemented in many areas from social, economic, business life, etc. The DEA method accepts the preliminary assumption related to the tendency to decrease inputs and the tendency to expand outputs by evaluating the efficient target frontier for each DMUs presented with different linear programming models. By means of DEA, the best practices in the relevant activities being studied are also identified. In this study, the following are accepted as outputs: premature death and years of life lost, which can be "called" unwanted outputs, according to DEA the outputs should have an increasing tendency, but not decreasing. [2] treats the invariance of efficiency by presenting models of transformation of variables (see methodology). The invariance of the efficiency by transforming the unwanted variables has been addressed by [3] and [4]. [5] offers different approaches for dealing with values for dealing with non-positive input and/or

non-positive output values.
Analysis and studies for improving the performance of the health service related to environmental pollution, mortality by measuring the productivity of the health care service by applying the DEA method are numerous. Thus, in [6] it deals with the identification of explanatory variables that are included as inputs and outputs related to mortality. The evaluation of air pollutants and the impact on human health for the reduction of mortality can be seen in [7]. [8] evaluates the measurement of productivity of health care services under environmental constraints. [9] deals with improving efficiency in improving air quality standards. An updated assessment of the associated environmental pollution that leads to loss of life and that requires improved health care is addressed in [10]. The application of DEA in conjunction with other mathematical methods for the study of impacts on improving health performance related to premature death is addressed in [11]. Various applications in the invariance of efficiency have been treated by [12], [13].

Methodology

The study and evaluation of the performance in the health service sector remains a constant concern and interest of researchers and managers to increase the care of the well-being of human health. The identification of the role of the distinguished factors and their influencing effectiveness in addition to their selection is an object of study and analysis addressed by many applications by different authors. The field of research has used parametric and non-parametric approach models. The methods of non-parametric approaches with linear programming, such as DEA, remain of interest. Based on the goals and hypotheses presented above and based on theoretical experiences, the selection of variable factors was made, showing their respective correlative relations in the construction of models according to groups (input x output). Since the variables in their observed values do not have the same orientation of the return to scale (increasing, decreasing or constant), the VRS (Variable return to scale) model is also used to evaluate the scale efficiency to better recognize the sources of inefficiencies. In the paper, both basic DEA models are applied to enable and respond to the improvement of the optimization in the health care indicator. According to DEA "A DMU is fully efficient if and only if it is not possible to improve any input or output without worsening any other input or output". This is also known as Pareto Koopmans efficiency [14]. The implementation form of this definition was given later by Farrell using the term technical efficiency and then presented in DEA. In the models applied to evaluate and measure the relative technical efficiency, the values of the variable quantities were previously normalized, which is based on these primary goals:

- The direct impact of environmental pollution on loss of life is done in terms of comparative assessments between countries, regions and time periods.
- The measurement of the relative technical efficiency is done to evaluate the performance of the impact of the density of the medical staff in the reduction of mortality to clearly show the comparison between countries, regions and time periods.
- Performance evaluation is done in the harmonization and grouping between input and output factors given through certain models.
- Evaluation of the comparative performance and the respective impacts of the fac-

tors distinguished and according to the time periods by presenting the rankings according to each model and the correlative relation (Spearman coefficient) conditioned by the two time periods.
DEA, CRS and VRS models with input orientation that are applied are given [14]:

CRS Model:

$\min \theta$
S.t $\sum_{j=1}^{n} \lambda_j x_{ij} \leq \theta x_{io}$, i = 1,2,…,m;
$\sum_{j=1}^{n} \lambda_j y_{rj} \geq y_{ro}$, r = 1,2,…,s;
$\lambda_j \geq 0$, j=1,2,…,n

VRS model:
$\min \theta$
S.t $\sum_{j=1}^{n} \lambda_j x_{ij} \leq \theta x_{io}$ i = 1,2,…,m;
$\sum_{j=1}^{n} \lambda_j y_{rj} \geq y_{ro}$ r = 1,2,…,s;
$\sum_{j=1}^{n} \lambda_j = 1$
$\lambda_j \geq 0$ j=1,2,..,n

In applied DEA models, input and output values are given in matrix

$$X=\begin{bmatrix} x_{11} & x_{21} & \dots & x_{m1} \\ x_{12} & x_{22} & \dots & x_{m2} \\ \dots & \dots & \dots & \dots \\ x_{1j} & x_{2j} & \dots & x_{mj} \end{bmatrix}, \quad Y=\begin{bmatrix} y_{11} & y_{21} & \dots & y_{r1} \\ y_{12} & y_{22} & \dots & y_{r2} \\ \dots & \dots & \dots & \dots \\ y_{1j} & y_{2j} & \dots & y_{rj} \end{bmatrix}; \qquad j = 1,2,..,19$$

These values of variable quantities according to each column are normalized to avoid negative impacts on DEA, when we have large differences between the values of different DMUs [12], [13]. To normalize the values, first calculate the average value for each input and output column, =and obtain the normalized value MNor= .
Since in DEA the assumption is accepted that inputs are reduced and outputs are expanded, but for outputs that we do not want to be expanded, but to be reduced while keeping the efficiency unchanged [2] each value of the "unwanted" output is multiplied by -1 and a value is found suitable η which enables all negative values to be positive. So we have = - + η (transformed value of the unwanted output), where η = max {} + 1.Then the model [2] is used:

S.t $\sum_{j=1}^{n} \lambda_j y_{rj}^{g} \geq h y_{r0}^{g}$
$\sum_{j=1}^{n} \lambda_j \bar{y}_{rj}^{b} \geq h \bar{y}_{r0}^{b}$
$\sum_{j=1}^{n} \lambda_j x_{ij} \leq x_{i0}$
$\sum_{j=1}^{n} \lambda_j = 1$
$\lambda_j \geq 0$, j=1,…,n

max
This model also enables the calculation of slacks for optimization and efficiency improvement.
Since several models are used for measuring and evaluating the relative technical efficiency, for the evaluation of the overall efficiency, the harmonic relative technical efficiency is evaluated, = . The evaluation of the harmonic relative technical efficiency is done separately for each period and then the relative technical efficiency is evaluated by taking the periods together, after calculating the geometric mean of the harmonic efficiencies =. In this way, the overall performance is evaluated for both time periods for each DMU, giving the respective summary ranking.

Numerical application

19 countries of the European region are included in the study: (14 EU member countries and 5 non-EU member countries) Albania (ALB), Bosnia and Herzegovina (BIH), Bulgaria (BGR), Croatia (HRV), Czechia (CZE), Estonia (EST), Greece (GRC), Hungary (HUN), North Macedonia (MKD), Poland (POL), Romania (ROU), Serbia (SRB), Montenegro(MNE), Lithuania(LTU), Latvia (LVA), Slovenia (SVN), Slovak Republic (SVK), Cyprus (CYP), Malta (MLT) for the period 2014-2019 (the period before Covid 19) and the year 2021 (the period after Covid). The selected variable factors are: PM2.5 air pollution, mean annual exposure (micrograms per cubic meter)(A) [Data from database: World Development Indicators Last Updated: 12/18/2023 (2014-2019) and for the year 2021 from World Air quality Report 2021 , IQAir], Density of medical doctors (per 10 000 population) (Doctors) (2013-2021) [D], Density of nursing and midwifery personnel (per 10 000 population) (2013-2021) [E] [Data from database: World Health Statistics 2020], Premature deaths due to exposure to fine particulate matter (PM2.5) (per 100 000 inhabitants) [B] [source: EEA], Health impacts of air pollution, Years of life lost (per 100 000 inhabitants) [C] [source: EEA (2014-2019) and for the year 2021 from European environment agency], Health Care Index [G] [15]. Table 1 presents the values of variable quantities

Table1. Values of variable quantities for both time periods

DMU	Time period : Years 2014-2019 (Average value)					Time period : Year 2021					
	A	B	C	D	E	A	B	C	D	E	G
ALB	18.96	158.67	1702.67	18.8	58.3	12.5	164	1308	18.8	58.3	50.7
BIH	30.43	172.00	1780.33	21	56	27.8	209	2107	21	56	53.5
BGR	20.01	180.67	1934.67	41.7	47.4	16.3	158	1443	41.7	47.4	56.1
HRV	18.77	105.33	1098.83	34.7	80.9	25.3	96	921	34.7	80.9	64.2
CZE	17.16	85.67	963.17	54.7	92	13.9	81	822	54.7	92	75.4
EST	6.46	14.17	169.83	38.6	111.8	5.9	7	84	38.6	111.8	72.8
GRC	14.91	116.67	1207.67	63.1	37	19	95	918	63.1	37	57
HUN	16.75	116.33	1337.67	32.9	66	15.5	107	1155	32.9	66	51.6
MKD	31.74	224.83	2235.17	28.3	37.4	25.4	255	2115	28.3	37.4	56.5
POL	22.78	113.33	1454.00	37.1	67.6	19.1	20	1372	37.1	67.6	58.3

ROU	15.82	112.17	1295.00	29.7	73.7	15.3	103	1111	29.7	73.7	56.1
SRB	26.52	186.50	1932.33	36.8	71.9	25.5	217	1938	36.8	71.9	51.6
MNE	22.20	147.17	1573.50	27.7	56.8	35.2	174	1549	27.7	56.8	51
LTU	11.16	72.17	828.00	49.5	96.6	13.2	77	779	49.5	96.6	71
LVA	13.15	64.50	749.00	33.5	44	10.1	75	755	33.5	44	62
SVN	17.21	69.50	802.50	32.8	105.4	13.3	56	543	32.8	105.4	65.3
SVK	18.57	85.50	1052.33	46.3	78.5	16	98	1060	46.3	78.5	60.9
CYP	15.71	50.50	535.00	53.8	46.3	14.8	70	536	53.8	46.3	52.7
MLT	13.10	39.00	463.17	54.9	144	13.5	37	426	54.9	144	67.1
Avg.	18.50	111.30	1216.57	38.73	72.19	17.77	110.47	1102.21	38.73	72.19	59.67
STDEV	6.10	54.20	542.81	11.84	27.35	6.92	66.46	546.14	11.84	27.35	7.54

For a more detailed study analysis based on DEA, the variable factors were selected and for a clearer comparison in the evaluation of health performance with the measurement of relative technical efficiency, the following groupings of input-output relations were built, supported by the coefficients of the respective correlations of inputs and outputs which are given in Table 2.

Table 2. Models according to the grouping of DEA variables (input x output)

Model 1			Model 2		
Inputs	Outputs	Correlation coefficient	Inputs	Outputs	Correlation coefficient
PM2.5 air pollution, mean annual exposure (micrograms per cubic meter)	Premature deaths due to exposure to fine particulate matter (PM2.5) YLL per 100,000 inhabitants attributable to exposure to PM2.5, (YEARS OF LIFE LOST)	(T1): = 0.862 = 0.857 r(= 0.991 (T2): = 0.677 = 0.746 r(= 0.886	PM2.5 air pollution, mean annual exposure (micrograms per cubic meter) Density of medical doctors and nursing and midwifery (per 10 000 population)	Premature deaths due to exposure to fine particulate matter (PM2.5) YLL per 100,000 inhabitants attributable to exposure to PM2.5, (YEARS OF LIFE LOST)	(T1): = 0.862 = 0.857 = -0.701 = -0.699 r(= 0.991 (T2): = 0.677 = 0.746 = -0.654 = -0.680 r(= 0.886

Model 3			Model 4		
Inputs	Outputs	Correlation coefficient	Inputs	Outputs	Correlation coefficient
Density of medical doctors (per 10 000 population) Density of nursing and midwifery personnel (per 10 000 population)	Premature deaths due to exposure to fine particulate matter (PM2.5) YLL per 100,000 inhabitants attributable to exposure to PM2.5, (YEARS OF LIFE LOST)	(T1): = -0.495 = -0.507 = -0.615 = -0.607 r(= 0.991 (T2): = -0.493 = -0.530 = -0.560 = -0.575 r(= 0.886	PM2.5 air pollution, mean annual exposure (micrograms per cubic meter) Density of medical doctors and nursing and midwifery (per 10 000 population)	Premature deaths due to exposure to fine particulate matter (PM2.5) YLL per 100,000 inhabitants attributable to exposure to PM2.5, (YEARS OF LIFE LOST) Health Care Index	(T2): = 0.677 = 0.746 = -0.520 = -0.654 = -0.680 = 0.748 r(= 0.886 r(= -0.614 r(= -0.649

Note: – the first number indicates the input and the second number indicates the output, and so on for the others.

According to the built models presented above, the corresponding goals are also given:

The goal at Model 1 [x (: to evaluate the performance of the health service in dealing with the negative impact of the PM2.5 pollutant in reducing premature death and reducing years of life lost from this impact. To be given according to the evaluation of the relative technical efficiency and the differences in the evaluation of the efficiencies and in the relevant groupings of EU and non-EU member countries. The scale efficiency is evaluated for better identification of inefficiencies for this grouping.

The goal at Model 2 [() x (): To evaluate and evidence the performance of the health service for each DMU conditioned by the impact of PM2.5 and the impact of the distribution density of doctors plus nurses per 10,000 inhabitants in reducing mortality.

The goal at Model 3 [() x (): To directly evaluate the effectiveness of doctor and nurse densities in health performance to reduce mortality, as a result of the negative effect of environmental pollutants.

The goal at Model 4 [() x (,]: To evaluate the performance of the health service in reducing mortality and increasing the health care index for the decision-making unit (DMU). The results obtained for both periods are given in Table 3 and Table 4:

Table 3. The obtained results of efficiency evaluations and rankings (Period (T1): 2014-2019)

DMU	Model 1		Model 2		Model 3	
	Rank.	SE	Rank.	SE	Rank.	SE
ALB	15	0.340 > 0.318	15	0.963 > 0.435	8	1.000 > 0.653
BIH	17	0.212 < 0.255	16	0.904 > 0.372	16	0.977 > 0.488
BGR	16	0.323 > 0.214	17	0.843 > 0.290	17	0.814 > 0.317
HRV	12	0.344 < 0.570	12	0.689 < 0.756	7	0.789 < 0.840
CZE	7	0.376 < 0.662	11	0.662 < 0.802	15	0.550 < 0.938
EST	1	1.0001.000	1	1.000 1.000	1	1.000 1.00
GRC	9	0.433 < 0.516	8	0.841 > 0.668	5	1.000 >0.780
.HUN	11	0.385 < 0.518	10	0.784 > 0.679	9	0.780 < 0.836
MKD	19	0.203 > 0.006	19	1.000 > 0.009	19	1.000 > 0.009
POL	13	0.283 < 0.532	13	0.720 > 0.717	13	0.731 < 0.825
ROU	10	0.408 < 0.537	9	0.800 > 0.689	6	0.862 >0.837
SRB	18	0.244 > 0.186	18	0.684 > 0.255	18	0.658 > 0.320
MNE	14	0.291 < 0.372	14	0.871 > 0.514	14	0.887 > 0.625
LTU	3	0.578 < 0.726	4	0.825 > 0.805	11	0.640 < 0.954
LVA	4	0.491 < 0.762	1	1.000 1.000	1	1.000 1.000
SVN	6	0.375 < 0.739	5	0.678 < 0.906	4	0.946 > 0.919
SVK	8	0.348 < 0.663	7	0.675 < 0.846	12	0.650 < 0.938
CYP	5	0.411 < 0.828	3	1.000 > 0.912	1	1.000 1.000
MLT	2	0.493 < 0.883	6	0.646 < 0.951	10	0.647 < 0.979
		25.63 %		51.55 %	61.21 %	
%		20.25 %		43.95 %	53.76 %	

Table 4. The obtained results of efficiency evaluations and rankings (Period (T2): 2021)

DMU	Model 1		Model 2		Model 3		Model 4	
	Rank.	SE	Rank.	SE	Rank.	SE	Rank.	SE
ALB	13	0.472 > 0.398	10	0.983 > 0.607	7	1.000 > 0.816	7	0.983 > 0.828
BIH	17	0.212 > 0.189	17	0.892 > 0.293	17	0.975 > 0.357	6	0.892 < 0.925
BGR	15	0.362 < 0.394	15	0.839 > 0.561	15	0.846 > 0.590	8	0.839 < 0.924
HRV	14	0.233 < 0.643	11	0.659 < 0.900	9	0.816 < 0.920	14	0.769 < 0.894
CZE	7	0.424 < 0.703	13	0.652 < 0.884	14	0.580 < 0.971	9	1.000 > 0.760
EST	1	1.0001.000	1	1.0001.000	1	1.0001.000	1	1.0001.000
GRC	12	0.311 < 0.647	6	0.761 < 0.905	1	1.0001.000	12	0.761 < 0.933
HUN	11	0.381 < 0.598	7	0.769 < 0.838	10	0.829 < 0.905	16	0.769 < 0.847
MKD	19	0.232 > 0.004	19	1.000 > 0.007	19	1.000 > 0.007	1	1.0001.000
POL	8	0.309 < 0.948	3	1.000 > 0.965	1	1.0001.000	4	1.000 > 0.965
ROU	9	0.386 < 0.614	8	0.740 < 0.856	8	0.903 > 0.896	15	0.740 < 0.912

SRB	18	0.231 > 0.157	18	0.664 > 0.231	18	0.652 > 0.260	19	0.664 < 0.867
MNE	16	0.168 < 0.329	16	0.840 > 0.494	16	0.874 > 0.563	11	0.840 < 0.869
LTU	5	0.447 < 0.719	9	0.674 < 0.893	12	0.639 < 0.965	10	0.868 > 0.847
LVA	2	0.584 < 0.727	1	1.0001.000	1	1.0001.000	1	1.0001.000
SVN	4	0.444 < 0.803	5	0.726 < 0.977	6	0.988 > 0.956	13	0.727 < 0.975
SVK	10	0.369 < 0.635	14	0.628 < 0.869	13	0.634 < 0.931	17	0.628 < 0.980
CYP	6	0.399 < 0.778	4	1.000 > 0.899	1	1.0001.000	5	1.000 > 0.899
MLT	3	0.437 < 0.880	12	0.591 < 0.996	11	0.643 < 0.982	18	0.591 < 0.996
24.83 %			48 %		53.63 %		101.9 %	
%	19.57 %		40.48 %		46 %		102.6 %	

From the results obtained (by measuring the relative technical efficiency) for each group it is noted that in Model 1 for both periods the Spearman rank correlation coefficient is ϱ = 0.942, for Model 2 it is ϱ = 0.768, and for Model 3 it is ϱ = 0.837. This shows that the two periods have almost the same ranking picture with not big changes in the ranking positions of the decision-making units. Also, for the 5 decision-making units of the Western Balkans, the average value of the relative technical efficiency according to the models in relation to the average value of the whole as well as in relation to the average value of the EU countries is low in percentage for the first three models. Thus, for the first model for the period 2014-2019, these ratios have the values of 25.63% and 20.25%, as well as for the year 2021, these ratios have the values of 24.83% and 19.57%. The same can be said for Model 2 and Model 3. This shows that the performance of the health service in the countries of the Western Balkans is weak in relation to other countries that are members of the EU. The result obtained from the geometric mean of the two periods of efficiency values = , where and are respectively the averages of the harmonic efficiencies of each period, which shows this ranking position: 1(EST), 2(LVA), 3(CYP), 4(MLT), 5(SVN), 6(LTU), 7(CZE), 8(ROU), 9(POL), 10(GRC), 11(SVK), 12(HUN), 13(HRV), 14(ALB), 15(BGR), 16(MNE), 17(BIH), 18(SRB), 19(MKD). The values of the ratios in percentage of the average value of the relative technical efficiency of the countries of the Western Balkans to the whole and the EU member countries are: = 35.8% dhe % = 29.15%. So, in summary for both periods, the countries of the Western Balkans are positioned in the last countries and the effectiveness of the health service performance of these countries is the lowest in relation to the EU member countries. In Table 3 and Table 4, the evaluations for each model are given and it is found that the countries of the Western Balkans have inefficient values. Based on the DEA method, where from the above tables it is found that if we have: a) and and SE it is said that the source of inefficiencies is from managerial inefficiency. Thus, in Albania, for each model, it is found that the source of its inefficiency is managerial inefficiency. In general, this is the result obtained for every country in the Western Balkans. Table 3 and Table 4 provide answers for each case.

Conclusions

The paper presents a study of the evaluation of the health performance in mitigating the negative effects of the influence of natural environment pollutants that bring mortality consequences. The paper also evaluates the impact of the role of each vari-

able factor with an impact on the level of health service. The paper provides a more explanatory picture of health service performance for both periods by measuring relative technical efficiencies based on the DEA method. The paper presents the verification of the hypotheses where the higher the environmental pollution, the higher the mortality. The paper showed significant differences between countries and regions for the negative effects of environmental pollutants on loss of life. Thus, in the Western Balkans as a region (non-member countries of the European Union), measurement of relative technical efficiency showed that it is lower than the EU member countries and the average of the entire group of 19 countries. For the period 2014-2019, for each microgram per cubic meter of PM2.5, the average coefficient of premature death is 6.8, while for the years of life lost it is 71 for the countries of the Western Balkans, while for the EU countries these coefficients are respectively 5.5 and 62.79, so the negative effect of environmental pollution is higher in the countries of the Western Balkans. Even for 2021, these coefficients respectively for the countries of the Western Balkans are 8.06 and 71.33, while for the EU member countries they are 5.1 and 56.45. The distribution density per 10,000 inhabitants of doctors (2013-2021) is 26.52 and of nurses is 56 for the Western Balkans, while in EU countries these figures are respectively 43.09 and 77.96. This shows that the impact of doctor and nurse density, even from the performance evaluation results according to the models, has its own role in improving health service indicators. The positive experience evaluated for each country according to the studied groups shows a great evaluation of the health care index, that the magnitude of the values of this indicator given in Table 1 as well as the performance results of Model 4 fully prove this conclusion. The results obtained in the study suggest to better evaluate the factors that lead to the increase of the environmental pollution indicator by recognizing and evaluating the positive experience. The use of the DEA method is a very efficient instrument in the evaluation of health performances in a comparative aspect. Managerial institutions conditioned by the assessment table can revise the development of clearer visions for the growth of health service, which will be evaluated continuously, conditioned by diagnosis, service treatment and the relevant support networks.

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Social rights and the 1998 Constitution

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Abstract

Social rights usually mean the rights of citizens to receive some services from the state apparatus. These rights were born in the concept of the welfare state to rebalance social inequalities. After the fall of the communist regime, the constitution of 1976 was abolished and the law no. 7491, dated 29.4.1991 on the Main Constitutional Provisions, was adopted, which contained the essential provisions on the organization of the State, leaving unregulated other very important constitutional areas such as: freedoms and human rights, organization of judicial and local power, etc. Fundamental rights and freedoms in general and social rights in particular do not find a place in the constitutional law of 1991. This gap was later filled by implementing the Constitutional Law with fundamental human rights and freedoms in 1993. With the adoption of the Constitution in 1998, basic human rights and freedoms, and especially social rights, find a wide regulation in it. This Constitution, which in its preamble provides for the determination to build a social state and the commitment to protect human dignity and personality, as well as for the prosperity of the entire nation, well-being and social solidarity. Furthermore, this constitution in its basic principles, in article 3 provides, among other things, that social justice is the basis of this State, which has the duty to respect and protect it. In this work, a general panorama will be made first on the birth and development of social rights and their constitutionalism. In the following, the author will deal with social rights in the constitutional and doctrinal dimension, not forgetting the jurisprudence of the constitutional court regarding their implementation in reality.

Keywords: *Constitutionalism, social justice, right to health, right to education, right to housing*.

1. The birth and development of social rights

The constitutional doctrine has not reached a univocal concept regarding the definition of social rights and has stopped more to highlight the elements and changes of these rights from classical rights.[1] Social rights were born after personal rights because in modern constitutionalism, only the personal rights of the person were initially foreseen.[2] Social rights were affirmed later than personal and political rights. The latter were affirmed in Europe in the 18th[3] century until the end of the first world war. These rights were intended to guarantee the protection of the individual from the non-interference of the public authorities, guaranteeing the person a sphere within each to decide freely.[4] Otherwise, these were called negative freedom or freedom from the State. Social rights usually mean the rights of citizens to receive some services from the state apparatus. These rights were born in the concept of the social state.[5] More specifically, social rights include all those rules through which the State

[1] Polito F (2017), *Diritti sociali*, Enciclopedia Treccani Diritto on line.
[2] Caretti p, Barbieri g, *I diritti fondamnetali liberta e diritti sociali*, , G. Giappichelli, torino, 2017, f.504.
[3] Within the concept of the liberal state.
[4] Grandi G., *"Diritti sociali e diritto del lavoro: breve storia di un viaggio verso la globalizzazione delle economie"* ne *Rivista Pace diritti umani*, n.3 (2006).
[5] Bin R, Pitruzzella G, *Diritto Costituzionale*, G. Giappichelli, Torino, 2012, f. 512.

intervenes to rebalance social inequalities through which individuals or citizens participate in the benefits of community life by enjoying the right to certain benefits from public authorities.[6] Equality is a necessary condition with freedom, in this sense social rights are not at all in contrast with negative freedoms because they aim to concretize formal legal equality.[7] Formal equality determines that equal situations should be treated equally and different situations differently. So formal equality means the equality of all citizens before the law. This concept in the Constitution of the Republic of Albania is found in its article 18.

The equality of all citizens before the law includes those who approve or apply laws with the aim of avoiding the abuse of power by public entities to the detriment of citizens. The essence of the principle of equality prohibits the State from issuing decisions that are discriminatory due to gender, religion, ethnicity, political beliefs, economic status, etc. This principle is implemented in several provisions of our Constitution, such as the equality of religious communities,[8] the moral and legal equality of spouses, the equal enjoyment of the right to health care,[9] the equality of the right to education,[10] the equality of the right to work,[11] etc. It should be emphasized that we are not dealing with an absolute ban. Why? Because the Constitution itself provides for some exceptions regarding children, pregnant women, young people in poor economic conditions to study at the expense of the State, etc. The essence of the principle of equality does not imply an absolute prohibition of the legislator to provide for differentiations for different reasons, [12] but it prohibits making them a reason for discrimination in the enjoyment of different rights and freedoms. It allows positive or rewarding legislation if and to the extent that it is necessary to prevent sex, language, ethnicity, etc., from becoming elements of de facto discrimination, i.e. a reason for a social handicap, here we are dealing with the principle of substantial equality.[13]

The principle of substantial equality aims to remove the economic and social obstacles that hinder the equal enjoyment of rights and freedoms.[14] This apparent contrast between the two principles of equality has been highlighted as an irreconcilable contrast between the liberal state[15] and the social state.[16] The two principles of equality complement and limit each other: the principle of substantial equality prevents exceeding the strictness of formal equality, in some way la *dura lex* that does not allow exceptions in the name of justice, while formal equality prevents positive actions to be taken source without justice.[17]

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[6] Grandi G, *"Diritti sociali e diritto del lavoro: breve storia di un viaggio verso la globalizzazione delle economie"* ne *Rivista Pace diritti umani*, n. 3 (2006).

[7] Caretti P, Barbieri G, *I DIRITTI FONDAMNETALI Liberta e Diritti Sociali*, , G. Giappichelli, Torino, 2017, f. 504.

[8] Paragrafi i trete i nenit 10, *Kushtetuta e Republikes se Shqiperise* miratuar me ligjin nr. 8417, date: 21.10.1998.

[9] Paragrafi i pare, neni 55, *Kushtetuta e Republikes se Shqiperise* miratuar me ligjin nr. 8417, date: 21.10.1998.

[10] Paragrafi i pare, neni 57, *Kushtetuta e Republikes se Shqiperise miratuar* me ligjin nr. 8417, date: 21.10.1998.

[11] Shih nenin 49, *Kushtetuta e Republikes se Shqiperise miratuar* me ligjin nr. 8417, date: 21.10.1998.

[12] Gender, race, education, etc.

[13] Bin R, Pitruzzella G*, Diritto Costituzionale*, G. Giappichelli, Torino, 2012, f. 455.

[14] Idem.

[15] Based on the formal equality of individuals.

[16] Which aims at substantial equality.

[17] Bin R, Pitruzzella G*, Diritto Costituzionale*, G. Giappichelli, Torino, 2012, 455-457.

2. **Constitutionalization of social rights**

The crises and tensions that developed within the liberal state at the end of the 19th century and the beginning of the 20th century were irreversible. In this context, the conflict between the needs of the market and the demand for substantial equality on the part of those classes excluded from economic wealth has led to the spread of the principle of social solidarity and the evaluation of positive freedoms within which social rights are concretized.[18] With the decline of liberalism and the totalitarian regimes that marked Europe between the two wars, the transformation of the liberal state into a social state took place, and social rights were added to the typical liberal rights.[19] Article 20 of the German constitution provides that the Federal Republic of Germany is a democratic, federal and social state. This constitution does not contain a catalog of social rights. The preamble of the French Constitution refers to the Declaration of the Rights of Man and Citizens (of 1789) and the preamble of the Constitution of 1946, which defines a series of principles for the protection of the rights of children, the disabled and workers.[20] In the Italian Constitution, the second chapter of the first part is entitled Ethico-Social Relations and the syntax of social rights is introduced into the Constitution with the constitutional reform of 2001. Even the Constitution of Spain in its article 1 declares Spain as a social and democratic state and affirms the protection of the dignity of the person, the right to education, health, work and a dignified home. While, in Albania, the category of social rights is foreseen in the fourth chapter of the second part of the Constitution, which concretizes the principle of fundamental equality and the full development of the human personality. This category of rights includes: the right to work,[21] education, health, the right to housing, the right to pension, etc. It must be said that social rights are applied not only at the national level but also at the international level.

The universal declaration of human rights in its article 22 provides for the right to work, the right to education, the right to trade union, the right to social assistance, etc.[22] Within the framework of the Council of Europe, the Social Charter of the Council of Europe[23] provides for the right to education, the right to work,[24] the right to health, social and legal protection from poverty and social exclusion,[25] the rights of

[18] Gaetano Zilio Grandi, *"Diritti sociali e diritto del lavoro: breve storia di un viaggio verso la globalizzazione delle economie"* ne *Rivista Pace diritti umani*, n. 3 (2006).

[19] Idem.

[20] Polito F (2017), *Diritti sociali*, Enciclopedia Treccani Diritto on line.

[21] The right to work is one of the most important social rights that contributes to personal and social well-being. The Constitution of the Republic of Albania in its article 49 provides for the right of everyone to earn means of income by work respecting the legislation in force, which the person chooses and accepts. The basic means to protect the rights of women workers are the freedom of trade unions and the right to strike. A trade union is a free and spontaneous association that unites members of a category of workers or employers with the aim of protecting their collective professional interests, while a strike is an instrument of trade union struggle that consists of collective abstinence from work, which is generally promoted by trade unions and implemented from the employees. In this paper, the author will not discuss at length the right to work, the freedom of trade unions and the right to strike, because they were discussed at the International Scientific Conference, *Globalization and Internationalization: Benefits and Challenges of Collaboration,* on December 21, 2023, and the papers presented in that cafe are published in the scientific magazine of UAMD.

[22] Shih nenin 22, "*Deklarata Universale e te Drejtave te Njeriut*."

[23] Approved in 1961 and revised in 1996 in Strasbourg, it entered into force in 1999.

[24] *Karta Sociale Europiane*, e rishikuar, ne piken 1 te pjeses se para parashikon se: *Anyone wants this opportunity to earn his living in a job he entered freely.*

[25] *Karta Sociale Europiane*, e rishikuar, ne piken 30 te pjeses se para parashikon se: *Everyone has the right to protec-*

persons with disabilities and social protection for the elderly,[26] the right to housing,[27] the right of children and pregnant women to adequate economic, legal and social protection, etc.[28] Regarding the European legal system, the Charter of Fundamental Rights of the European Union[29] in its preamble provides that the European Union is founded on indivisible and universal values of human dignity, freedom, equality and solidarity. Specifically, this Charter establishes the right of employers to information and consultation,[30] the prohibition of work for minors and the protection of young people in the workplace,[31] the protection of the family,[32] the right to have access to assistance and social services,[33] health protection,[34] the right to education,[35] the right of children and the elderly,[36] etc. To conclude, the European Union Treaty, in the third paragraph of Article 3, provides for the provision of full employment and sustainable development in a social market economy, the fight against social exclusion, discrimination and the promotion of justice and social protection.[37] The arrival of mass democracy[38] was not accompanied in some countries by the acceptance of pluralist principles, tolerance of political parties and the transformation of liberal institutions. The crisis of liberal institutions led to the creation or affirmation of state models based on the rejection of pluralism and the identification of a single party with the State. As examples we can mention the case of Italy,[39] Germany[40] and the Soviet Union.[41] The model of the state that was born between the two wars (where power was concentrated in the party-state) was exported to several socialist countries, including Albania.

The socialist vision of the State was totally opposed to pluralist democracy. It was based on the denial of political pluralism and concentrated all power in the communist party. The state and the Constitution were nothing but appendages of the

tion against poverty and social exclusion.

[26] *Karta Sociale Europiane*, e rishikuar, ne piken 23 te pjeses se para parashikon se: *Every elderly person has the right to social protection.*

[27] *Karta Sociale Europiane*, e rishikuar, ne piken 31 te pjeses se para parashikon se: *Everyone has the right to housing.*

[28] *Karta Sociale Europiane*, e rishikuar, ne piken 17 te pjeses se para parashikon se: *Children and young people have the right to adequate economic, legal and social protection.*

[29] It was solemnly announced for the first time on December 7, 2000 in Nice and for the second time with an adapted version on December 12, 2007 in Strasbourg by the Parliament, the Council and the European Commission. This Charter has the same legal force as the treaties and for this reason it is completely binding for the European institutions and for the member states.

[30] Shih neni 27, "*Karta e te Drejtave Themelore te Bashkimit Evropian*."

[31] Shih neni 32, "*Karta e te Drejtave Themelore te Bashkimit Evropian*."

[32] Shih neni 33, "*Karta e te Drejtave Themelore te Bashkimit Evropian*."

[33] Shih neni 34, "*Karta e te Drejtave Themelore te Bashkimit Evropian*."

[34] Shih neni 35, "*Karta e te Drejtave Themelore te Bashkimit Evropian*."

[35] Shih neni 14, "*Karta e te Drejtave Themelore te Bashkimit Evropian."*

[36] Shih nenet 24-25, "*Karta e te Drejtave Themelore te Bashkimit Evropian*."

[37] Shih paragrafin e trete, neni 3, "*Traktati i Bashkimit Evropian*."

[38] It is based on liberal suffrage and modern political parties.

[39] The fascist state operated in Italy from 1922-1945, it was organized in opposition to the pluralist democracy that was unable to protect national interests due to the fragmentation of political power. For this reason, the Fascist State concentrated political power in a single body such as the Head of Government with legislative and executive functions.

[40] Fascist experience, already established in nearby Italy, combined with Hitler's doctrine, led to the formation of the National Socialist State that operated from 1933-1945. The leader of the national-socialist movement was simultaneously the head of the state, the government and the armed forces, concentrating all power in one hand.

[41] The roots of this model were based on Marxist-Leninist doctrine. Where model was accepted in some countries of the connection until the disintegration of the early 90s. This state model had its origins in the dictatorship of the proletariat.

party and its program. It is true that both constitutions of the period of the communist regime[42] provided for basic human rights and freedoms and their respect, but it should be emphasized that they were mere predictions and were not implemented in practice. The disintegration of the Soviet Bloc and the political transformations of the East also affected Albania until the overthrow of the communist regime as a result of various protests. After the fall of the communist regime, the constitution of 1976 was abolished and the law no. 7491, dated 29.4.1991 on the Main Constitutional Provisions, was adopted, which contained the essential provisions on the organization of the State.[43] More specifically, this constitutional law provided for the organization and functioning of the institution of the Parliament, the Government and the President of the Republic, based mainly on the Constitution of the Republic of Italy. This constitutional law initially left unregulated other very important constitutional areas such as: freedoms and human rights, the organization of judicial and local government.[44]

So as can be seen, fundamental rights and freedoms in general and social rights in particular do not find a place in the constitutional law of 1991. This gap was filled by law no. 7692, dated 31.3.1993, for an addendum to law no. 7491 , dated 24.4.1991, on the Main Constitutional Provisions, the fundamental human rights and freedoms. With the adoption of the first Constitution after the communist era in 1998, basic human rights and freedoms and especially social rights find a wide regulation in the constitutional provisions. This Constitution, which in its preamble foresees the determination to build a social state and the commitment to protect human dignity and personality, as well as the prosperity of the whole nation, well-being and social solidarity. Furthermore, this constitution, in its basic principles, in article 3 provides, among other things, that social justice is the basis of this State, which has the duty to respect and protect it.[45]

3. **The right to health**

The right to health is a fundamental right of every human being. The word health comes from the word salus, which means salvation, security and integrity. It is a universal right that must be guaranteed to all without distinction. However, social inequalities do not allow everyone to enjoy the right to health. Before dealing with the right to health according to the constitution of Albania, we must see how the concept of health is defined by the literature. According to the Treccani Legal Encyclopedia, health means the state of physical and mental well-being, an expression of the structural and functional normality of the organism as a whole. The Constitution of the Republic of Albania, unlike other Constitutions, does not expressly provide for the right to health in a specific way, it is limited only to defining the right of citizens to health care from the State in an equal way. Our constitution clearly defines that it is the duty of the State to guarantee health care for citizens as well as the right to health insurance for all in a non-discriminatory way. According to the American medical dictionary, health care is defined as: the prevention, treatment, and management of disease and the maintenance of mental and physical well-being through services pro-

[42] Constitutions of the regime.

[43] Loloci K, ne *Debati Kushtetues*, P.S.H. 2015, Shpk, f. 5-8.

[44] Loloci K, ne *Debati Kushtetues*, P.S.H. 2015, Shpk, f. 10

[45] Shih nenin, 3, *Kushtetuta e Republikes se Shqiperise* miratuar me ligjin nr. 8417, date: 21.10.1998.

vided by or related to medical professionals. The right to health, so important for the realization of other fundamental rights, finds protection at the national and international level.

The Universal Declaration of Human Rights[46] states that everyone has the right to a standard of living adequate for the health and well-being of himself and his family.[47] The International Covenant on Economic, Social and Cultural Rights[48] guarantees the right of every person to have the best possible state of health, physical or mental that he is capable of achieving and details the measures that the party states must take for the effective realization of this right.[49] The right to health care, through which the right to health is realized, is not a programmatic goal to be achieved, but is a positive right that the state must, through appropriate mechanisms, fulfill this duty for the citizens. No difficult economic situation justifies the State to realize the right to health. Our constitution, in its article 55, sanctions that *citizens enjoy the right to health care from the State in an equal way*. The Constitution of the Republic of Italy, it should be emphasized that it is more clear and complete regarding the protection of the right to health. It, in the first paragraph of Article 32, determines that the *Republic protects health as a fundamental right of the individual and the interest of the community, and guarantees free treatment for the poor*.[50] The right to health is attributed to the category of indivisible, inalienable and inviolable rights and is the foundation of the entire legal system.[51] Health is not only a primary right of the individual, but also a primary interest of the community, which needs the right structures to protect and guarantee this right. For this purpose, not only health care is provided in an equal way for all adults,[52] but also the prevention of various diseases. In this perspective, the concept of the right to health extends to the right to a clean and unpolluted environment, to the use of goods that are not harmful or dangerous,[53] to working conditions that respect the safety parameters and hygienic measures required by law. It should be emphasized that the right to health is more comprehensive than in the case of health care that must be provided by the State without discrimination.

4. **The right to education**

Education is the step that concretizes equality between people, in the sense that it allows everyone to make informed choices and build a dignified life. We say that the right to education is a social right because it requires public authorities to guarantee everyone access to an adequate school system. This right is protected and guaranteed

[46] The Universal Declaration of Human Rights is a document on human rights, adopted by the General Assembly of the United Nations at its third session on December 10, 1948 in Paris.

[47] Shih nenin 25, "*Deklarata Universale e të Drejtave të Njeriut*."

[48] Miratuar dhe hapur per nenshkrim, per ratifikim dhe per aderim nga Asamblea e Pergjithshme me Rezoluten e saj 2200 A (XXI) te dates 16 dhjetor 1966.

[49] Shih neni 12, "*Pakti Nderkombetar per te Drejtat Ekonomike, Shoqerore dhe Kulturore."*

[50] Translation to the author.

[51] Shih pargrafin e pare, neni 15, *Kushtetuta e Republikes se Shqiperise* miratuar me ligjin nr. 8417, date: 21.10.1998. This constitutional provision is very important because it characterizes our system as a State of rights.

[52] Health care according to the dictionary of the University of Cambridge is related to a set of services provided by the state or by an organization for the treatment of physical and mental illnesses, while the World Health Organization has said that health care is known as any type of service provided by specialists or paraspecialists with impact on health status.

[53] Shih nenin 56 dhe 59, *Kushtetuta e Republikes se Shqiperise* miratuar me ligjin nr. 8417, date: 21.10.1998.

at the international[54] and national level as a basic human right. The right to education is one of the basic inalienable rights of the person as provided by the UN Universal Declaration of Human Rights. This right in our legal system is presented as a right-duty, which is quite well harmonized in Article 57 of the Constitution. According to our Constitution, the right to education is a subjective right when it provides that everyone has the right to education. It should be emphasized that rights are right when the conditions for their exercise exist and when someone intervenes to protect them. The right to education is a right provided in the Constitution, but this part of the constitution could have the value of a statement of purpose at the moment that the State would maintain a passive and not active position in the realization of this right. In order to make this right concrete, state bodies must provide the necessary infrastructure. Here we are dealing with a constitutional obligation that the state bodies bear in creating the infrastructure for the realization of the right to education. In this sense, this service, together with other services, concretizes the welfare state. Furthermore, the compulsory aspect of education is highlighted by the second paragraph of the same provision under review, which states that compulsory school education is determined by law.[55] In addition to the state bodies to provide the educational infrastructure, parents are also obliged to enroll their children in school to attend at least the mandatory cycle. Determining compulsory education in the Constitution is a great achievement for the development of the whole society regardless of religion, race and political belief. Before the fall of the communist regime, education was considered a privilege accessible only to a part of society. To guarantee this obligation, the Constitution has determined that compulsory education, as well as general secondary education in public schools, [56] is free and open to all.[57] Our constitution determines that secondary professional education and higher education can only be conditioned by ability criteria.

It should be emphasized that this constitutional provision does not limit compulsory education and general secondary education. The post-communist constitution of 1998 expressly defines the pluralistic nature of education in Albania. Until the beginning of the 90s, education was a monopoly of the State,[58] while today male and female students have the opportunity to be educated in private schools of all levels that operate on the basis of the law.[59] This right, so important for the development of society, is guaranteed not only to Albanian citizens but also to foreign citizens and stateless citizens.[60] The constitution gives a special protection to national minorities

[54] Deklarata Universale e te Drejtave te Njeriut ne nenin 26 parashikon te drejten e gjithesecilit per arsimim, Konventa kunder diskriminimit ne arsim date 14.12.1960, Pakti Nderkombetar mbi te Drejtat Civile dhe Politike date 16.12.1966, Pakti Nderkobetar per te Drejtat Ekonomike, Sociale dhe Kulturore date 16.12.1969, Konventa Nderkombetare Per Eliminimin e te gjitha formave te diskriminimit ndaj grave date 18.12.1979, Konventa per te drejta e femijes date 20.11.1989, Konventa pper te drejta e personave me aftesi te kufizuar date 13.12.2006, Konventa Evropiane per te Drejta e Njeriut dhe protokollet e saj, Karta Sociale Evropiane, Konventa per mbrojtjen e minoriteteve kombetare, Karta Evropiane per Gjuhet rajonale ose te pakicave date 25.6.1992.

[55] Compulsory education.

[56] Shih paragrafin e peste, neni 57, *Kushtetuta e Republikes se Shqiperise* miratuar me ligjin nr. 8417, date: 21.10.1998.

[57] Shih paragrafin e trete, neni 57, *Kushtetuta e Republikes se Shqiperise* miratuar me ligjin nr. 8417, date: 21.10.1998.

[58] Aurela A, Omari L, *E Drejta kushtetuese*, ABC, Tirane, 2010, f. 183.

[59] Shih paragrafin e gjashte, neni 56, *Kushtetuta e Republikes se Shqiperise* miratuar me ligjin nr. 8417, date: 21.10.1998.

[60] Shih nenin 16, *Kushtetuta e Republikes se Shqiperise* miratuar me ligjin nr. 8417, date: 21.10.1998.

in terms of the right to education, where it is sanctioned that they have the right to learn and be taught in their mother tongue.[61]

5. The right to housing

The Constitution of the Republic of Albania categorizes the right to housing as a social objective that the State intends to achieve. In the first paragraph of Article 59, it is provided that: *The State, within the constitutional powers and means at its disposal, as well as in addition to the initiative and private responsibility, aims to ……. meeting the needs of citizens for housing*. The right to adequate housing is protected by a series of international conventions that Albania has ratified. The International Convention on Economic, Social and Cultural Rights in the first paragraph of Article 11 provides: *States parties to this Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including food, clothing and* ***shelter*** *adequate as well as the continuous improvement of living conditions. The States Parties shall take appropriate measures to ensure the realization of this right, recognizing for this purpose the essential importance of a freely accepted international cooperation.* Whereas, the European Social Charter, revised, in article 31 provides: *with the aim of ensuring the effective exercise of the right to housing, the Parties undertake to take measures aimed at: promoting access to housing of a sufficient standard; to prevent and reduce the number of homeless with the aim of its gradual elimination; make housing affordable for those without sufficient resources.*
Other conventions, such as the Convention on the Elimination of All Forms of Discrimination against Women,[62] the Convention on the Rights of the Child[63] and the Convention on the Status of Refugees[64] also provide for the right to shelter. According to our legal system, it is a social right where its realization is conditioned by the financial resources available to the State. For the realization of this goal, so important for human life, our legislators and various governments have approved several legal acts over the years to ease the pain of not having a dignified housing. These acts are:
• Law no. 9232, dated 13.5.2004, *On Social Housing Programs, amended*;
• VKM no. 53, dated 28.1.2005, *On the necessary documentation and procedures to benefit from social housing programs*;
• Instruction no. 23. date, 30.12.2008 of the Ministry of Public Works, Transport and Telecommunications *Regarding the content of the housing bonus*
• Law no. 9482, dated 3.4.2006, *On the legalization, urbanization and integration of constructions without permission*, etc.
But it should be noted that the Constitution of the Republic of Albania has lagged behind in relation to the International Conventions regarding the provision of the right to housing.

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[61] Shih paragrafin e dyte, neni 20, *Kushtetuta e Republikes se Shqiperise* miratuar me ligjin nr. 8417, date: 21.10.1998.
[62] Shkronja ë e paragrafit te dyte, neni 14 i Konventes parashikon: *…….. In particular, they provide women with: The right to have suitable living conditions,* ***especially regarding housing,*** *sanitary services, electricity and water supply, transport and communications.* The underlining is the Author's.
[63] Kjo konvente ne paragrafin e trete te nenit 27 parashikon: *States Parties shall take appropriate measures, according to national conditions and their possibilities, to assist parents and other persons responsible for the child to exercise this right and, in case of need, to provide material support and support programs , especially related to food, clothing and housing.*
[64] Shih nenin 21, *Konventa per te drejta e femijes* date 20.11.1989.

6. **The right to social security and social assistance**

Social security is a relatively new phenomenon in the last quarter of the 19th century. The genesis of social insurance is related to the Prussian legislation initiated by Chancellor Bismarck, in particular to the 1889 law establishing insurance for invalidity and old age.[65] Social insurance and social assistance are important components of the social welfare state. These rights represent the core of the welfare state and its most significant expression. They are so important for social well-being that they are recognized both at the international level[66] and at the national level. In advance, it should be said that the social legislation aims to achieve social protection of the person individually and collectively. As for national resources, the right to social insurance and social assistance are constitutional rights and not just legal rights. More specifically, they are provided for in the Constitution, but are realized through ordinary laws approved by the Parliament. The constitutional doctrine has given several definitions regarding the right to social security and social assistance. In this paper, I am bringing the definition of the Treccani encyclopedia as the most complete and suitable for our legal system. According to this definition, the right to social security is a very important aspect of social security which aims to protect workers and their families from the risks of injury or loss of work ability due to events such as unemployment, illness, disability and old age, while the right to social assistance includes the entirety of the duties of the public administration in providing services, usually free, aimed at eliminating economic and social inequalities within society.[67]
These rights are provided for in Article 52 of the Constitution. This constitutional provision establishes two different principles, in the first paragraph it establishes the principle according to which female workers have the right to social insurance and assistance in cases of accident, illness, disability and old age, while in the second paragraph it establishes the right to social assistance for each individual when he is unable to work and does not have the necessary means to live.[68] As can be seen, we are dealing with two different rights, one assuming the exercise of a work activity constitutes a parallel right to the one guaranteed by the first paragraph of Article 52 of the Constitution, in the sense that it aims to provide the subject of the right a free and dignified existence and the other in the deprivation of the ability to work which has to do with the protection of human dignity and social justice guaranteed by Article 3 of the Constitution. Through social assistance, the State intervenes to somehow achieve substantial equality between people. So the State, through supporting and helping policies, seeks the social integration of the disadvantaged. The norm contained in Article 52 protects the individual as a person, regardless of his ability to produce wealth. It provides adequate guarantees of assistance in favor of individuals who do not have the ability to work, because they are disabled, elderly, providing them with what is necessary for the needs of daily life. This norm is an expression of social solidarity, a principle that is foreseen in the Preamble of our Constitution.

[65] Polito F (2017), *Diritti sociali*, Enciclopedia Treccani Diritto on line.
[66] Traditional concepts of social insurance are found *ne Konventen e Organizates Boterore te Punes* nr.102 dhe tek *Regullorja e BE-se* 1408/71 e zevendesuar me rregulloren 883/2004; *Karta sociale Evropiane* nenet 12, 8, 24, 27.
[67] Idem.
[68] Paragrafi i dyte, neni 52, *Kushtetuta e Republikes se se Shqiperise*, parashikon: *Anyone, when he remains unemployed for reasons independent of his will and when he has no other means of living, has the right to assistance under the conditions provided by law.*

Conclusions

Law no. 7491, dated 29.4.1991 Regarding the Main Constitutional Provisions, initially left unregulated very important constitutional areas such as: freedom and human rights, organization of judicial and local power, etc. So as can be seen, fundamental rights and freedoms in general and social rights in particular do not find a place in the constitutional law of 1991. This gap was filled by law no. 7692, dated 31.3.1993, for an addendum to law no. 7491 , dated 24.4.1991, for the Main Constitutional Provisions. With the approval of the first Constitution after the communist period, with the law no. 8417, date: 21.10.1998, basic human rights and freedoms and especially social rights are widely regulated in the constitutional provisions. The first liberal-pluralist constitution, which in its preamble or introduction foresees the determination to build a social state and the commitment to the protection of human dignity and personality, as well as the prosperity of the whole nation, well-being and social solidarity. Furthermore, this Constitution, in its basic principles, provides that social justice is the basis of the Albanian State, which has the duty to respect and protect it. The respect and implementation de facto and not only de jure of social rights, already provided by the Constitution of the Republic of Albania, is a great challenge not only for the State but also for various private organizations. As I have emphasized above, the full respect and enjoyment of social rights concretize the principle of substantial equality, a fundamental principle to remove economic and social obstacles in a democratic and pluralistic society.

The effect of training in improving balance in 9-10 years old gymnastics

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Abstract

This study aims to determine the effect of 12-week "Core Training" on improving balance in female gymnasts aged 9-10 years. Using a homogeneous group of participants within this age group helps to minimize confounding factors and ensures results specific to this age group. Methodology: The study lasts for 12 weeks and includes 5 gymnasts of 9-10 years old. Training sessions take place six times a week, with duration of 2 hours for each session. The measurement of balance parameters is done at before and after of the experiment using the GRFP "Leonardo Mechanography". Balance tests include the Romberg stand with eyes open and eyes closed, semi-tangent stand with eyes open and eyes closed, tangent stand with eyes open and eyes closed, one-legged stand with eyes open and with eyes closed. Results: The results are obtained for each test from GRFP; Std. Ellipse Area (cm 2); Std. Ellipse Angle (degree); Num. Eccentricity; dominant Freq (Hz); rel. Path length (mms); abs. Path length (mm); EQ(AP); Total Duration (s). Conclusion: The findings suggest that engaging in regular "Core Training" sessions can contribute to the development and improvement of balance skills in gymnasts of this age. Specific exercises aimed at core training have a direct impact on postural control and stability, which are essential for maintaining balance during various physical activities.

Keywords: gymnastics, 12-week training, Core training, balance, gymnast.

1. Introduction

The sport of gymnastics is quite attractive and physically demanding that includes a wide range of activities that contain components of strength, flexibility, dexterity and coordination. It combines art and athleticism, requiring athletes to perform various acrobatic and gymnastic movements with precision and control. In competitive sports, almost all sports exert force on external objects through the ends of human limbs to make the equipment move. The most significant aspects impacting an athlete's competitive abilities are his or her physical fitness. Skills appear to be particularly critical in light of the highly demanding and specialized proficiencies necessary for high performance in various sports (Wilson et al., 2017). Gymnastic training stimulates the development of balance and allows almost perfect stability, even under extreme conditions (Atilgan et al., 2012). There are numerous factors that affect balance, and the most important are genetic determinism, the state of the vestibular apparatus, age, area of support, the amount of body balance, the number of motor habits, their fitness, strength, coordination, flexibility, emotional state, muscle fatigue (Cetin et al., 2008; Popovic & Velickovic, 2021).The sports field's skill could be an event due to goals undertaken by a coordinated motor ability within a sport-specific scenario (Breivik, 2016). Understanding the benefits of participation in gymnastics training would provide pertinent information for this area. Терещенко et al. (2015) shows that Coordination training of sportsmen, specializing in sport gymnastic shall

take one of priority places in system of physical education and sport training means. Trainees of sport gymnastic, calisthenics, sport acrobatic, jumping on trampoline, jumping on acrobatic track(i.e. sport kinds of gymnastic) fulfill exercises in complex conditions of static-dynamic and static-kinetic (vestibular)balance (in complex conditions of sensor-motor coordination). Thus, physical, technical and psychological skills, and motor control and harmony of movement are key factors in the performance of gymnasts (Frutuoso AS et al. 2016). In gymnastic disciplines, to perform a maximum number of strength elements in a competition routine, a high level of specific strength endurance is required (Schärer et al., 2019). Relative strength is considered to be a more important determinant of gymnastics performance than absolute strength (Sands, W. et al. 1991), which is why many training systems use the gymnasts' own body weight to prepare them (Sands, W. et al. 2000). As practical experience and scientific-methodic researches show sensor-motor coordination is not sufficiently effective in sportsmen's demonstration of gymnastic, acrobatic exercises in training and competitions' conditions. As a basic sport, artistic gymnastics affects the development of motor skills: strength, coordination, flexibility, and balance (Albuquerque & Farinatti, 2007; Carrick et al., 2007). Balance, along with other motor skills, plays an important role in the successful execution of sports skills, as well as in the prediction of sport injury (Sabin et al., 2010). Balance training is also used as a part of a rehabilitation program after injury of the ankle and knee joint (Hrysomallis, 2011). Balance is an important factor for success in many sports, particularly in gymnastics, because even minimal distortion affects the final score. Training programs should be composed to give enough time to practice and to develop motor skills (Marinsek & Velickovic, 2010).

This study aims to investigate the effect of 'core training' for 12 weeks on improving balance in 9-10-year-old high school students, i.e. engaged in artistic gymnastics. By exploring the relationship between core training and balance, valuable insights can be gained regarding the potential benefits of incorporating specific exercises targeting the core muscles into the physical preparation of young gymnasts. The results of this research may contribute to the advancement of gymnastics training practices, potentially leading to improved performance and success in national and international competitions.

2. **Material & methods**

2.1. ***Participants***

The study will focus on female gymnasts in the age group of 9-10 years. This age range was chosen to target a specific developmental stage where children are typically engaged in gymnastics training and are able to understand and follow instructions effectively. Selecting a homogeneous group of participants within a narrow age range helps minimize confounding factors and ensures that the results are specific to this age group.

2.2. ***Procedure***

The study will last a period of 12 weeks. This duration was chosen to allow a sufficient training period to observe potential improvements in balance parameters. Twelve weeks is a reasonable time frame for evaluating the effectiveness of a training program, as it provides sufficient time for adaptation and skill development.

2.3. *Training sessions*

Participants will engage in training sessions six times a week, with each session lasting 2 hours. The frequency and duration of the training program are designed to provide adequate training stimulus to the participants. By conducting training sessions six times a week, a consistent and regular practice schedule is ensured, which is essential for mastering and improving skills.

2.4. Test protocol/Instruments

Balance parameters will be measured at the beginning and end of the 12-week experiment using the GRFP "Leonardo Mechanography" force platform. This device is a reliable and valid tool for assessing various aspects of balance and provides objective measurement of its parameters. It provides accurate data on participants' postural control and stability during various balance tests.

The balance tests included in the study are:

Photo 1.

- Romberg posture, eyes open (EO): Participants hold a static posture with eyes open, which assesses their ability to maintain balance under visual feedback.
- Romberg posture, eyes closed (EC): Participants maintain a static posture with their eyes closed, which challenges their reliance on proprioceptive and vestibular inputs for balance.
- Semi-tangent stance (EO): Participants stand in a semi-tangent position with their eyes open, assessing their ability to maintain balance during a slightly challenging stance.
- Semi-tangent stance (EC): Participants stand in a semi-tangent stance with their eyes closed, assessing their balance control under reduced visual input.
- Tangent stance (EO): Participants stand in a tangent position with their eyes open, testing their ability to maintain balance in a more challenging position.

2.4. *Data analysis*

Balance parameters collected during the Pre-test and Post-test will be analyzed using appropriate statistical methods. Descriptive statistics, such as mean and standard deviation, will be calculated for each balance parameter to summarize the data. Paired t-tests or other appropriate statistical tests will be performed to determine whether there are significant improvements in balance parameters after the 12-week baseline training program. Statistical analysis will allow a comparison of participants' balance

performance before and after the intervention. By analyzing the data, they can identify any significant changes in balance parameters, providing valuable insight into the effectiveness of the 12-week core training program.

3. **Results**

In this part of the study, the data extracted from the tests for 5 gymnasts aged 9-10 years were analyzed. The analysis is based on balance tests: Romberg's stance, eyes open (EO), Romberg's stance and eyes closed (EC), Semi-tangent stance, eyes open (EO), Semi-tangent stance, eyes closed (EC), Tangent stance, eyes open (EO), Tangent stance, eyes closed (EC), One leg stance, eyes open (EO), One leg stance, eyes closed (EC). For each test, the following data were obtained: Std. Ellipse Area (cm 2); Std. Ellipse Angle (degree); Num. Eccentricity; dominant Freq (Hz); rel. Path length (mms); abs. Path length (mm); EQ (AP); Total Duration (s).

Table.1. Test "Romberg position, week 1"

Age	Body Weight	Std.Ell Area RomE	Std. Ellipse Angle RomEO	num. Excent RomE	domin-Freq. RomEO	rel. Pathlen RomEO	abs. Path-leRomEO	EQ)Ro-mEO	total Duratio RomEO
9	**24.1**	**2.26**	**-32.01**	**0.8**	**0.6**	**49.62**	**248.1**	**97**	**5**
9	**36.5**	**3.39**	**0.5**	**0.73**	**1.6**	**54.72**	**273.6**	**85.5**	**5**
9	**27.7**	**0.97**	**-9.99**	**0.78**	**1.4**	**23.58**	**117.9**	**91**	**5**
7	**23.8**	**2.94**	**-17.12**	**0.88**	**0.4**	**26.49**	**132.5**	**62.1**	**5**
10	**26.5**	**1.96**	**18.08**	**0.87**	**0.4**	**33.23**	**166.1**	**86**	**5**

Table.2. Test "Romberg's stance, week 12"

Std. Ellipse Area (1L_EC)	Std. Ellipse Angle (1L_EC)	num. Excenticity (1L_EC)	dominat Freq. (1L_EC)	rel. Pathlength (1L_EC)	abs. Pathleng (1L_EC)	EQ (AP) (1L_EC)	total Duration (1L_EC)
_24.57	**__-71.31**	**__0.85**	**__0.4**	**__184.88**	**__924.4**	**__70.6**	**__5** _
22.68	**-10.1**	**0.8**	**1.4**	**147.22**	**736.1**	**60.2**	**5**
12.22	**-2.92**	**0.82**	**0.4**	**124.16**	**620.8**	**66.1**	**5**
_7.54	**__-0.64**	**__0.78**	**__1.2**	**__139.73**	**__698.7**	**__77.3**	**__5** _
__8.2	**___-75.94**	**___0.8**	**___0.4**	**___109.61**	**___548.1**	**___82.5**	**___5** _

To analyze the overall average for the test, the descriptive data were analyzed. Based on the data presented in the descriptive data table, we can draw some important conclusions. These findings help us understand the characteristics and performance of the five children tested in gymnastics during the first week. Some of the summarized findings are:

1. For Rom EO tests (Romberg position with eyes open):

• The mean standard area of the ellipse is 2.304 cm^2, with a standard deviation of 0.933 cm^2.

• The mean standard angle of the ellipse is -8.108 degrees, with a standard deviation of 18.815 degrees.

• The average eccentricity is 0.812, with a standard deviation of 0.063.

• The dominant frequency ranges from 0.400 Hz to 1.600 Hz.

• The relative length of the road varies from 23,580 mm to 54,720 mm.

- Mean absolute road length is 187,640 mm, with a standard deviation of 69,665 mm.
- EQ (AP) (Rom EO) ranges from 62,100 to 97,000.
- The total duration of Rom EO tests is fixed at 5,000 seconds.

4. **Discussion**

To understand the differences between the 12 weeks of training, an analysis of the differences between the first week and the twelfth week was done for the first test, which shows different overall results for each measurement. The independent t-test table shows the t-value and degrees of freedom (df) for each measurement, as well as the p-value for the difference between week one and week twelve. In p-values, a value less than 0.05 indicate statistically significant differences. For differences in normality, the results of the normality test (Shapiro-Ëilk) show the Ë-value and the p-value for each measurement. If the p-value is less than 0.05, there is reason to say that the values do not conform to a normal distribution.
T-test for independent samples: For all tested variables (Std. Ellipse Area, Std. Ellipse Angle, Num. Eccentricity, Dominant Freq., Rel. Path length, Abs. Path leng, EQ (AP)), p-values (p-values) are above the level of significance 0.05. This means that there are no statistically significant differences between week 1 and week 12 for these balance variables. Check prerequisites: For all the tested variables, the results of the Normality Test (Shapiro-Ëilk) show that unlike the precondition aspect of the t-test, the data do not follow a normal distribution. This result indicates that the precondition of normality is not met for these data. In conclusion, the analysis shows that there are no statistically significant differences between the first week and the 12th week for all balance variables tested in gymnasts aged 9-10 years. However, it is important to note that the data does not follow a normal distribution, so the results may have an impact on the evaluation of the differences between these two weeks, even though the differences are small and not statistically significant. Based on specific exercises targeting applied balance and a focus on core muscle strengthening, the study expects to observe improvements in balance parameters in participants. Through the 12-week core training program, participants are expected to experience improved postural control, stability and neuromuscular coordination, leading to improved balance performance. The main exercises included in the training program aim to rebalance the kinetic chains, promoting optimal muscle activation and coordination, which is expected to have a positive impact on the participants' balance abilities. Furthermore, the improved neuromuscular control resulting from the training program is expected to minimize the risk of injury during gymnastic performance, as participants will develop better motor control and proprioception. Overall, the study aims to demonstrate the effectiveness of the 12-week basic training program in improving balance parameters in 9-10-year-old female high school gymnasts. The detailed methodology, including participant selection, training sessions, balance measurement tools, and data analysis, provides a rigorous approach to investigate the impact of core training on improving balance in this specific population. In summary, the results suggest that for most measures there are no statistically significant differences between week one and week twelve. However, the measure "dominate Freq. (SemTan EO)" shows statistically significant differences between the two weeks. So, in summary, the data manage to show us statistically significant differences for the part of the measure-

ments above. So in particular, there are statistically significant differences in the variables of frequency of dominants, relative and absolute length of the path and area of the standard ellipse, number of eccentricities and EQ (AP), in specific tests. These differences show discernible variation between the two weeks. For the other data, we have non-statistically significant differences, that is, small differences in the improvement of balance after 12 weeks of training. These data also prove the hypothesis of the study that there is an improvement in balance among high school students aged 9-19, through core training.

5. Conclusion

Based on the study conducted with 9-10 year old gymnasts, it can be concluded that a 12-week Core training program has a positive effect on improving balance. The results showed significant improvements in some of the balance tests, while smaller but still noticeable improvements were noted in other tests. This shows that core training is useful for increasing balance in this age group. The findings suggest that engaging in regular Core training sessions may contribute to the development and refinement of balance skills in gymnasts of this age. Specific exercises aimed at core training have a direct impact on postural control and stability, which are essential for maintaining balance during various physical activities.

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Exploring the Evolution and Synthesis of Bektashi Tekkes in Albania

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Abstract

This paper delves into the historical evolution and architectural synthesis of Bektashi Tekkes in Albania, spanning from the 14th century to the present day, with a focus on those established in the Balkan Region during the 14th century. It aims to establish standard criteria for the architectural synthesis of these Tekkes, drawing on historical precedents as a foundation for future endeavors within the Bektashi Community in Albania.The historical context section examines the impact of Ottoman rule on architectural development, tracing a transition from modest mosque construction during the 15th century to a significant conversion to Islam in the late 17th and 18th centuries. It discusses the decline in Ottoman art during this period and the influence of ethnic demographics on architectural preferences and styles.The methodology section outlines the study's approach, emphasizing historical research with primary sources and a qualitative method for gathering firsthand information through on-site visits. It explains the adoption of a typological research method, drawing on Quincy's and Gulgonen and Laisney's interpretations of "type" and "typology."The architectural analysis section provides insight into the unique features and significance of Bektashi Tekkes, highlighting their fusion of Islamic architecture, Sufi ideology, and cultural symbolism. It emphasizes the spiritual and social cohesion embodied in these structures. The conclusion synthesizes the findings, reflecting on the evolution of Bektashi Tekkes over time and their significance within Albanian society. It discusses challenges in accurately conveying historical recollections and the importance of a holistic understanding of Tekke architecture. The conclusion also touches on the influence of political and cultural movements on architectural development and suggests potential applications of typological findings for modern architectural design.Overall, the paper offers a comprehensive exploration of Bektashi Tekkes from historical, methodological, and architectural perspectives, providing valuable insights for future research and design endeavors.

Keywords: sacred architecture, architectural synthesis, typology, history, evolution.

Introduction

This paper undertakes a historical research journey into Bektashi Tekkes from the 14th century to the present, particularly focusing on those constructed in the Balkan Region during the 14th century. The study also delves into the evolution of Bektashi Tekkes in Albania and aims to establish standard criteria for the inner synthesis of their architecture. As Lewcock (1988) asserts, studying historical precedents provides a solid foundation for future endeavors, ensuring consistency across the Bektashi Community in Albania.

This study examines the suitability and appropriateness of form and organization in relation to the landscape by analyzing precedents from the earliest period to contemporary Tekkes in Albania. The construction of Bektashi Tekkes and Islamic places of worship holds significant architectural heritage from the Ottoman Empire era. Albania's incorporation into the empire during the 15th century resulted in a limited number of mosques built due to modest requirements of Ottoman garrisons. However,

in the late 17th and 18th centuries, Albania experienced a conversion to Islam, coinciding with a decline in Ottoman art characterized by uninspired forms and clumsy aesthetics (Michael, 1990).
Ottoman architecture in Albania lacked solid roots and often imported forms from provincial art, resulting in a lack of natural development. Ethnic composition played a significant role in shaping tastes for Ottoman art and influenced the design of Bektashi Tekkes. Therefore, unraveling such situations requires attention to ethnic demographics and the motivations behind the construction of various buildings.
Ottoman architecture emerged in a region with no tradition of Islamic culture, resulting in the introduction of novel building types such as mosques, Tekkes, baths, and khans. Settlements by Muslim-Turkish administrators and civilians in the Balkans led to the establishment of these structures, integrating Turkish tastes with local Balkan masonry traditions. Despite this, the Balkans did not produce monumental architectural wonders akin to the Alhambra or the Taj Mahal (Keil, 1990).
The architecture of Bektashi Tekkes in Albania reflects a form of conservatism, with provincial features influenced by the capital cities' art in later phases. The absence of imperial cities in Albania limited the grandeur of Tekkes, with the only imperial Bektashi buildings emerging recently in Tirana in 2012, marking a new era for Bektashi Shrines. External components like domes and luxurious appearances are increasingly added to Bektashi shrines, following models from Anatolia, to enhance their overall composition.
This research emphasizes the significance of Tekkes' spatial components over external features, as most religious activities occur inside the buildings. It aims to clarify variations in these elements influenced by different historical periods, ensuring a balanced understanding of Bektashi doctrines and contextual needs in Tekke design. Thus, this study seeks to identify agreed-upon guidelines for Bektashi art and architecture, rooted in historical analysis and contextual relevance.

Methodology: Typology as a Research Method

To ensure the authenticity of evidence, this study employs historical research with primary sources, which are considered its lifeblood. A qualitative approach is adopted to gather firsthand information or primary data through on-site visits. For the analytical aspect of this research, a typological research method is utilized.
According to Quincy, "type" does not merely refer to images that can be reproduced or imitated accurately. Instead, it delves deeper into the quality of formal arrangements. "Type" represents independence and ambiguity, yet remains identifiable. Gulgonen and Laisney (1982) similarly define "typology" as the classification of objects, with "type" representing an abstract concept identified through classifying activities influenced by the material and cultural production of architects and society.
Typological studies primarily involve the classification of mosques, extending to create an architectural inventory. The term "classification" implies continuity within a certain system, echoing the views of Muratori and the Italian school of thought, as elucidated by Cataldi and Laisney. Muratori's typological method relies on critical literature and site visits of existing buildings to formulate design processes beneficial for history and memory.
In Tekke formation, primary themes and usage within the context remain constant,

despite the diversity of cultures and modern technologies. Bambang (2000) explores the assertion by many scholars that Islamic religious buildings typically feature square plans with four pillars erected in prayer halls. His study on selected Tekkes across Albania suggests a detailed typological research of plans and structures, revealing three main types. These findings indicate that typological studies provide comprehensive existing data while offering new sets of reviewed data that may supersede superficial statements.

Despite Albania's history of receiving Islam and Bektashism since the 14th century and achieving independence from the Ottomans in 1912, followed by the fall of the Communist Regime in 1990, there remains no central body appointed to record the characteristics of Bektashi Architecture or the built dates of Tekkes. Proper updating and documentation of Bektashi Tekkes in Albania are crucial for conducting thorough historical research.

Architectural analysis of Bektashi tekke

Bektashi shrines are challenging to study due to their significance being more about people's perceptions than their visible attributes. Scholars have praised them for their unique approach to mosque architecture within the Persian tradition, recognizing them as prototypes of Islamic worship spaces integrating Sufi ideology (Pirnia M. K., 2004). Responding to the perpetual human need for spirituality, these shrines offer a solution deeply rooted in Persian-Islamic culture, combining forms, functions, and patterns to create captivating spaces (Oleyki, 2009). Scholars have lauded Bektashi shrines as unique among Islamic architectural styles, incorporating patterns and archetypes of worship spaces and often introducing them to the broader architectural discourse (Hojjat, 2009).

The design principles of Bektashi Tekkes are rooted in well-established principles recognized by Muslim architects as optimal for facilitating worship. In Albania, evidence of Sufi ideology and architecture dates back to the 13th century with the arrival of figures like Sari Saltik, revered as a saint by Balkan Bektashis. However, Albanian architectural articulation demonstrates a diverse and minimal application of Sufi patterns compared to the Middle East.

Understanding the origin of Islamic architecture is crucial for tracing the typology of Bektashi buildings. Islam initially emphasized simplicity in worship spaces, with the Prophet's house serving as a model for mosque design. The mosques built by the Prophet, along with shrines like those of Seyyid Gazi and Hacı Bektaş, exemplify this ideal. Shaped primarily as pilgrimage centers, these shrines provided spaces for rituals such as prayer, tomb visitation, and the distribution of food and largesse.

Bektashi shrines reflect the increasing social cohesion of marginalized segments of Ottoman society, featuring tomb chambers, kitchens, ritual spaces, and courtyards supplied with water. The Bektashi culture, steeped in military symbolism, played a significant organizational role in Albania's renaissance and independence movement.

Palatial symbolism is evident in Bektashi shrines, with metaphors of gates and courtyards often used in Persian and Ottoman Turkish literature. The layout of shrines resembles that of palaces, featuring successive courtyards leading to the core of the complex. Kitchens and bakeries hold political significance, symbolizing power

through rituals of sacrifice and communal feasting.In summary, Bektashi tekke represent a unique fusion of Islamic architecture, Sufi ideology, and cultural symbolism, embodying spiritual significance and social cohesion within Albanian society.

Character of a Bektashi Architecture

Albanian Bektashi shrines showcase three distinct typological architectural ensembles, each characterized by significant elements such as tomb chambers with pilgrim foyers, kitchens with adjacent bakeries, and ritual spaces. These elements are organized around paved courtyards supplied with water, serving as central hubs for Bektashi life within the broader social context. Architectural decoration in these shrines subtly expresses Bektashi beliefs, with the emblematic twelve-sided stone, known as the 'submission stone' (teslīm taşı), consistently featured on important gates. This stone symbolizes homage to the line of Twelve Imams, beginning with Ali, the cousin and son-in-law of Prophet Muhammad.

One striking feature of architectural decoration in Bektashi shrines is the conspicuous use of spolia, reused pieces integrated into buildings from medieval Anatolian structures. While spolia were commonly displayed on such buildings, in the Ottoman imperial age, they were often integrated to the point of being unrecognizable. This practice altered the shape and form of buildings according to regional and cultural needs, reflecting the beliefs of the community.

Recent discussions among scholars have focused on contemporary mosque construction in Albania. Scholars like France advocate for Bektashi Tekkes to act as community development centers, akin to the precedent set by the Prophet, where mosques serve as hubs for religious, political, and social activities. To ensure the longevity and relevance of such spaces, thorough examinations of internal orientation and spatial arrangements are crucial. Typological analysis reveals variations in the floor plans of Bektashi Tekkes, offering insights into their evolutionary design. Three distinct categories emerge:

Type A: Intervention in direct elements of nature, such as caves, which served as the initial locations for Bektashi communities in Albania. Examples include Sarisaltik in Kruja, the Cave of Martanesh, and the Tekke of Baba Maksur. These areas later became significant centers of pilgrimage and faith.

Type B: Aggregation systems where multiple components converge into an ensemble of elements. Examples like the World Bektashi Headquarters, Asim Baba Tekke, and Tekke of Frasheri demonstrate a clear hierarchy and organization of functions around a central courtyard.

Type C: Typology with a central focus, usually where the Tyrbe (tomb) itself is a pilgrimage site. Examples include the Tekke of Mustafa Dollma in Kruja and the Tyrbe of Ali Baba near Tomorr Mountain. These structures feature a singular dome and defined entrance area, enriching the journey of visitors from the mountain's base to its summit, where the shrine is situated.

Conclusion

Analysis, derived from purposeful sampling, showcases various designs and forms, both different and repeating, within Bektashi Tekkes. This study elucidates how these

Tekkes evolved in shape and form over time. Initially, they were constructed with basic Islamic spiritual concepts, employing a simple, single multi-functional space reflecting the social and cultural values of the community through vernacular architecture. However, in the 20th century, new Tekkes emerged, and significant partial and comprehensive restorations followed the damage from the Balkan wars. Especially notable was the establishment of the Bektashi World Headquarters in Tirana, which ushered in a clear trend towards creating monumental ensembles, introducing new architectural styles, scales, materials, and construction technologies, aimed at projecting a grandiose image.

Yet, these changes often overlooked the original local architectural features of the Tekke, instead aligning them with Anatolian and Middle Eastern models such as the Tekke of Haci Bektashi Center in Turkey. Four observations arise from this research. Firstly, ambiguously defined parameters and characteristics pose challenges in accurately conveying historical recollections. Secondly, a monolithic approach to analyzing Bektashi Tekkes overlooks their constituent components. Instead of viewing each building as a single entity, Tekkes can be understood through the analysis of their individual elements. This approach allows for the inclusion of Tekke variants that may not fit neatly into existing classifications based solely on their formal characteristics. The third observation emphasizes the importance of a holistic overview in understanding Tekke architecture in Albania. Classification should extend beyond individual categories to encompass their overall transformation over time within a larger historical context. Tekkes should be appreciated as expressions of a syncretic system of ideas, beliefs, and architectural precedents, both locally and globally.

The transformations over time are also influenced by changes in the administration of the Islamic community and Tarikat, which are now largely in the hands of Islamic rulers and leading political parties in the region. This scenario mirrors the Middle East during the medieval period, where mosques became symbols of power for ruling governments. However, despite their monumental appearance, the interior organization of Tekkes remains clearly defined, with a progression from entrance to courtyards to ritual halls. Surviving Tekkes from this period are relatively recent constructions, using materials that have not withstood the test of time.

During the 17th and 18th centuries, Albania experienced a cultural flowering of Islamic art, driven by socio-economic and organizational factors. Religious works across the country were associated with Albanian names in various spheres, including military, art, culture, and Muslim clergy. This period coincided with the peak and decline of the Ottoman Empire, marked by classical Ottoman architecture and the masterpieces of Sinan.

The changing times, coupled with the political and cultural movements of the Renaissance, led to the formation of an independent Albanian state and the establishment of autocephalous religious communities. The creation of the Bektashi World Headquarters in Tirana prompted a reexamination of Tekkes as public buildings, questioning their style, origin, and the identity of Bektashi architecture. This study confirms the success of classifying Tekkes based on spatial arrangements over time.

In summary, Albanian Bektashi Tekkes offer diverse typological articulations and floor plans, with positive qualities in spatial arrangement that could be adapted for modern applications to provide comfort and familiarity to users. When analyzed over time, it becomes evident which Tekkes exhibit total congruence in functional

and structural features, showcasing how these typologies can reflect Sufi ideology and enrich spatial compositions for future applications.

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An overview of the immigration of Albanians to the countries of the European Union: Legal immigration for reasons of work

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Abstract

Immigration is such a discussed topic in recent years and this dynamic phenomenon has been following the Albanian reality for decades. Although it is one of the countries with a small composition of the population, Albanian citizens are occupying an important weight in the countries of the European Union and this immigration rate continues regardless of the improvement of living conditions, the growth of the economy and the improvement of public security in the Albanian state. The liberalization of visas offers opportunities for free movement of citizens in the framework of tourism and short term exchanges, but does not offer opportunities for work and regular immigration. Albania has experienced an intense period of immigration since the fall of communism and the dimensions of these movements have been such that they have brought an imbalance of the population of Albania with a focus in the capital city, to the extent that we can even talk about the depopulation of rural areas in the north and south of Albania. Some of the reasons why albanians immigrate to the countries of the European Union are: the possibility of employment in these countries, family reunification, unemployment in the country of origin and opportunities for study and training abroad. The context of Albanian migratory movements includes both typologies of immigration, regular and irregular immigration. For the purpose of this study, we will only focus on immigration for work reasons, which includes employment, self-employment and seasonal work, analyzing the international and national legal framework. The research work in this study is based on the analysis of primary and secondary data, making a review of the literature, legal and logical analysis, including the historical method.

Keywords: immigration, legal immigration, immigration for work reasons, employment, self-employment, seasonal work.

Introduction

It's been a while since the countries of the Western Balkans have been experiencing a decline in their population, the declining number of births per population and the ever increasing wave of immigration. Immigration is now characterized by regular migratory movements and in accordance with the law, for the purposes of employment, the pursuit of studies and qualifications in European countries and beyond, and for reasons of family reunification. Albania has always been involved in waves of dynamic migratory movements, starting with the fall of the communist regime and after, so much so that people often talk about depopulation levels today. The World Bank has listed Albania in the 20 countries that have the highest relative rate of immigration.[1] If before the purpose of migratory movements was mainly economic or family reunification, in the last decades new factors have come to light that have to do with a better job and qualification, more effective education for children, safer health

[1] *How migration, human capital and the labor market interact in Albania, Ilir Gëdeshi*. (n.d.). https://openspace.etf.europa.eu/sites/default/files/2021-10/Albanian%20version.pdf

services. There is a lack of a long-term perspective in Albania, while in the countries of the European Union and beyond, they see higher chances for employment if they are capable and educated. In recent years, there has been a trend of increasing immigration for work reasons in several countries other than Italy and Greece, which have the two main centers of Albanian emigration. Germany, France, Belgium, Great Britain are the new destinations for Albanians. According to a study carried out in 2018, it was seen that Albanians aged 18-40 were willing to migrate (Gëdeshi & King, 2018a) and that the population wanting to leave had grown significantly (ETF, 2007). Now many young people are learning the German language with the aim of legal immigration to work there. And one sector where a lot of interest is seen is that of health, including doctors and nurses. Emigration has two sides of the coin, on the one hand it is accompanied by innovative ideas, intelligence and new approaches that give a very positive contribution to society, but on the other hand it results in the decline of human capital, with a lack of workers in various professions. Regardless of many positive changes that have been made and continue to be made in different sectors, the part of the labor market reflects various problems that need a structural touch. Working conditions, low salaries, job insecurity, lack of career advancement opportunities are some of the factors that today push Albanians towards European Union countries (INSTAT & IOM, 2020). But on the other hand, this has also brought positive consequences such as improvement of macroeconomic indicators and economic investments (de Zwager et al., 2005; de Zwager et al., 2010). Also, in a long-term plan, the return of immigrants to their country of origin and their contribution through the application of knowledge, skills, qualifications and experiences in EU countries will have a great impact on our country. In the following, the movement of Albanian citizens for the purpose of legal immigration for employment reasons will be addressed, showing the national and international legal basis, defining the beneficiary entities, their rights and obligations based on LAW No. 9668, dated 18.12. 2006 For the Immigration of Albanian Citizens for Employment Reasons.[2]

Legal provisions

Nations define themselves through their immigration policies. Establishing who may enter, who must leave, and who is eligible for membership is central to nation-state sovereignty(Armenta, 2017). The free movement of Albanian citizens inside or outside the territory of Albania is one of the fundamental rights provided for in the Constitution of the Republic of Albania. Likewise, the free movement of citizens is sanctioned in the European Convention on Human Rights. According to Luljeta Ikonomi(2017), there are three important sources of international rights that include international customs, international conventions and principles related to international rights accepted both in host countries and in the home country of immigrants.[3] The Republic of Albania has also ratified other conventions related to the rights of migrant workers such as: European Convention on the Legal Status of Migrant Workers, 1977; Council of Europe Framework Convention for the Protection of National Minorities, 1995;

[2] This law regulates reports regarding the issue of legal immigration for reasons of employment or professional qualification by Albanian citizens and the purpose is to provide assistance and support to these citizens with the good desire to maintain ties with the mother country.

[3] See Ikonomi, L,. (2017). *E drejta e migracionit*.

Convention on the Participation of Foreigners in Public Life at the Local Level, 1997; Council of Europe Convention on Measures against Trafficking in Human Beings, 2005 etc.[4] Also, in the framework of the policies of the European Union, we have a series of auxiliary directives such as: EU Directive on Racial Equality 2000/43/EC, which aims at the protection and equal treatment of all persons (workers) regardless of their origin and ethnicity. Another directive is that of the Blue Card, 2009, which aims to promote the employment of qualified migrants and the respect of their rights. [5]
The Single Permit Directive, 2011 aims to facilitate the procedures for obtaining a work and residence permit for citizens of countries that are not part of the European Union but who stay regularly and legally in EU host countries, and focuses on working conditions, social security, education and professional training.[6]
The directive for seasonal workers, 2014 aims to promote the employment of seasonal workers, providing the conditions for the entry and stay of third-country nationals in the countries of the European Union for the purpose of seasonal employment, facilitating them with accommodation during their stay, health protection and personal security, providing complaint tools, preventing forced labor or their exploitation, etc.[7]
The Inter-Corporate Transfer of Skilled Workers from outside the EU Directive 2014 aims to facilitate the Transfer of skilled workers who are not EU citizens in order to ensure innovation in the economy, attract investment and create jobs.[8]
Also DIRECTIVE (EU) 2021/1883 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 October 2021 is important on the conditions of entry and residence of third-country nationals for the purpose of highly qualified employment, and repealing Council Directive 2009/50/EC.[9]
Regarding Albanian legislation, with importance is Law No. 9668, dated 18.12.2006, "On the Immigration of Albanian Citizens for Employment Motives" (revised) which defines the general conditions of Albanians who immigrate or tend to immigrate for the purposes of employment and professional training, their rights and obligations as well as the obligations that the Albanian state has to create suitable conditions for immigrants. The subject of this law are Albanian citizens who have regularly immigrated and are employed, self-employed or seasonal workers in the countries of the European Union and who tend to return or have returned from these destination countries after the completion of the work contract or professional training.

Important notions regarding the law for the immigration of Albanian citizens[10]

Immigrant - is a person who is, has been or will be employed or self-employed, regularly, in a profitable, non-profit or public activity, with or without a time limit, in a country other than the one of his/her citizenship.[11]

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4 https://publications.iom.int/system/files/pdf/vleresimi_per_mbrojtjen_e_te_drejtave_te_puntoreve_migrante_albpdf.pdf

5 http://ec.europa.eu/dgs/home-affairs/what-we-do/policies/legal-migration/work/index_en.htm

6 http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011L0098

7 http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0036

8 *Press corner*. (n.d.). European Commission - European Commission. Retrieved April 18, 2024, from https://ec.europa.eu/commission/presscorner/detail/en/IP_10_931

9 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021L1883

10 Detached from Law No. 9668, dated 18.12.2006, "On the Immigration of Albanian Citizens for Employment Motives" (revised)

11 Most experts agree that an international migrant is someone who changes his or her country of

Immigration for reasons of employment - is the voluntary departure of the Albanian citizen from the territory of the Republic of Albania in order to be employed, self-employed, to be trained professionally through work in another country or to reunite with the family member who has immigrated.
Cross-border employment - is the employment of Albanian citizens, who move from the territory of the Republic of Albania to the territory of the border areas of a country neighboring the Republic of Albania, for the exercise of employment activities, based on contracts, provided that they return to their permanent place of residence every day or at least one day a week, while maintaining their permanent residence in the country of origin.
Seasonal employment - is the employment of Albanian citizens, which is carried out only during a period of the year and depending on the seasonal conditions.
Employer - is any citizen, Albanian or foreigner, with headquarters inside or outside the territory of the Republic of Albania, who has signed an employment contract with the Albanian immigrant.
Self-employed - is the immigrant, who has been, is or will be engaged in a profitable activity, providing a living through this activity, working, alone or together with family members, as well as any other immigrant, defined as self-employed by the legislation of the state where he is employed by bilateral or multilateral agreements.

The rights of Albanian migrant workers

Every Albanian citizen, regardless of race, religion, color, sex, political belief, etc., has the right to immigrate from the territory of the Republic of Albania in accordance with the rules and principles provided for in the international acts that are mandatory for implementation by the state. In this area, however, there are less clear examples of actual decision-making on asylum and immigration that refer explicitly to the need to fight racism and xenophobia (Furuseth, 2003). Albanian citizens also enjoy the political rights provided by the constitution of the Republic of Albania and legal acts, taking an active part in the political life of the country. The responsible state authorities create the appropriate facilities for immigrants in order to exercise their rights to vote, in accordance with the Constitution, legal acts and specifically with the Electoral Code and the legislation of the host country.
The right of representation enables Albanian immigrants to contact and cooperate with the central and local government bodies of the Albanian state, as well as to contact with diplomatic and consular representatives of Albania in the host countries, through elected representatives of their organizations and associations, to express and protect their interests, respecting the legal provisions in force. Likewise, Albanian immigrants have the right to benefit from state services, they have the right to free information and advice regarding professional training, intermediary services for employment, social protection, housing, education, social insurance, knowledge of working and living conditions. in the country of the host country, through media, brochures, etc.
It also assists with the organization of courses for learning the language or basic knowledge for the professions required by the host country for the citizens of the Republic of Albania. Also an advantage is the fact that the responsible state authorities

usual residence, irrespective of the reason for migration or legal status" (UN 2019).

exempt from customs payments and taxes Albanian immigrants, who have acquired the status of an immigrant returned to the country of origin, for personal belongings and movable property owned by migrant workers and their family members and for a quantity of hand tools necessary for the profession they have to practice.[12]

Responsibilities and obligations of Albanian migrant workers

In addition to the rights, workers who wish to immigrate must take into account the responsibilities that await them. Immigrants in the host countries have the obligation to adhere to the employment motive for which they immigrated. Moving into an irregular situation, as well as committing crimes and criminal misdemeanors in the host country are considered criminal offenses. Based on the law, the main thing is that Albanian citizens who want to immigrate, in addition to the documentation, which is required based on the legislation of the host countries, must have a work contract with the employer, as well as a passport or a valid travel document, accepted by the legislation of the Republic of Albania and the host country, with an entry visa of the host country. Registration of citizens requires that every Albanian citizen who wants to immigrate for employment purposes, as well as returned immigrants, register in the "Registry for immigrants" at the Ministry of Labor and Social Welfare.[13]

Germany in 2023 adopted The New Skilled Immigration Act, which aims to provide facilities for skilled workers with vocational training and for citizens with practical knowledge to immigrate to Germany. The Western Balkans regulation gives nationals of Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia access to the labor market in Germany for any type of employment in non-regulated occupations. The scheme was originally set to expire at the end of 2023. The Regulation on the Further Development of Skilled Immigration will extend the Western Balkans Regulation indefinitely. From June 2024, the quota will be 50,000 approvals per year issued by the Federal Employment Agency.[14]

Obligations of the Albanian state towards Albanian migrant workers

The responsible authorities of the Albanian state have the right to respect the free movement of Albanian citizens, to respect the principle of gender equality, to prevent the trafficking of Albanian citizens for employment reasons, to support the establishment, development and strengthening of immigrant communities abroad, consolidating the activities undertaken by clubs, organizations and associations, with the aim of strengthening the ties between them and with the country of origin. They should also take care of enabling conditions for the education of Albanian immigrants and their families, for the preservation of language, culture and national heritage, as well as spiritual ties between immigrant communities. The state authorities also promote the voluntary return of immigrants after completing their qualifications and work contracts, offering cooperation with the aim that they contribute to their country by benefiting from the experiences and new skills they have acquired from the professional and cultural side and leave open cooperation with host countries.

[12] Article 9 of Law No. 9668, dated 18.12.2006, "On the Immigration of Albanian Citizens for Employment Motives" (revised)

[13] Article 10 Law No. 9668, dated 18.12.2006, "On the Immigration of Albanian Citizens for Employment Motives" (revised)

[14] https://www.make-it-in-germany.com/en/visa-residence/skilled-immigration-act

Conclusions and recommendations

The international immigration of Albanians has not stopped for years, with an increasing trend in recent years, but what should have changed is an increasing trend in the immigration of citizens who have completed their studies or have a profession, who they see EU destinations as hotbeds of offers for better jobs, qualifications and higher salary. In this scoping of the new age of migration which spanned the period from the late 1980s into the new millennium, we can note how the technology of travel and communication changed, facilitating new regimes of mobility and staying in touch (King,2020). International immigration has also affected education, this can be seen in the awareness of Albanian citizens for the need for professional training, language acquisition and to know the history and culture of the host countries, in order to better and more easily adapt to the demands of the labor market outside the country of origin. The impact of immigration has also become evident in the decrease in the number of students attending pre-university and university education in Albania, which will also affect the labor market in the near future.[15]

As for the immigration of Albanians for reasons of employment, they are free and have rights that derive from the constitution, international acts, and legal acts. They can move for reasons of work, self-employment or seasonal work in accordance with the rules of the host country. And each of these citizens is encouraged to voluntarily return to their home country after their work contract has ended, after they have received the desired experiences and qualifications abroad, with the aim of contributing to their country of origin and thus having positive impact on the development of the country. From the state side, substantial reforms are needed in the Albanian labor market in order to mitigate strong immigration trends. It is important to pay attention to policies and programs related to the labor market in order to reduce unemployment, and it is also important to increase wages, even though they have increased in recent years. State policies should focus especially on employment policies that affect middle and skilled workers who are more and more inclined to emigrate. Employment in the public sector must be rationalized through fair and transparent recruitment procedures. More flexibility and support for entrepreneurship is needed, for new business developments that generate much-needed jobs. In particular, the youth of Albania needs a clear perspective for the future, in order to minimize the number of those who see emigration as the 'only solution'. This would require not only improving the scale and quality of existing jobs, as well as the opportunities to do business in Albania, but also the creation of a suitable environment for talented and well-educated young people to find jobs that give them satisfaction, that are paid in fair proportion to their qualifications and that create equal opportunities for professional advancement. Albania should cooperate with the main host countries in the EU so that this migration turns into a type of circular migration. In this way, the main host countries can cooperate and invest in the qualification and education of potential migrants in Albania, producing more such professionals that the country needs. On the other hand, the experience gained in the host country, after returning, would

[15] See NATIONAL MIGRATION STRATEGY 2024-2030, https://konsultimipublik.gov.al/documents/RENJK_676_draft--STRATEGJIA-KOMBETARE-E-MIGRACIONIT-2024-2030-2112023.pdf

improve the quality of human capital in Albania. In this situation, we would have a win-win situation for all parties, where both the migrants and their countries of birth and reception would benefit from this cooperation.

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The comparison of the effectiveness of imputation methods based on real Datasets with missing data

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Abstract

The absence of data is a common occurrence in research despite carefully planned and controlled investigations. Statistical power can be seriously affected by missing data, and the results may be skewed. It is therefore important for researchers to ensure the accuracy and validity of their analysis by minimizing missing data and accounting for any missing values. The performance of various approaches to filling in the missing values will be evaluated in this study. It will be based on real data. A set of real-world data was obtained in collaboration with Korçë Regional Hospital to evaluate techniques for filling missing values. Insulin-dependent patients were monitored before and after meals for three years. The data contains missing values in varying proportions. We will fill in missing values using multiple imputation, which is a highly effective method. To complete these values, we will use three functions from the "mice" package and other method is "missForest" package in the R programming language. The results obtained using the four proposed methods will then be compared. We will use MAPE and RMSE statistics to evaluate the efficacy of the methods that have been suggested. We discovered that the "pmm" function from "mice" method produced better results when dealing with this real data.

Keywords: Missing values, multiple imputation, pmm, craft, lasso.norm.

Introduction

Missing values are unanswered questions or unobserved variables. Indeed, missing values can greatly impact the accuracy of data analysis. It's important for analysts to be aware of missing data and take steps to handle them appropriately. Even a small amount of missing data can lead to incorrect conclusions and affect the overall quality of a study. So, it's crucial to address missing values in a thorough and thoughtful manner. It's important to perform a comprehensive analysis of missing values in a study to determine if they pose any issues. In some cases, statistical procedures may automatically remove cases with missing data, which can be problematic if a large number of data points are missing. This can result in having insufficient data to perform a meaningful analysis. When missing values represent a significant portion of the data, it's important to take them into account, especially if they pertain to a group that is crucial to understanding the problem at hand. Ignoring missing data that could be meaningful may lead to biased or incomplete conclusions. Therefore, it's essential to perform a careful examination of the missing data and determine the best strategy for dealing with them to ensure the accuracy and completeness of the analysis. Using statistical methods, we can complete the missing data in such a way that the completed information is as close as possible to the real data. (For more about these methods, see Baraldi A. N. and Enders C. K. (2010).
In this material, we will describe and demonstrate multiple imputation as a very

efficient method for filling in missing values. The multiple imputation method is popular in the medical research field for dealing with missing values. In imputation, missing values are replaced with some guesses. We will use the R programming language and the "*Mice*" and "*missForest*" packages in the case of real data. With the completed information, these methods will help us perform the most appropriate analysis and make the best decisions.
Understanding the mechanisms that cause missing values is crucial to selecting an appropriate analysis and interpreting the results. Sometimes statisticians have control over the mechanism. Researchers must understand the nature of missing data before attempting to impute it. Identifying whether the missing data is random or not can impact the validity of the analysis and the interpretation of the results. It's important to address these underlying patterns to ensure the accuracy and reliability of the conclusions drawn from the data. (See Little & Rubin (1987)). According to Rubin (1976), the missing data is seen as a probabilistic process, as is the difference between the data that describes the measured changes and the probability of the missing data. He was the first to discover a useful taxonomy for describing the assumptions underlying the depreciation process. A missing data mechanism refers to the relationship between missing data and the values of variables in a data matrix. There are three types of missing data mechanisms based on this focus: missing completely at random (MCAR), missing at random (MAR), and missing not at random (MNAR). (For more about these mechanisms, Rubin,D.B (1976) and Rubin, D. B., and Little, R. J. (2002).

Data collection and description

The issue of missing data remains a frequent one in medical research, despite all the effort researchers put into careful study design and conduct. Missing data literature is well developed, with numerous discussions of different methods for handling missing data as they are applied in both randomized trials and observational studies. The collection of real data that has been used to see the performance of missing value-filling methods has been obtained in collaboration with the Korca Regional Hospital. Over three years period, 515 insulin-dependent individuals had their measurements recorded before and after the meal. This data has missing values. 8.5% of the data are missing in the first measurement, which are the blood glucose measurement before the meal (sober), and in the second measurement, the blood glucose measurement after the meal, 10.6% of the data are missing. Following is a graph produced by SPSS that summarizes all the data obtained in the study. Various patient data, such as age, gender, cholesterol, and pre-and post-bread sugar measurements, are examined. The only data that will be referred to later is the blood glucose measurement data.
The results of the overall summary of missing values are shown in Figure 1.

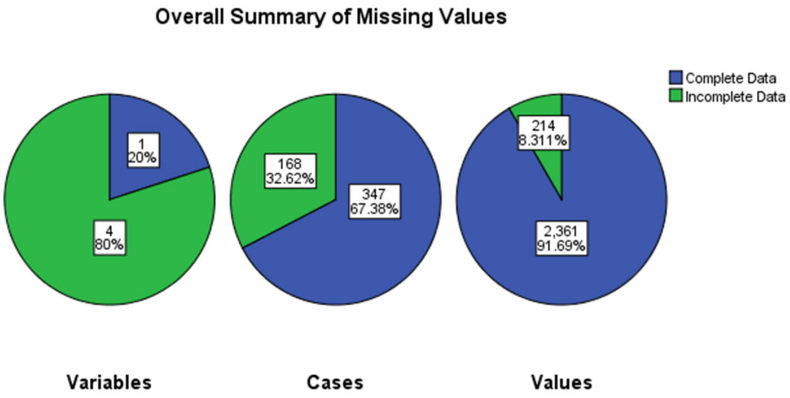

Figure 1: Summary of missing data

When constructing the graph of the series for the sober measurements, we notice that the nature of this series is periodic. In order to accurately show the period of this series, we will use the *periodogram* function from the TSA package in the R program.

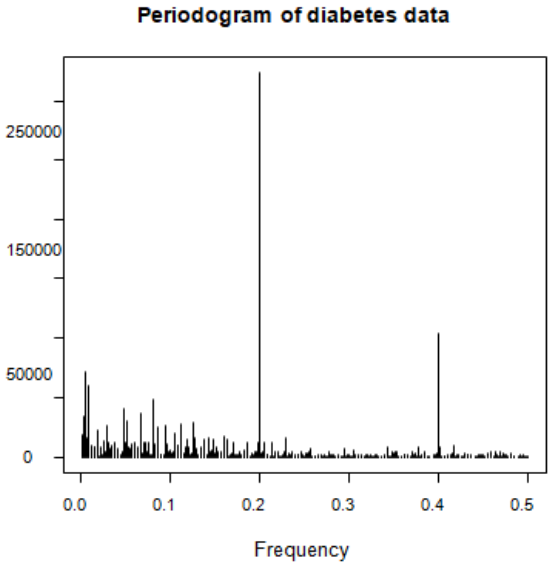

Figure 2: Diabetes series periodogram

Based on the figure above, we notice that the largest value is reached for the frequency 0.2, this shows that the period is $T = 1/0.2 = 5$. By finding its period, which is 5, it is

noticed that this series is periodically correlated. (see [2], [5])
Using the *perARMA* package in the R software as well as the "*permest*" function, we will calculate the seasonal means and compare the results obtained with the seasonal means obtained after filling in the missing values with the help of the *Mice* and *missForest* packages. A plot of the series is shown in Figure 3, before and after filling in the missing values.

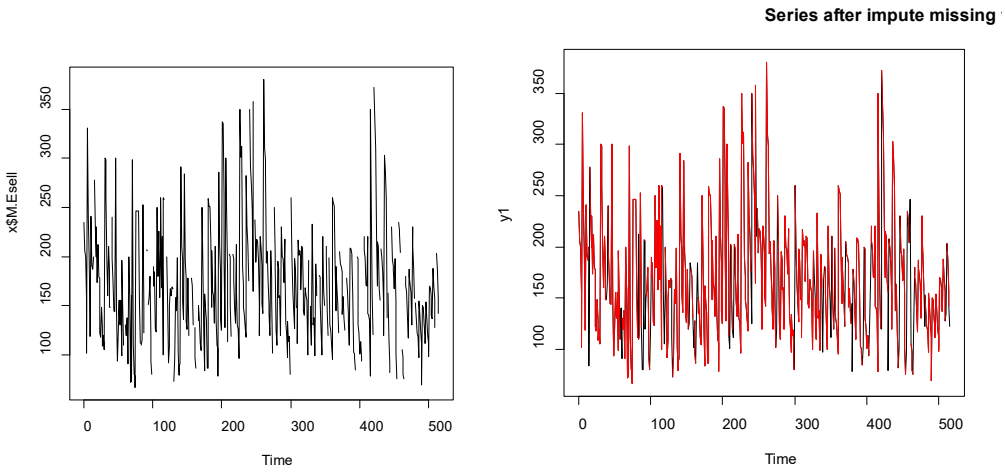

Figure 3: Left series of diabetic data with missing values, right the series after impute missing values with "*pmm*" method from Mice package

We will first calculate the seasonal means of this series using the perARMA package, where by the "*permest*" function, the missing values are imputed with the seasonal means. After this step, we will use the *Mice* and *missForest* packages, which are specific for filling in missing values based on multiple imputation. Referring to the *Mice* package, we will use three methods to fill in the missing values, *pmm* (predictive mean matching), *cart* (Classification and regression trees), *lasso.norm* (lasso linear regression). In order to evaluate the performance of the methods, the MAPE (Mean Absolute Percent Error) and RMSE (Root Mean Square Error) accuracy measures obtained from the results of seasonal means (SM) are compared before and after the missing values are imputed All result about seasonal mean before and after imputation proposed methods are in Table 1.

Table 1: Seasonal means for diabetic data using four methods

	Seasonal mean	**Seasonal mean after impute with mice pmm_method**	**Seasonal mean after impute with mice Cart_method**	**Seasonal mean after impute with mice Lasso.norm _method**	**Seasonal mean after impute with missForest**
1	216.7573	216.7573	216.7573	216.7573	216.7573
2	187.9703	188.0000	187.4369	188.4502	188.2400
3	164.4500	164.3301	164.6117	164.9140	164.5056
4	146.6771	144.9806	145.1456	146.1655	146.3560

5	126.0423	127.2621	130.5437	132.5132	133.8888
MAPE		**0.004434823**	0.009772297	0.01153848	0.01251386
RMSE		**0.9360857**	2.14097	2.918215	3.514157

Based on our results, we noticed that all four methods provided very good results. The "*pmm*" method from the *Mice* package gives a good approximation to the given series in our case. We calculated the MAPE and RMSE matrix for each method and determined that "*pmm*" provided the best result.

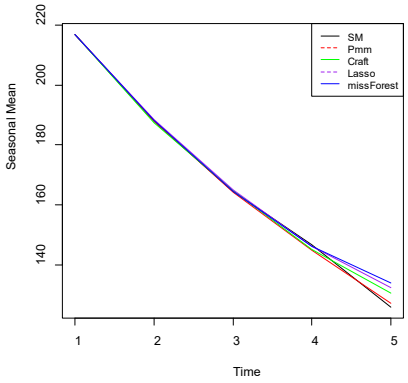

Figure 4: Seasonal means for diabetes data using four methods

A histogram can also be constructed based on the distribution of the data to demonstrate how effective the proposed methods are at completing the missing values. Overall, the imputed distributions appear to be more similar to the originals. The diabetes series imputed by "*pmm* "before meal distribution appears to be the most similar. The results are shown in Figure 5.

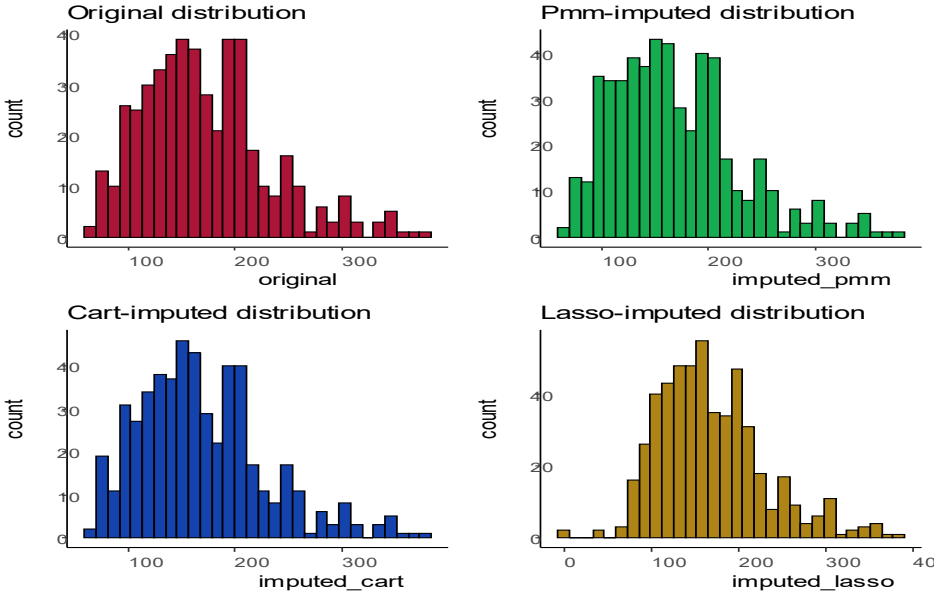

Figure 5: Distributions after "*pmm*", "*cart*" and "*lasso.norm*" methods from *Mice* imputation

We use the same idea also for the series of measurements after the bread. We noticed that the proposed methods follow the same trend even though we have a greater number of missing values. The results obtained are presented in Figure 6.

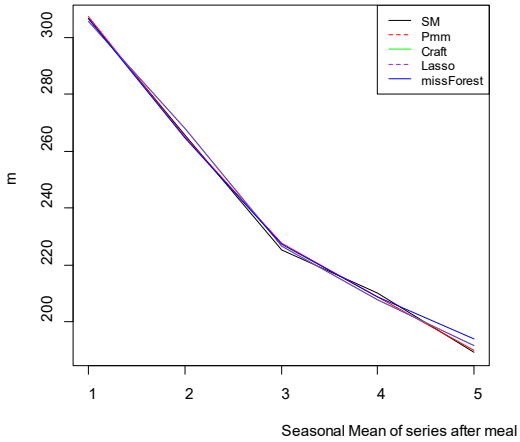

Figure 6: Seasonal means for diabetes data after meal using four methods

Conclusion

In our study, we examined two time series using real data on diabetes. There are missing values in this data. In the first measurement, the blood glucose level before the meal (sober), 8.5% of the data are missing, and in the second measurement, the blood glucose level after the meal, 10.6% of the data are missing. Next, we used the *pmm*, *cart*, and *lasso.norm* functions to impute the data from the *Mice*, and another method is the *missForest* package in R. Based on the outcomes of the two scenarios, we saw that the four suggested approaches performed admirably. In this instance, Table 1's results show that the "*pmm*" approach produced better MAPE and RMSE values when compared to the other three methods.

We used the same idea in the series with more missing values and we noticed that the performance of these methods was very good. We have used the *per*ARMA package in the R environment as well as the "*permest*" function and will calculate the seasonal means and compare the results obtained with the seasonal means obtained after imputation of the missing values with the help of the four methods proposed by the *Mice* and *missForest* packages.

In this case from the results obtained, we notice that all these methods have a good performance. After this, we compare the results obtained for mean absolute percentage error (MAPE) and root mean squared error (RMSE) in estimating the seasonal means before and after imputing the missing data. We notice that based on these results "*pmm*" imputation method has better performance compared to other methods. We have used SPSS and the R programming language for data processing, and all the appropriate scripts have been built.

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Fiscal evasion and factors affecting it

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Abstract

The term "tax evasion" includes the wilful concealment or avoidance of obligations tax, through non-submission of documents or non-declaration of data (eg: sales or realized income), falsification of accounting and tax documentation, obtaining falsified documents to fictitiously increase business expenses or deductible VAT leading to the incorrect calculation of the tax or tax amount. It is also considered tax evasion, concealment of income, in order to hide or avoid paying tax obligations. Taxpayers who are found to have committed these violations are subject to the applicable provisions of Law No. 9920, dated 19.05.2008 "On tax procedures in the Republic of Albania", amended. The tax withholding agent, tax or fee agent, in case they are found to have committed tax evasion, are obliged to pay a fine, in the following amount:
Fine in the amount of 0.06% of the full amount of the tax, tax or fee, in case he has withheld, calculated and declared the withholding tax or the tax, tax or fee, but has not transferred it to the state budget.
Fine in the amount of 50% of the full amount of the tax, tax or fee in case of not withholding tax or tax or not collecting the tax or fee;
Fine in the amount of 100% of the full amount of the tax, tax or fee if withholding and not declaring and paying the tax at source or the tax, tax or fee collected.

Keywords: Fiscal evasion, factors, Albania.

1. Introduction

The findings on the level of education and tax evasion and avoidance are consistent with the findings of Kasipillai et al (2006), Ahmed et al (2007), also Houston and Tran (2001) and Devos (2005), both from Australia. , showing a significant positive association of educational attainment and taxpayers' perception of taxation.
This research is an approach to analyze the fiscal evasion of businesses in Albania. From our analysis we see that evasion is a complex phenomenon, difficult to measure and simultaneously influenced by several factors. Some factors such as the level of fines, unfair competition and corruption of the tax administration can be avoided to reduce the level of evasion, while some other factors such as age and gender are personal factors and cannot be avoided. From the linear regression analysis, it is observed that the age of the person and the size of the firm are the factors that influence the decision to tax evasion to the greatest extent.
Tax evasion is illegal and refers to actions or omissions made by businesses to avoid paying taxes or to pay a lower amount than the actual liability. The importance of studying fiscal evasion lies in the effects it brings to the economy, the decrease in state budget revenues. The main factors influencing tax evasion are grouped into 3 groups called tax evasion theories, economic theories that include various economic factors (tax level, tax administration corruption, complex tax system, etc.) as causes of tax evasion, psychological theories that involve people's behavior and tendency to avoid

and social theories that look at the cause of behaviors and tendencies that society has for a certain action.
The structure of businesses in Albania shows that mainly in Albania we have small family businesses in the service sector. From the analysis of primary data collected through a questionnaire in 244 randomly selected businesses, it results that women have more ethical behavior than men. Also older people have more ethical behavior than younger people. The period of operation of a firm in the market affects the tendency for tax evasion, a firm that has been operating for many years in the market has a low tendency for tax evasion. Firm size affects the tendency for tax evasion, larger firms have a greater tendency to avoid taxes and commit tax evasion. The level of fines affects the tendency of businesses for tax evasion, the high level and heavy fines make businesses behave more ethically in terms of paying taxes and tax evasion. The level of corruption in the administration affects the tendency for fiscal evasion, a corrupt administration leads to fiscal evasion by businesses. Unfair competition affects tax evasion. Unfair competition at high levels encourages businesses to avoid paying taxes and tax evasion.
The constant change of rules and norms does not seem to have significant effects on the tendency of businesses for fiscal evasion. The more frequent these changes, it does not mean that the tendency of businesses to avoid taxes and avoid will be higher.
Further research can be done on the Factors Affecting Profit Evasion of Businesses in Albania.
It would be particularly interesting to study and analyse to what extent is fiscal evasion in Albania and what is the tendency for evasion in recent years, increasing or decreasing.
Of course, committing fiscal evasion is called such when it is done with the purpose of avoiding the payment of taxes which are mandatory for all active businesses that operate
in the Republic of Albania

2. **Tax evasion law**

Point 7 of Article 86, of Law 92/2014 - on VAT in RSH' where this provision is referred to defines "The taxable person, for whom a supply of goods or services has been performed and who knows or cannot deny the fact that VAT- here to be paid or part of this VAT on the supply or on all previous supplies of goods or services, it was not paid due to fraud, it is jointly liable with the supplier for the payment of VAT".
Fiscal evasion leads to a big tax loophole.
In the last decade, various fiscal authorities or non-governmental organizations have studied the informal economy, fiscal evasion and the direct and indirect impact on the level of the tax gap. In some countries there are different definitions related to tax loophole clarification, but they contain the same meaning. The determination of the tax gap is considered in most of the publications as an amount of taxes and uncollected taxes, as a result of non-compliance with laws and loopholes in laws and administration.
The calculation of the tax gap does not take into account the fact of payment or non-payment of taxes and duties. In the identification of the level of the tax gap, all tax revenues are included, which come from non-registration, non-reporting, from the

use of tax avoidance schemes, errors in the calculation of obligations, self-calculation errors by the taxpayer, deficiencies and lack of attention of the administration in the implementation of her duties.

3. The emptiness that evasion brings

In the case of Kosovo or Albania, as long as there is a lack of official definition or a lack of confrontation with studies published by study and research organizations, then ALTax Center has decided below a definition that it considers to be the most appropriate in relation to the goals of assessment of the tax gap:
The tax gap is the difference between the taxes and duties that should be considered payable by all citizens and businesses, and the taxes and duties that are actually declared and paid by all taxpayers within a fiscal year and that are collected by the tax administration with its resources and its agents.
The tax loophole comes as a result of the non-enforcement of laws and the lack of voluntariness in their implementation by taxpayers.
If everyone voluntarily followed all fiscal laws, then there would be no tax gap between legal requirements and their implementation. But, in the opposite case, if the space between the voluntary implementation of fiscal laws and their voluntary non-implementation would increase (evasion), the tax gap would also increase. In this way, the size of the tax gap goes in direct proportion to the size of fiscal evasion. From the calculations of the weight occupied by tax evasion and exclusionary and facilitating policies in the tax gap, the ratio ranges from 76 to 90 percent of it.
First, the tax loophole is not the cause but the consequence of tax evasion. It is not just equated with tax evasion. Measuring the tax gap is not simply measuring tax evasion. Fiscal evasion itself is understood as non-payment of taxes by not applying the legislation through the use of (a) forms of false declaration of income realized by the citizen or business, (b) non-declaration and consequently non-payment of obligations of the undeclared part, (c)) false declaration of higher expenses.
Secondly, the tax gap is also a consequence of tax evasion, where taxpayers use the legal spaces, or the irregularities of the schemes of exemptions and fiscal facilities, which were intended for another purpose (investment promotion, redistribution of the burden), but which serve their users to reduce of the amount of the real obligation.
Thirdly, the tax gap is related to errors in the calculation of fiscal obligations by the administration, followed by the fiscal culture in the country.
Fourth, the tax gap is a consequence of the administration's ethics and low quality of service. Weak administrative capacities, little attention to taxpayers' complaints, as well as corruption in the administrative hierarchy make it possible to reduce the amount of the real obligation to be paid and increase the gap with the implementation of laws.

4. What else can be done to reduce evasion?

In 2008, the flat or proportional tax was implemented for the first time, which in some way reduced the fiscal burden. In the first year of implementation, we had an increase in fiscal income by over 16% and an increase in the registration of new businesses by

over 12%, of course this increase did not come only as a result of the flat tax. But let's say that it also contributed to the reduction of evasion, however this positive trend was reduced in the following years.
In 2010, fiscal cash registers were introduced to the market, which made a very important contribution to the fight against informality as they served above all to raise awareness of commercial activities, but they could not solve the problem of "printing" the tax coupon.
Fiscal cash registers, beyond the current debates on costs or efficiency, were and are a very important tool for measuring business turnover, fiscal cash register invoices were simple to make and tax control was simpler. However, they did not solve the intersection of information, this remained difficult even though there were about 100,000 fiscal cash registers in the market from almost 160,000 active businesses.
In 2021, the government implemented electronic invoices and fiscalization is now done in real time.
Albanian businesses, now thanks to existing fiscal equipment (spending little energy and money for their updating) and new software (which also led to the liberalization of the market)

5. **Conclusions**

Point 7 of Article 86, of Law 92/2014 - on VAT in RSH' where this provision is referred to defines "The taxable person, for whom a supply of goods or services has been performed and who knows or cannot deny the fact that VAT- here to be paid or part of this VAT on the supply or on all previous supplies of goods or services, it was not paid due to fraud, it is jointly liable with the supplier for the payment of VAT".
Some factors such as the level of fines, unfair competition and corruption of the tax administration can be avoided to reduce the level of evasion, while some other factors such as age and gender are personal factors and cannot be avoided.
The state of fiscal evasion in Albania is difficult to assess, due to the lack of accurate statistics and reports from the competent agencies. It is challenging to collect the necessary data due to the growing bureaucracy and the large number of cash transactions
Tax avoidance, according to the OECD is a tax saving plan in which a taxpayer arranges his affairs in order to reduce his tax burden. Tax avoidance is the deliberate act of reducing taxes using legal means
The level of informality, tax avoidance and evasion is high in many businesses formally registered as small businesses, but which in reality are large. It is also clear that, even with the current registration limit, many of the small businesses should have been registered for VAT, but the lack of information and especially efficient capacities for receiving and using the information properly from the tax administration has caused informality to take the present size.
Although for some years the high fiscal burden in the form of taxes on wages and social security contributions has been reduced, it is now a well-known postulate that is used politically to influence the fragile environment of the labor market, which can to have serious consequences on the productivity of a business even though it has the character of a political slogan. This is the reason why many employers who prefer to pay a certain amount of wages by envelope or act completely informally are justi-

fied. This mode of operation can potentially distort competition in the market as tax-exempt employers have an unfair competitive advantage over compliant businesses. Lowering payroll tax and social security contributions has been proven in some cases to increase compliance and potentially increase tax revenue as a result. However, the studies carried out in this direction conclude that only the reduction of labor taxes not accompanied by reforms is an incomplete formula even though it may bring a relative increase in the budget. The fiscal reform, which is accompanied by the reform of the labor market and other reforms for the economy, education and the financial market, should also include the package of support measures for a formal market for an encouraging fiscal environment, especially for small and medium-sized businesses. While it is also important to facilitate compliance to review and simplify legal and administrative requirements, such as registration and licensing, continuing with their qualitative part. In fact, compliance costs (in terms of time, money and expertise), especially for small businesses, will tend to remain flat for several years.

Clear economic indicators should be developed to regularly measure the progress of the labor market and related issues to help the social partners in their discussions on the determination of minimum wages, the treatment of employees, the fight against informality and the growth of capacities. Close cooperation with INSTAT is necessary, which should be based on the comparison of minimum wages and average wages in specific sectors and regions, as well as the publication of other indicators that show the labor market trend.

Depending on the market data on its tendency and situation, it is a rather complex challenge for public agencies and the entire private sector to fight in reducing the percentage of an indicator that has turned into the biggest enemy of the market: informality.

Naturally and related to the mission of the tax administration as well as the labor inspectorate, the weight of informality needs to be eased year after year until reaching the objective set by the government.

In the multitude of strategies and operating programs to combat informality, you always see commitments and tasks from the most diverse. Year after year renewed commitment to informality and at the end of many years he has played from the country a little. It still has a weight that takes enough oxygen from the formal market. Although thousands of hours of work have been consumed and successes have been achieved in various tasks, the war is still an open circuit and looks more like a seasonal engagement than a necessarily continuation of daily tasks.

Specific schemes, clearly targeting the informal market, should be designed to allow informal workers and their employers to enter formality. Individuals and businesses can be given a certain period of time (like artificial respiration) during which they can enter the formal economy without sanctions. The administration of these measures should be as simple as possible to implement as prescribed, avoiding unnecessary bureaucracy and excessive rules in implementation.

How can the problems of informal work be addressed by simultaneously testing fiscal policy and administration?

One way to encourage consumers and businesses to use declared work is to temporarily reduce value added tax (VAT) on certain goods and services where undeclared work is more prevalent e.g. In Finland and Italy, VAT was reduced in the field of construction, renovation and maintenance.

A sector in particular need is agriculture and tourism services, which represent the highest level of informal employment in Albania. The dominant characteristic of traditional agriculture is the small scale of enterprises, for which the challenge is to increase productivity and reduce vulnerability.
An interesting practice has been introduced in Italy through the voucher service in the agricultural sector, which allows the arrangement of students and pensioners, who supply their services on a casual basis during the grape harvest season. The success of these schemes leads to the expansion of this approach to other sectors and activities, such as seasonal youth and door-to-door delivery of goods and services.

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Irrigation rate maps for the main plants in Albania

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Abstract

Albania is a country where about 50% of employment is occupied by agriculture and as such, it needs to use the resources it has to develop this sector most optimally.
In total, agricultural land covers an area of 695,000 ha (24% of the country's total area), of which about 360,000 ha are estimated to be irrigable, and about 120,000 ha are potentially irrigable.
To make the best possible administration of water resources in function of the development of agriculture, it is necessary first of all to determine as well as possible the amount of water needed for irrigation, as well as the types and number of plants that are now planted, differ from those that were planted before the 90s.
In this paper, the water needs for different plants will be determined based on the methodology recommended by the World Food Organization (FAO), FAO Penman-Monteith published FAO Irrigation and Drainage Paper No. 56 (FAO, 1998), as a new standard to calculate potential evapotranspiration for different plants.
The purpose of this work is to prepare the irrigation rate maps for Albania for irrigation rates for effective rain with 75 and 90 return period for the entire vegetation period.
This material can serve as a guide for the planning and design of different irrigation works.

Keywords: Agriculture, Hydrology, Irrigation Rate.

Introduction

Albania is a country where about 50% of employment is occupied by agriculture and as such, it needs to use the resources it has to develop this sector in the most optimal way.
In total, agricultural land covers an area of 695,000 ha (24% of the country's total area), of which about 360,000 ha are estimated to be irrigable, and about 120,000 ha are potentially irrigable.
Irrigation of these surfaces is done mainly with free flow, and the irrigation canals have an efficiency of 30 ÷ 60%, which means that a relatively large part of the water is not used.

Materials and methods

To determine plant evapotranspiration, different methods have been used in Albania, this paper will be based on the FAO Penman-Monteith method published FAO Irrigation and Drainage Paper No. 56 (FAO, 1998), as a new standard to calculate potential evapotranspiration.
The purpose of this work is to prepare the maps of Albania for:

- Irrigation rates for effective rain with 75 and 90 return period for the entire vegetation period for the main plants in Albania.

The process of evapotranspiration

The combination of the two separate processes whereby water is lost from the soil surface due to evaporation and from plants due to transpiration is defined as Evapotranspiration (ET).

Evapotranspiration

Evaporation and transpiration occur simultaneously and there is no easy way to distinguish between the two processes. When the plant is small, water is mostly lost by evaporation from the soil, but when the plant is well developed and manages to cover the soil completely, transpiration becomes the main process. In the first stage of planting, almost 100% of evapotranspiration comes from evaporation, while with the full growth of the plant, more than 90% of ET comes from transpiration.

Factors affecting evapotranspiration

Weather parameters, crop characteristics, management and environmental aspects are factors that affect evaporation and transpiration.

Meteorological data

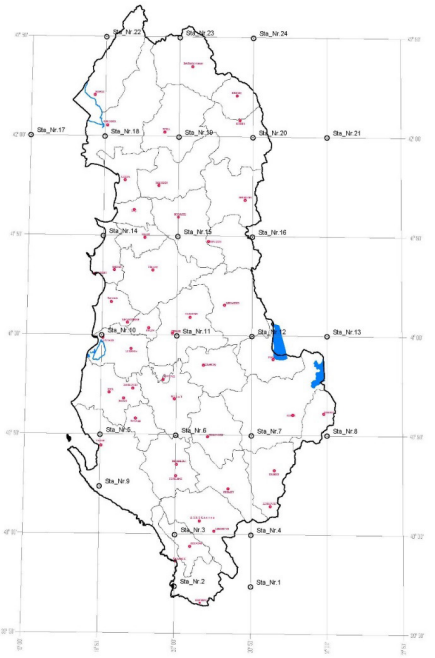
The metrological data used for this paper were obtained from the NASA Langley Research Center (POWER) project established by the NASA Earth Science Directorate Applied Science Program.
POWER supports three user communities with solar and/or meteorological data:

- Renewable Energy (RE),
- Sustainable Buildings (SB)
- Agroclimatology (AG).

Bearing this in mind, to download the data for this work, 24 stations (data points) were taken. For each of these points (stations), daily data were obtained for:

- Maximum temperature at 2 m height (T2M_MAX)
- Minimum temperature at 2 m height (T2M_MIN)
- Dew point temperature at 2 m height (T2MDEW)
- Daily precipitation layer (PRECTOTCORR)
- Wind speed at 2 m height (WS2M)
- Atmospheric pressure (PS)

For the above 6 parameters, daily data were obtained from 03 - January - 1981 and until 31 - December 2020.



Map of data stations

The method used to determine Evapotranspiration

To determine plant evapotranspiration, as we said above, different methods are used in Albania, this paper will be based on the FAO Penman-Monteith method published FAO Irrigation and Drainage Paper No. 56 (FAO, 1998), as a new standard to calculate potential evapotranspiration for different plants.

The Penman-Monteith equation

In 1948, Penman combined the energy balance with the mass transfer method and derived an equation to calculate evaporation from an open water surface from standard climate data of sunlight, temperature, humidity, and wind speed. This combination of methods was further developed by many researchers and extended to plant surfaces by introducing resistance factors.
The combined Penman-Monteith equation states:

The reference evapotranspiration ETo provides a standard for which:
- Evapotranspiration can be compared for different periods of the year or for different regions
- Evapotranspiration can be correlated for different crops.

The equation uses standard measured climatological data of solar radiation (sunlight), air temperature, humidity and wind speed. To ensure the integrity of the calculations, weather measurements should be made at 2 m (or converted to that height) over a large area planted with grass shading the soil and watering as per the standard.

Plant evotranspiration (Etc)

Reference evotranspiration (Eto) differs from plant evopotranspiration (Etc) as the plant's ground cover, crown characteristics and aerodynamic resistance differ from the grass that is taken as a reference for Eto calculation. These changes are integrated into the Kc coefficient. This coefficient can be defined as a coefficient Kc or as the sum of two different coefficients Kc = Kcb + Ke where: Kcb is the base coefficient and Ke is the evaporation coefficient from the soil.

Watering rate

The ETc value calculated with the above method expresses the total evapotranspiration that occurs during the plant's development phase.
The irrigation rate, which is the amount of water that the plant needs during the entire vegetation phase, is defined as the difference of plant evapotranspiration (ETc) with the arrival of moisture to the soil from atmospheric precipitation.
Pef – effective rain (mm)
W – volume of water retained by the soil during plant development

Calculation of effective rainfall

One of the methods to determine effective rainfall is the Runoff Curve Number (SCS). This method determines surface runoff based on soil type and precipitation layer. Effective rain is calculated as the difference between the precipitation layer and the surface runoff layer.
The found values of the effective rain are subjected to a statistical processing, to determine their average values for a certain security.
In this paper, the value of effective rain for the return periode of 75 and 90 year is calculated.

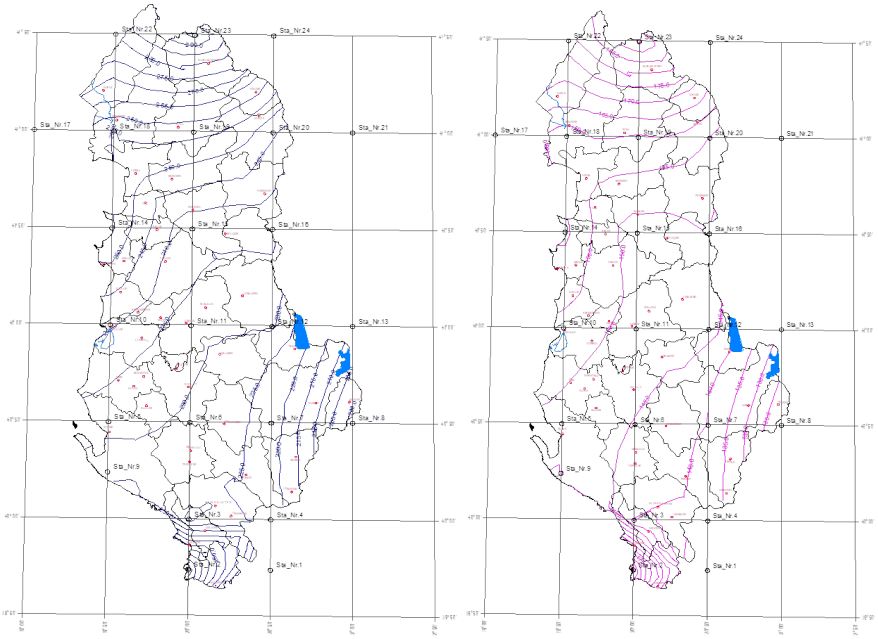
Agricultural crops that are planted today

Based on the national irrigation and drainage strategy 2019 ÷ 2031 In Albania, agriculture accounts for about 50% of employment and 19% of GDP. The average farm size is about 1.26 ha and is divided into an average of 4.7 plots, which means that the average plot size is only 0.27 ha. The main crops grown are vegetables, fruit trees, vineyards, olives, cereals (INSTAT). In 2014, access to irrigation extended to an area of 120,000 ha or about 30% of the potentially irrigated area. Irrigation schemes are designed with a hydromodule of 0.8-1.2 liters/second/ha, with an irrigation rate of 2000-7000 m3/ha. Although gravity schemes are designed with 70% efficiency (30% loss), actual efficiency ranges from 30-60%.

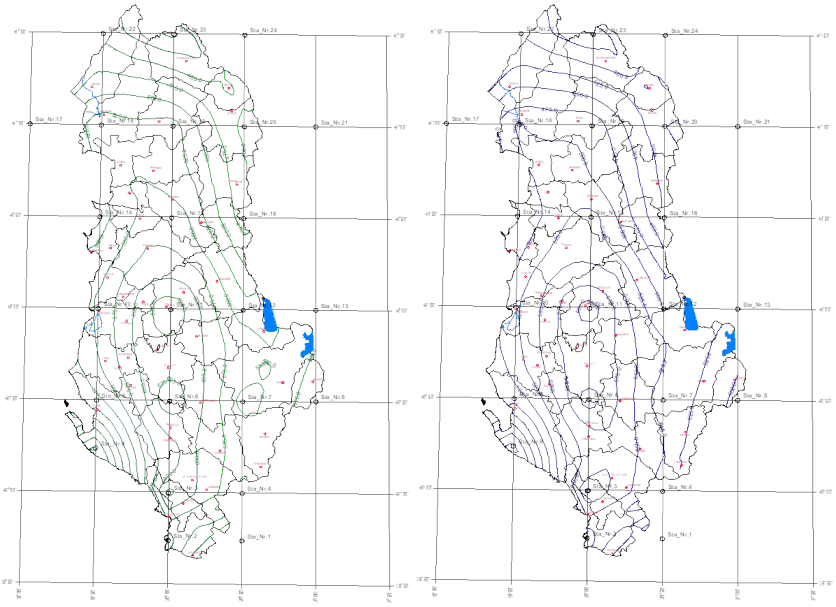
Results and Discussions

According to the procedure recommended by FAO, reference Evapotranspiration (ETo) calculations were made with the FAO Penman-Monteith method published in FAO Irrigation and Drainage Paper No. 56 (FAO – 56) and .

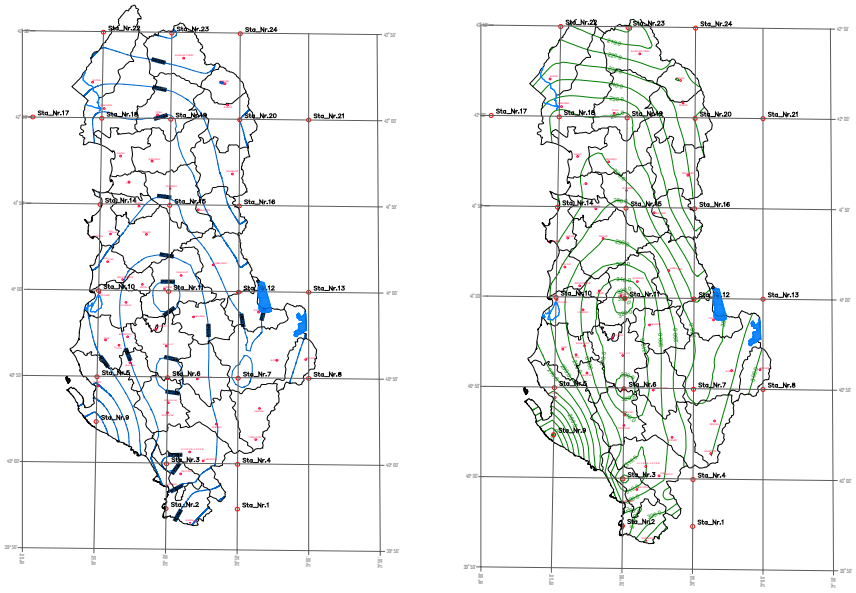
Since the available data is daily, and Evapotranspiration (ETo) was done on a daily basis for each of the stations considered.



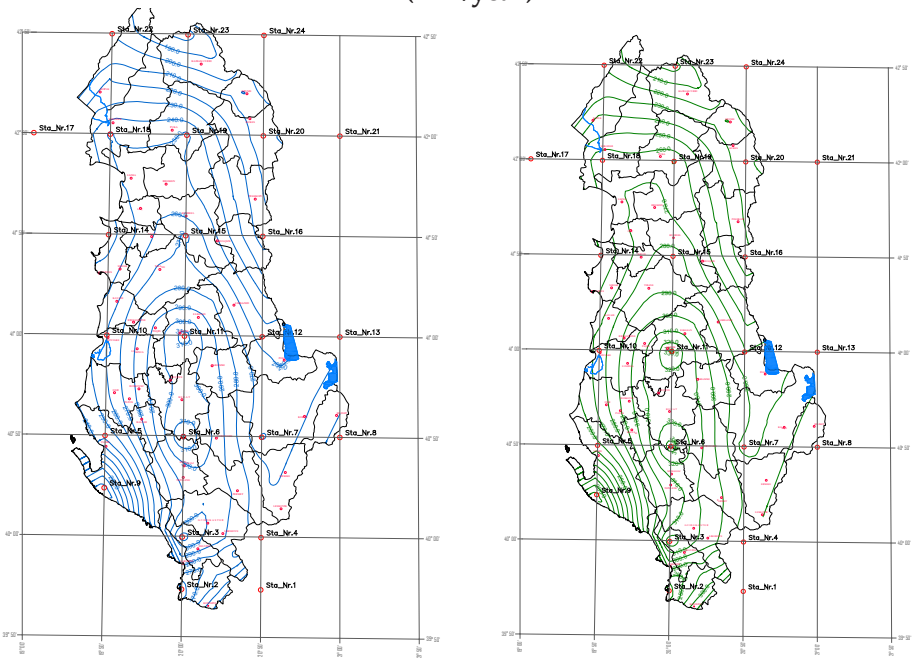
Distribution map of annual effective rain with 75 and 90 year return period (mm/ year)



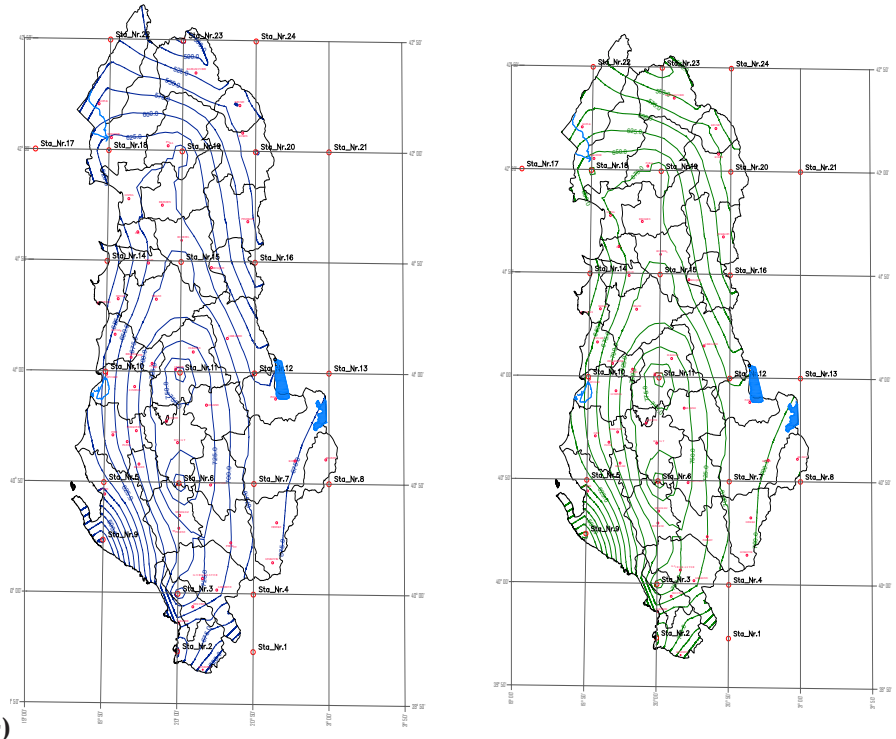
Map of the Irrigation Rate with 70 & 90 year return period for the Carrot (mm/ year)



Map of the Irrigation Rate with 70 and 90 year return period for the Cabbage plant (mm/year)

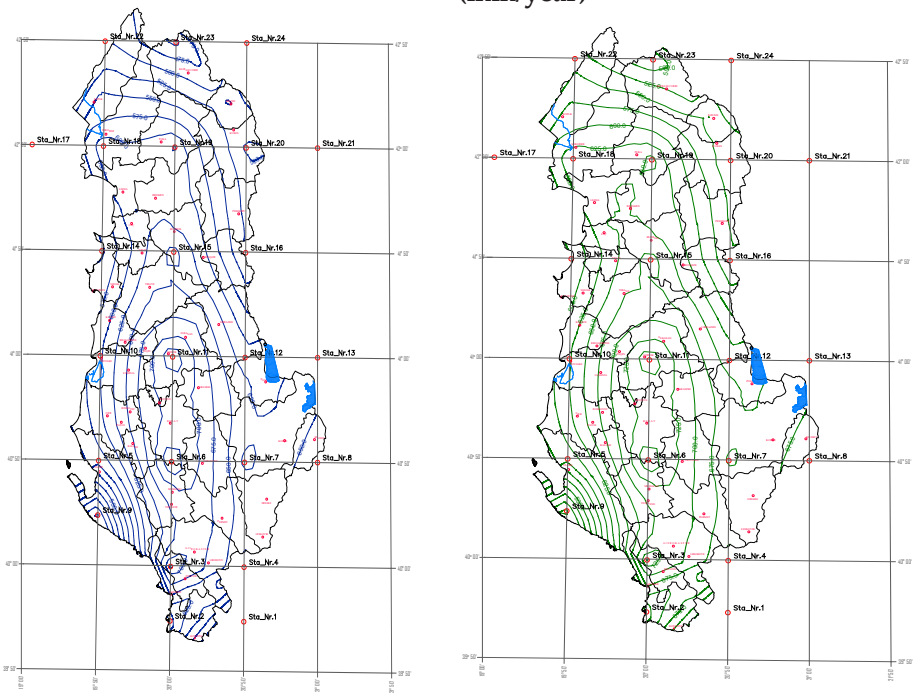


Map of the Irrigation Rate with 70 and 90 year return period for the Onion plant

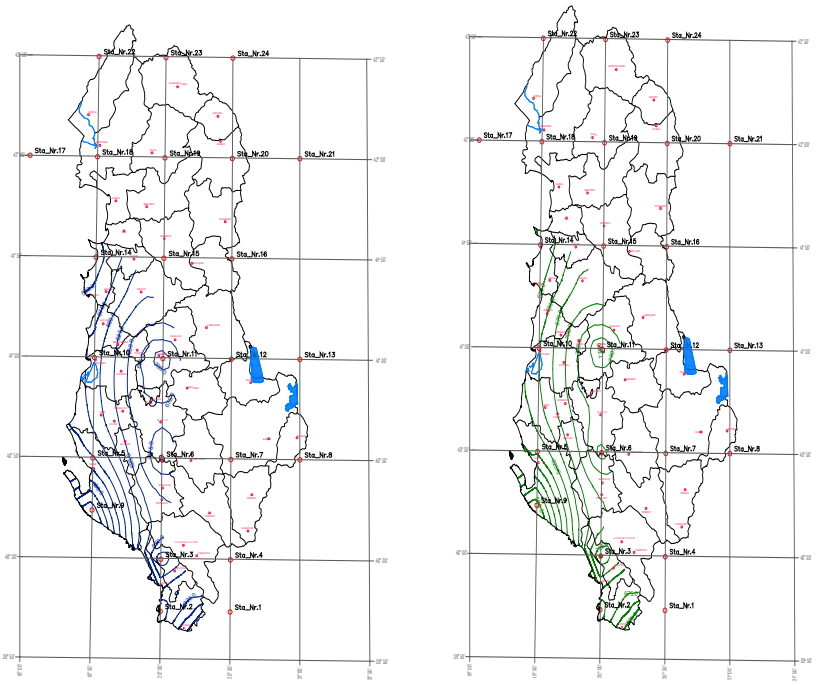


(mm/year)

Map of the Irrigation Rate with 70 and 90 year return period for the Tomato plant (mm/year)



Map of the Irrigation Rate with 70 and 90 year return period for the Potato plant (mm/year)



Map of the Irrigation Rate with 70 and 90 year return period for the Olive plant (mm/year)

Conclusions

The purpose of this paper is to determine the Irrigation rates for some main plants for Albania.

From the comparison with the previous data, we have diferences in the values for determining irrigation rates.

These changes come as a result of:

Using different formulas . The Blaney-Criddle methods, the Quijano (Nezir Nota 1983 dhe Zef Rakacolli. Minella Xinxo, Nezir Nota 1987) method use in their formula only a coefficient of the plant that characterizes the plant for the entire period of vegetation and use only 1 or 2 climatic parameters to determine the value of evapotranspiration, while the FAO Penman-Monteith method uses several parameters such as maximum and minimum temperature, dew point temperature, solar radiation, wind, etc., as well as plant characteristics such as the duration of the different stages of plant development, coefficients for the different stages of plant development, etc.

Method of calculation . In the previously used methods, the calculations were made on a monthly basis by averaging many parameters and not taking their full impact on evapotranspiration, while the FAO Penman-Monteith method is suitable for determining evapotranspiration on a daily basis, managing to estimate more precisely its value .

Climatic changes This work, as we said above, uses the dates between January 3, 1981 and December 31, 2020. As is known, climatic changes have caused both the increase in average temperatures, as well as the amount and time of rainfall. These

changes are also reflected in different requirements for irrigation rates.

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Nezir Nota 1983, Përcaktimi I harxhimit të ujit për bimët bujqësore 1983.
Zef Rakacolli. Minella Xinxo, Nezir Nota 1987 - Ministria e Bujqësisë. Përmbledhje e përfundimeve kryesore të studimit mbi Evapotranspirimin dhe sasitë e ujit për ujitje.

Translation with adaptation in the tragedy "Macbeth" - A comparative view between the original text of Shakespeare and the text translated by Fan Noli

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Abstract

The article aims to present the translation with adaptation by Fan Noli, in the Albanian version of the tragedy of 'Macbeth' written by 'William Shakespeare'. We will present that this adaptive translation process is an important process and plays a special role in textual semantics. This process is of great importance because it requires a very good knowledge of the target language, that is, in fact, the native language of the translator, in which Noli will rewrite the text of the foreign author or re-express the thoughts of foreign speakers.
The article will present cases in which Noli has adapted expressions or sentences that were not written concisely by the author in the original work. This translation with adaptation represents a very good knowledge of the source language, that is, normally, the foreign language in which the text of William Shakespeare was written. The adaptation method also shows that the verses translated with adaptation by Noli present the correct knowledge of the theme that Shakespeare's Macbeth deals with. Noli's adaptation of the lexicon shows that he acquires and has a comprehensive culture, horizon and knowledge of translation as a technique, science, art and profession. The comparative method was applied.
Keywords: translator, adaptive method, original, source language, target language, culture.
Symbols:[N:18] = Fan Noli Makbethi,Tiranë,1943, page, 18.
[Sh:290] = Shakespeare, volume II, 27, Great books of the Western World, 1952, page, 290.

Introduction

Noli is considered to be the master in translating the tragedy of "Macbeth" written by William Shakespeare. He has translated a total of 2452 verses on paper. In order to give a more concrete idea of the type of translation activity of Noli, we are giving a table with statistical data on the types and methods of translation realized by him, answering some questions that arose during the realization of the study.

No.	Type of translation	No. of verses	%
1	word for word translation	2142 verses	87%
2	Contextual translation	156 verses	6.3%
3	Translation with added words	64 verses	2.6%

4	Translation with adaptation	40 verses	1.6%
5	Translations of omitted words	35 verses	1.5%
6	Translation with his ideas or opinions	15 verses	0.6%

From the study we found another feature in Noli's translation style, which is translation with adaptation. This way of translation occupies *the fourth place* with 1.6% of the translated verses. This does not mean that the word order in the translation is the same as in the English language, but adapting to the rules of the Albanian language structure. About this phenomenon Umberto Eco writes that: "A reasonable principle of translation would require that the idiomatic statements and expressions should not be translated word for word, but by choosing the expressions and statements that coincide with those in the language to be translated".[1]

The importance of Noli's translation, as Lloshi expresses, is the need to find in Albanian language the nicknames associated with the whitches. The first whitch mentions Greymalkin, meaning the gray cat; the second, whitch says he's calling Paddock, here with the meaning of toad, the third would pronounce only in A 4.1 the word Harpier, a kind of predatory eagle. Then the translator left out the two English nicknames and gave an understandable Albanian figure: '*Zonja Lubi'.* While for the second Paddock calls, the replication remained "I'm coming back", the nickname is dropped. In Albanian language we would have the word-for-word equivalent translation:

*-Po vij mace e p**ë**rhime!*
*-Thithelopa po th**ë**rret.*
-Qetash.[2]
I come, Graymalkin!
Paddock calls
Anon. [Sh:284]

Whereas Noli has translated it in this way:

Ja ku po vij, Zonja Lubi,
Ja ku po kthehem
Ja tani [N:12]

The reason for Noli's variant is that the Albanian receiver is not at all familiar with the world of English witchcraft, therefore this precise translation would not evoke anything in his mind. Even more interesting is the answer of the three whitches together. Noli has given a translation with adaption for the answer of the three whitches.

Fair is foul, and foul is fair;
Hover through the fog and filthy air. [Sh:284]
-Zbardh e zeza, dhe e bardha nxin,
Er' e ndyr' e mjegull na përpin.[N:12]

Word for word Albanian translation would be:

e qashtra është e qelbur dhe e qelbura është e qashtër
Flatro përmes mjegullës dhe ajrit të ndyrë.[3]

[1] Umberto Eco, *Të thuash gati të njëjtën gjë, përvoja përkthimi*, Dituria, 2006, f.72.
[2] Xhevat Lloshi, Vështrime Stilistike, UEGEN, Tiranë 2021, f.246.
[3] Xhevat Lloshi, Vështrime Stilistike, UEGEN, Tiranë 2021, f..246.

I think, as Lloshi says, that with this adaptation, Noli has found an objection to disrupt the evil world of the witches and then he has removed them from the scene. He has made a very wonderful and understandable adaptation for the Albanian audience.

Even Shakespeare is frequently adapted by changing not the dialogue, but the setting, as seen in 1990, film versions of Titus Andronicus (with Anthony Hopkins) and Romeo and Juliet (with Leonardo Di Caprio)[4]

We can say that the optimal translation is the one that allows you to preserve as translatable the most levels of the translated text, and not necessarily the purely lexical level, which appears in the linear display. [5]

What will you do? Let's not consort with them:
To show an unfelt sorrow is an office
Which the false man does easy. I'll to England. [Sh:294]
Njeriu i rremë e ka zanat të lehtë
Të shfaqë helm që nuk e ndjen në zemër.
Unë pra shkoj n'Angli. [N:63]

With the above Albanian verses, *Noli has created a* wonderful adaptation with his translation of

Njeriu i rremë e ka zanat të lehtë, Të shfaqë helm që nuk e ndjen në zemër, Noli has also added the Albanian adverb *pra,* and the verb *shkoj.*

There is a case when the principle of translation is not very stable, or it needs to be understood in a broader sense than when talking about linguistic translation. Here it seemed right to me to encroach every principle of lexical consistency (and the distinction of events and things to make the descriptive rhythm translation, which is very important)[6]. Noli does not just make a literal linguistic translation. He often makes adaptations

Macbeth shall never vanquish'd be until
Great Birnan wood to high Dunsinane hill
Shall come against him. [Sh:301]
Makbethi s'thyhet gjer sa Pyll' i Brinjës
T' ec' e t'i bjerë Malit të Dunsinjës [N:104]

The linguist must thus begin to work out a series of functional analysis that lead him to create a manual of translation - which must coincide with a whole manual not only of linguistics, but also of cultural anthropology. [7]

Normally, in an adaptation the SL text is less sacrosanct than in a traditional translation. An adaptation, while taking as its point of departure the information content of the original, is less "faithful" than a translation. (The quotation marks around *faithful* are to hint that a close rendering of literal meaning is only one way to demonstrate fidelity to a text.) What kind of situations call for adaptation rather than 'straight' translation? One obvious case is drama, in which dialogue must be not only intelligible but also 'speakable.' Many lines that look good on paper sound forced, or worse, when uttered on stage. We are all familiar with the so-called Tom Swifties from *The*

[4] Clifford. E. Landers, Literary Translation, A Practical guide, British Library, 2001, f. 56.
[5] Umberto Eco, *Të thuash gati të njëjtën gjë, përvoja përkthimi*, Dituria, 2006, f. 73.
[6] Umberto Eco, *Të thuash gati të njëjtën gjë, përvoja përkthimi*, Dituria, 2006, f.74.
[7] Umberto Eco, *Të thuash gati të njëjtën gjë, përvoja përkthimi*, Dituria, 2006, f.40.

New Yorker, whose filler items often gleefully ridiculed the stilted speech characteristic of the Tom Swift books[8].

In my opinion, Noli has always taken into account that the actor, that is, the speaker, should be very understandable by the Albanian-speaking audience. It is because of this that Noli has used adaptations while translating.

I wish your horses swift and sure of foot.
And so I do commend
you to their backs . Farewell. [Sh:295]
Uroj t*ë* t'ec*ë* mir*ë* kali.
Udh*ë*n e mbar*ë* dhe u kthefsh sh*ë*ndoshë! [N:70]

By the adaptation of the added Albanian words *'u kthefsh shëndoshë'* Noli expreses a wish, which is a greeting that is used even nowadays in the Albanian language, when someone goes on a long journey. They are used to wish a good journey, to have fun and reach the destination safe and sound. I think that, the special and distinguished features of this state translated so well by Noli, have to do with the fact that there is a connection between the real and the imaginary state of Macbeth, that is, what is in reality and what is thought to happen, combining the present with the future. Macbeth experiences a moment of time between the present and the future because he has prepared the murder of Banquo.

Adaptations are not inferior to translations. They merely apply a different set of methods to the selfsame problem of recreating as closely as possible for the TL reader the effect experienced by the SL. reader. In some ways, adaptations are even more challenging than more conventional translations, for they demand even greater flexibility and an unfailing sense for what TL audience will find humorous, scary, or persuasive. Beginning translators are better off sticking to more straightforward translation until they acquire the experience and confidence to take on adaptations, which are certain to test their mettle. [9]

Infirm of purpose!
Give me the daggers:
the sleeping and the dead [Sh:291]
Vullnetsëmurë! Nemi mua kamat.
Të vdekurit edhe të fjeturit. [N:52]

If we compare the word for word translation of the first verse, it would *be week to the purpose,* that is, in Albanian language *I dobët ndaj qëllimit.* Noli has adapted the English word *Infirm* with the Albanian version *vullnetsëmurë.* which according to my idea sounds absolutely correct and very meaningful in this context.

Silver'd in the moon's eclipse, [Sh:300]
Natën sterrë si katrani [N:99]

Maybe Noli has adapted the Albanian translation *nata* ***sterrë*** as *tar* or pitch. I think he wanted to express the *shine of silver under the eclipse of the moon,* with the Albanian word ***sterrë,*** thinking that the eclipse of the moon creates total darkness. I think, it is because of this that Noli used the adaptation of *silver'd to* the Albanian word *sterrë*, as a shine of the dark, in this case sounds sterrë.

According to Peter Newmark, adaptation is *'the freest'* form of translation. It is used mainly for plays (comedies and poetry: the themes, characters plots are usually pre-

[8] Clifford. E. Landers, Literary Translation, A Practical guide, British Library, 2001, f. 55-56.
[9] Clifford. E. Landers, Literary Translation, A Practical guide, British Library, 2001, f. 58-59.

served, the SL culture converted to the TL culture and the text rewritten. The deplorable practice of having a play or poem literally translated and then rewritten by an established dramatist or poet has produced many poor adaptations, but other adaptations have 'rescued' period plays.[10]

And keep the natural ruby of your cheeks,
When mine is blanched with fear. [Sh:298]
Dhe më qëndroni faqekuq të qetë,
Kur unë jam i verdhur si i vdekur. [N:91]

Noli has adapted*:* When mine is blanched with *fear with the* Albanian meaning *as dead* by giving the Albanian adaptation*: Kur unë jam i verdhur si i vdekur.*

Double, double toil and trouble;
Fire burn, and cauldron bubble. [Sh:300]
Trubull, trubull avullo;
Digju zjarr, kazan valo [N:99]
Dyfish, dyfish shkëpurdhu e trubullo,
Digju zjarr e kazan gurgullo.

Consequently, the semantics of words and special sentences loses its importance, it is enough for the text as a whole to be close to the original from the impression it should create as an incantation, not as the information of a real meaning; as an act of magic and not as understandable communication. If the lexical units are seen one by one, it would be said that the translator did not know how to give the Albanian translation, but he tried not to translate, but to build an Albanian text to evoke the image of the spectator, who sees the three witches around the cauldron, admits that this is a work of magic and he is greatly influenced by the alliteration, and phonetic combinations, that resonate with the bubble of the hot cauldron. [11]

Translating for the stage differs in significant ways from other genres of translation. The essence of theatrical translation, at least from the standpoint of the spectator, is its 'speakability'. Most other considerations - meaning, fidelity, precision - are secondary to this primordial characteristics. Even style, which is by no means unimportant in dramatic translation sometimes must yield to the reality that actors have to be able to deliver the lines in a convincing and natural manner. The 'illusion of the first time' can be fatally undermined if the dialogue strikes the audience as somehow off-register or odd. [12]

What are these, so withered and so wild in their attire? [Sh:285]
Ç'janë *këto të fishkura dhe rrob*ëçjerra? [N:20]

In the above verse, Noli has adapted the word attire, which means clothes, with the Albanian word, *rrobëçjerra*, meaning worn in rag clothes. Perhaps, in our opinion, Noli warns us that it has to do with the witches. He has done a wonderful adaptation of the translated word, which makes the reader anxiously await to learn what these worn in rags are.

You are, and do not know't:
The spring, the head, the fountain of your blood
Is stopp'd; the very source of it is stopp'd. [Sh:293]
Keni pësuar ju dhe nuk e dini:

[10] Peter Newmark, Atextbook of translation, Prentice Hall, New Zork,London, Toronto,1988, f. 46.
[11] Xhevat Lloshi, Vështrime Stilistike, UEGEN, Tiranë 2021, f.247.
[12] Clifford. E. Landers, Literary Translation, A Practical guide, British Library, 2001, f.104.

Burimi, Kroi, dhe çezm' e gjakut tuaj
U tha; dhe uja i pushoi, iu shter. [N:60]

In the aforementioned verse, Noli has made a wonderful adaptation with these words: *You are,* with the Albanian translation *keni pësuar:* the words: *Is stopp'd* with the Albanian version *me u tha; the very source* with the Albanian version, *uja*; *it is stopp'd* with the Albanian translation *iu shter.*

Avaunt! and quit my sight! Let the earth hide thee! [Sh:298]
Shporru! Zhduku! Përpihu nënë dhe! [N:90]

The adaptation is; *Let the earth hide thee* with the Albanian version *përpihu nënë dhe*, and as Ristani says about Oliver, is in an almost hallucinatory state, accompanied by emotional gasps expressed through linguistic means, creating a state of endless anxiety and nightmare. We encounter a phenomenon where the past returns again, it owns and completely replaces the present, by inextricably interconnecting, entwining and superimposing the present and the past on the same plane, and just like Oliver, who experiences a moment in time that is neither past nor present, but that creates in Oliver the feeling of the impossibility of being saved from Fexhin.[13] Macbeth too is in an almost hallucinatory state, accompanied by emotional gasps expressed through linguistic means, creating a state of endless anxiety and nightmare. Macbeth experiences a moment in time that is neither past nor present, but that creates in Macbeth the feeling of the impossibility of being saved from the ghost. He has never escaped and will never be escaped from the ghost, which is the symbol of the past, the realization of his crime.

That will never be.
Who can impress the forest, bid the tree
Unfix his earth-bound root? Sweet bodements! Good.
Rebellion's head, rise never till the wood
Of Birnam rise [Sh:301]
Kjo gjë s'gjan kurrë. Se një pyll a lis
Nga vendi kurrë s'tundet as lëviz.
Sa mir' e ëmbël më profetëson
Pra,kryengritës, hiç mos u mundoni;
Sa kohë Pyll' i Brinjës nuk marshon [N:104]

In this paragraph, as Ristani writes, we encounter the confrontation, the overthrow of the reports and relationships established between nature and the individual, nature and culture in which a number of objects, an integral part of nature and the universe, the movement of heavenly bodies are transformed and embodied in the features and the individual's interests, creating and establishing new, previously unforeseen relationships. [14]

Noli has translated the movement of the forest in this way: *sa kohë Pyll' i Brinjës nuk marshon.*

In conclusion, we say that Noli is an excellent master of the English and Albanian language. He amazes us with his translation, with his wonderful adaptation of the source language to the target language. In a very convincing way, with his perfect

[13] Viktor Ristani, Kontribut në Studimet Përkthimore Gjatë Viteve '90, Shtëpia Botuese Geer, Tiranë, 2010, f. 90-91.

[14] Viktor Ristani, Kontribut në Studimet Përkthimore Gjatë Viteve '90, Shtëpia Botuese Geer, Tiranë, 2010, f.78.

translation Noli has made Macbeth appear with an amazing and graceful interconnection as an angel and devil.

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General overview of air pollution impact in allergic diseases in Albania

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Abstract

Albania is a small developing country in Europe, with Mediterranean climate. During a long period of time, it was the most isolated European country and for that reason, the prevalence of allergic diseases was lower than each place situated in this mainland. Even in this country, as all over the word, urbanization and westernized lifestyle have an impact on human environment. However, it is not easy to evaluate the impact of climate changes and air pollution on the prevalence of respiratory diseases, especially of asthma and on the timing of asthma exacerbations in the Albanian population, although the global rise in asthma prevalence and severity could also be an effect of air pollution and climate change.
The more completed information about air pollutants is given by National Environment Agency of Albania, which since 2006 publishes The Annual Report about Environment Situation in Albania, where are given the values measured at different predefined monitoring points. In Albania the environmental pollutants that have exceeded EC norms are currently NO2, Ozone, Particulate and their values increase year after year, which constitute an alarm signal for pulmonary allergic diseases.
A general overview by our side, results that the prevalence of asthma and allergic diseases in our country has risen similarly as in industrialized countries, and most epidemiologic studies focus on possible causalities between air pollution and these conditions. For these reasons we suggest that proper studies are needed to determine the negative effects of environmental pollution on our country.

Keywords: Air pollution, Allergic disease, Environmental pollution.

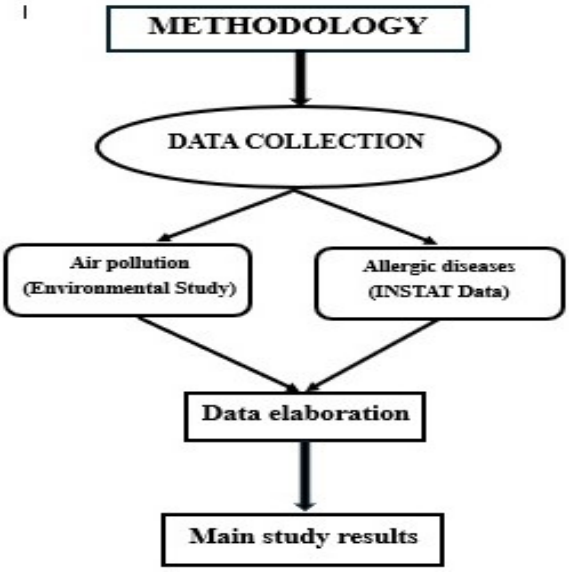
Introduction

It has been noticed that allergic respiratory problems, accompanied or not by skin problems, have been evaluated as the most common chronic diseases, not only in the general population, but also in teenagers and young adults. It does not matter if they engage in physical activity or not, whether they are athletes or not. The risk of developing asthma, especially in endurance sports, has been increasing. This situation has become an important problem for both recreational and competitive athletes, affecting not only sports performance but also personal health and quality of life. For this reason, the identification of inciting or explosive factors has become necessary, also, because in Albania there is no detailed and updated information regarding this possible correlation.
As a developing country, rapid urbanization, and increased energy consumption in Albania, have exposed the human body not only to an increased quantity of ambient air pollution, but also a greater variety of pollutants. Increasing evidence shows that air pollution is associated with adverse health outcomes, particularly respiratory diseases.
The principal air pollutants of concern are particulate matter (PM), ozone (O3), nitro-

gen oxides (NOX), sulfur dioxide (SO2) and indoor air pollutants.
Evidence that transportation-related pollutants contribute to the development of allergies is also emerging. Furthermore, exposure to PM, O3, and nitrogen dioxide (NO2) contributes to increased susceptibility to respiratory infection (Chauhan AJ, Johnston SL, 2003, 68:95-112), (Goings SA, Kulle TJ, Bascom R, Sauder LR, Green DJ, Hebel JR, 1989, 75-81).
Based in report "Health Risk Assessment of Air Pollution: assessing the environmental burden of disease in Europe in 2021", published by European Environment Agency, the prevalence-based approach is used to estimate the Environmental Burden Diseases (EBD) (European Environment Agency, 2023, 12). Are taken from different sources the outcome-specific prevalence data. For asthma (adults), COPD, they used data from the European Health Interview Survey (EHIS, Eurostat, 2023, f). Since EHIS does not provide prevalence data on asthma for children under 15 years of age, they used data from the Global Burden of Disease (GBD 2019 Diseases and Injuries Collaborators, 2020).
Recent advances in the understanding of the mechanisms involved in the association between air pollution and allergies provide insight into how air pollution influences the epigenetic alteration of genes (Holloway JW, Savarimuthu Francis S, Fong KM, Yang IA, 2012, 17:590-600).
In Albanian society, it has little or no attention in relation to the risk of poor air quality. Also, this situation is neglected by state institutions in general. Reducing exposure to environmental pollution to prevent episodes of Bronchial Asthma can be achieved through policies that reduce the level of internal and external contaminants.

Materials and Methods

In Albania the environmental pollutants that have exceeded EC norms are currently NO2, Ozone, Particulate and their values increase year after year, which constitute an alarm signal for pulmonary allergic diseases.
The more completed information about air pollutants is given by National Environment Agency of Albania, which publishes The Annual Report about Environment Situation in Albania (ESA), where are given the values measured at different predefined monitoring points.
Based in these conditions of the air pollution in our country and increase number of patients with respiratory diseases, the focus of this study is to identify the role of increase air pollution, in human health in Albania.
The methodology of this study consists in a simple way, but this study is a very effective one. More concretely, the methodology consists in gathering, selection, and classification of contemporaneous data for the main elements of air pollution in Albania and their impact in human health and specially in allergic respiratory diseases. The data are gathered from different study in environmental field in Albania, specifically from Environmental Situation Report (ESA) in Albania, published from National Environmental Agency in Albania. The data for human health are collected from INSTAT publication.



Figure, no. 1. Methodology used.

Results of the study

The review of the literature shows that in our country, the biggest sources of air pollution are the transport of vehicles, the quality of fuel, constructions, heating of buildings, etc.

- **Impact of Particulate Matter (PM-PM10 and PM2.5)**

From the examinations carried out during ambulatory visits by me to different patients with respiratory problems, as well as from the consultation with the conducted studies and INSTAT data, it has resulted that after the allergic causes have been eliminated (the patient is not allergic to pneumo-allergens), it has been established that the pollution of the air mainly with dust of different diameters (PM10. PM2.5) have had a harmful effect on health, as they have the ability to penetrate deeply into the pulmonary tissue (especially PM2.5), causing respiratory deterioration mainly in aged individuals. While young people, worsening and exacerbation of asthma has been noticed.

- **Impact of Ozone (O3)**

Ozone is not emitted directly by any human source. It is a product of chemical reactions that occur between different pollutants of air, mainly NOx and volatile organic compounds VOCs, initiated by strong solar radiation.

The high level of ozone can cause respiratory health problem that reduced lung function, exacerbation of asthma and other diseases of the lungs to premature death.

- **Impact of Nitrogen Oxides (NOx)**

The main source of nitrogen dioxide (NO2) is road transport, which emits NO2 close to the ground, mainly in densely populated areas, contributing to population exposure. Other important sources are the processes of combustion of fuel in industry and manufacturing of electricity based on the burning of fuel. (NEA, 2022, 141). The high values of NOx which are found in the main cities of our country, especially

in Tirana, have manifested in different patients unwanted health effects, worsening different chronic pulmonary diseases, and have affected the respiratory function in people without problems previously known, showing the first allergic symptoms such as difficulty in breathing, dry cough and wheezing in the chest.

- **Impact of Sulfur Dioxide (SO2)**

The emission of SO2 in our country results from the burning of fuels that contain sulfur beyond the permitted rates and from the use of old motor vehicles. The highest values of SO2 turn out to be in areas with heavy traffic. Reference to the literature shows that SO2 is a pollutant that causes serious problems in the health of the population.

From the findings carried out by us, it has been found that the high level of SO2 in the air has led to the worsening of asthma in chronic patients, as well as reduced the function of the lungs because of the irritation of the respiratory system. For this reason, we think that the emission of this gas in the air can also be one of the irritants that worsen the respiratory function.

Conclusion

- Bad air quality causes more deaths and illnesses than passive drinking, road accidents and obesity. However, it has little or no attention in society, certain communities, and the risk of bad air quality is neglected by state institutions in general.
- Reducing exposure to environmental pollution with the aim of preventing episodes of Bronchial Asthma can be achieved through policies that reduce the level of indoor and outdoor pollutants.
- In Albania, the environmental pollutants that have exceeded the EC standards are currently NO2, SO2. The particles and their values are increasing, which constitutes an alarm signal for allergic pulmonary diseases.
- Based on the above results, it results that the increased levels of air pollution in our country are associated with an increase in the incidence of bronchial asthma, but not with an increase in prevalence.
- Genuine studies are needed to determine the negative effects caused by environmental pollution in our population.

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The influence of operator's performance, absences, and defects on the production capacity in apparel industry

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Abstract

Absenteeism, defects and performance of the operators are the major threats to a manufacturing industry. Through this paper we aim to analyse how absenteeism, quality and performance of operators affects the production capacity of a sewing line in apparel industry. For this reason it is studied and analysed the influence of these factors in the effectiveness and productivity of the sewing line in a garment company in Albania for a period of 12 weeks, by calculating weekly output. The sewing line produces shirts and and has in total 60 employees. All the data are provided from Management Information System of the company. Considering the level of absences, the level of defects and operator's performance from Management Information System, it is calculated how total hours of production and output are reduced as a result of high level of absences, high level of defects and low level of operator's performance. The reduction of productivity can bring the company to not deliver in time the order risking to loose the credibility of the client and the client himself.
Based on this analysis there are given some suggestions to reduce absences, to improve quality and to increase operator's performance in order to increase the capacity of production.

Keywords: absenteesim, defects, operator's performance, output.

Introduction

Operators are one of the most important resources in production manufacturing and their absence at work in apparel industry is one of the major threats to the organization (Nanjundeswaraswammy, 2016).
In general, absenteeism is an operator's intentional or habitual absence from work. It is normal that operators miss a certain number of workdays each year, but excessive absences can influence to productivity by decreasing it and can have a major effect on company incomes, morale, and other factors. When an operator is absent from work, this can have a number of generic effects on company output. While the only disadvantages to the operator of not returning to work are possible loss of pay and disciplinary actions, the coworker will immediately bare a large portion of the responsibility for the absence (Kocakülâh, 2018). So the companies must try to decrease the level of absenteeism in order to reach their goals and to increase productivity. (Gomthy, Yashwanth, Bhupathi, Nikhil, 2022).
Absenteeism of operators in the garment industry is one of the major threats to the organization as well as to the operators. Absenteeism level not only influences on poor utilization of resources, but it also influences on the incomes of operators, by reducing it, by intereferring to the family harmony, health and more physical and psychological stress.
From the other side, also, defect in the apparel industry is a common phenomenon that hinders the smooth flow of production. Poor quality products have a negative

impact on overall factory incomes. Minimization of defects is a must in quality and productivity improvement. Rework is a vital issue for poor quality product and low production rate, but also rework has it own cost which is known as quality cost (Mfazal, Tarikul , Md Sujan, 2019).
A manufacturing defect typically occurs when something goes wrong during the manufacturing process. In many cases, manufacturing defects affect a small number of the products created. Unfortunately, it only takes a single defective product to cause wrongful death or injury. (Jessica Burgoyne 2023).
Related directly to the level of productivity and the capacity of production is also the operator's performance. As the operators are the force that drives the company, it is clear that their performance influences the productivity and the success of a company (Perkbox, 2024).
It is neccessary for the apparel industry to find ways to mantain and bring the best performance from their operators. For this reason an apparel company should work to improve their performance through measurements, evaluation and planning.
Evaluation of an operator's performance means how an operator fulfils the duties, completes required tasks and behaves in the workplace. Measurements of operator's performance include the quality, quantity and efficiency of work. An effective operator is an operator that achieves the targets of production and works with efficiency. (USAID 2011).
Focusing on operator's performance it's also a benefit for the employee to reach it full potential while improving performance, which can have a positive impact on morale and quality of work produced.
A low level of operator's performance may bring to unsatisfied clients and as a result the company may lose its client (Perkbox, 2024).

Method

In this study it is analysed a sewing line in a garment company in Albania with a total of 60 operators. The sewing line produces shirts.
The total work hours in a week are calculated with the formula:
Total work hours/week = number of operators* hours of work/day* number of days/weeks 60*8*6=2880 hours/week for the production
Standard minute value calculated to produce one piece/shirt is 20 minutes.
Based on this it is calculated the weekly production capacity for the sewing line:
Weekly output = 2880 * 60/20 = 8640 pieces/week
Referring to the level of absences, the level of defects and the operator's performance during 12 weeks of the study, it is analyzed how do they influence the capacity of production and the quantity of output produced every week of the study.

Results

The data on absence level, defects level and operator's performance are taken respectively from: attendance record sheet, quality control sheet and operator performance sheet as a part of Management Information System of the company; are processed and the results are shown in table 1.

Weeks of the study	Absences %	Standart hours	Level of defects %	Standard hours	Performance level %	Standard hours	Weekly output (pieces)
1	3,3	2784	7	2589,1	75	1941,8	5825
2	5	2736	8	2517,1	74	1862,7	5588
3	5	2736	8	2517,1	80	2013,7	6041
4	6,5	2688	6	2526,7	65	1642,4	4927
5	3,3	2784	5	2644,8	75	1983,6	5951
6	5	2736	7	2544,4	68	1730,2	5191
7	2	2832	4	2718,7	85	2310,9	6933
8	5	2736	5	2599,2	70	1819,4	5458
9	3,3	2784	6	2616,9	80	2093,5	6281
10	2	2832	8	2605,44	80	2084,4	6253
11	5	2736	7	2544,4	65	1653,9	4962
12	3,3	2784	6	2616,9	73	1910,3	5731

Table 1. The influence of absences, defects, and operator's performance on production capacity for 12 weeks

It is obvious that both factors have a negative impact on the capacity of production. The high level of defects and absences reduces total standard hours of production. In the same way influences the low level of performance of the operator by reducing the total standard hours of production and weekly output of the company to a considerable level. This can cause the company to not deliver in time the product by risking losing the client and its reliability.

We can notice from the table that there is a high level of absences especially during the 4-th week of the study, a high level of defects during 2^{-d}. 3^{-d} and 10^{-th} week of the study which bring to a reduced figure of standard hours and influence by reducing more the weekly output. When there is a high level of performance, we can have acceptable levels of output produced.

Conclusions and Suggestions

Referring to the results of the study we can conclude that absenteeism, poor quality and low performance of the operators have a negative influence on the capacity of production by reducing it and bringing low standard hours of production. Apparel companies should recognize and eleminate issues related to absenteeism, defects and low performance. Regarding to absenteeism they should:

- implement specific policies and organizational culture to combat absenteeism in the workplace;
- invest in operator's development and their engagement
- motivate the operators by applying incentive systems
- maintain a positive work environment
- maintain a safe workplace by improving working conditions

Regarding to the defects apparel companies should:

- control and monitor regularly the production by appling appropriate quality control system referring to the standards
- prevent the defects before they occur
- register the number of defects in every stage of the production
- apply an appropriate system of machinery maintenance
- train and qualify the operators
- use specific work methods
- Referring to the operator performance apparel companies should:
- investigate why the operators are not meeting the expectations
- develop operator;s skills through training and qualifications
- apply better methods of performing a job.
- set realistic and achievable targets
- motivate operators by providing incentive based on their performance
- put the operators to the process on what they are skilled
- create and maintain a friendly environment and increase job satisfaction
- create and maintain a safe workplace.

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