INTERNATIONAL INSTITUTE FOR PRIVATE COMMERCIAL AND COMPETITION LAW (IIPCCL - AUSTRIA)

Research Article

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Blockchain Adoption in Albania's Digital Transformation: Perspectives from Students and Businesses

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DOI: https://doi.org/10.2478/bjir-2026-0007

Abstract

Albania has taken massive steps in its roadmap to transforming its payment systems, from traditional banknote-based ones to digital ones. The context for this transformation is set by the regulation of electronic money institutions starting from November 2021, further accelerated by Albanian fintech startups and the country's integration into the Single European Payment Area (SEPA), effective from 21 November 2024. One important development in this transition is the growing use of Distributed Ledger Technology-based assets, especially cryptocurrencies, by a large Albanian consumer base. Statista projections indicate that 126,200 Albanians were expected to interact with at least one cryptocurrency during 2025, while ongoing legislative efforts aim to align the national framework with the broader MiCA European regulation.
Through two structured surveys—one involving 100 students from IT and finance-related programs at "Fan S. Noli" University, and the other involving 50 Albanian businesses, we evaluated awareness, adoption interest, and perceived benefits of these technologies. Students represent an important future workforce for the implementation of blockchain-based solutions, while businesses act as the main stakeholders providing the infrastructure for their adoption. For this reason, both perspectives are essential to understand the broader transformation. The results show that over one-third of students have already interacted with blockchain tools, with most highlighting security and transaction speed as key advantages. Meanwhile, Albanian business owners showed strong interest in applying core blockchain features—such as data traceability, security, and automation within their workflows. Over 80% expressed willingness to integrate AI and blockchain solutions, particularly for streamlining tax, utility, and payroll processes.

Keywords: Albanian digital transformation, Blockchain-based solutions, Cryptocurrencies Decentralized systems, Fintech adoption.

Introduction

In the past five years, Albania has significantly strengthened its legal framework governing payment services within the country, as well as the operational standards for international money transfers. On April 30, 2020, the Parliament of Albania approved Law No. 55/2020, *On Payment Services*, in full alignment with the European Union's Second Payment Services Directive (PSD2) (Toska et al., 2021). On November 24, 2021, the Bank of Albania approved Decision No. 59, *Regulation on the Licensing of Payment Institutions and Electronic Money Institutions, as Well as the Registration of Payment Service Providers* (Bank of Albania, 2021). Following this regulatory development, several financial institutions introduced digital e-money wallets, including e-para (developed by BKT), Paysera, and MPay (a collaboration between Raiffeisen Bank Albania and OTP Bank Albania).

These digital wallets enable users to store and transfer funds in real time, offering near-instant transaction settlement both domestically and internationally at minimal cost. This development establishes an additional infrastructure layer alongside traditional banking systems in Albania, allowing users to operate through virtual IBANs that are not directly linked to a single current or checking account. Since November 21, 2024, Albania's official membership in the Single Euro Payments Area (SEPA) has marked a significant step toward greater financial integration, enabling faster, safer, and more efficient cross-border payments within Europe (Bank of Albania, 2025). Initial evaluations by the Bank of Albania indicate that the Albanian economy could save at least €20 million in the first year, with savings expected to increase gradually over time.

Another important dimension of this digital transformation is the regulation of financial markets based on Distributed Ledger Technology (DLT), established under Law No. 66/2020. This law, along with subsequent decisions of the Council of Ministers, provides the regulatory framework for cryptocurrency-related activities in Albania. It requires entities involved in the issuance, distribution, or trading of virtual currencies or digital tokens to obtain appropriate licenses. The licensing process is governed by several authorities, including the Bank of Albania, the Albanian Financial Supervisory Authority (AMF), the National Agency for Information Society (AKSHI), and the National Agency for Information Society Services (NAIS), depending on the type of activity. Entities must apply for specific licenses, such as trading agent licenses, DLT licenses, innovative service provider licenses, and third-party portfolio custodian licenses, each with its own set of requirements as outlined in the law.

A synthesized overview of Albania's digital transformation landscape is presented in Figure 1.



Figure 1. A synthesized overview of the Albanian digital landscape transformation roadmap. *Source: Author*

This digital transformation leads to the formulation of the following research question: *To what extent is Albania prepared for the adoption of blockchain-based technologies when analyzed through the combined perspectives of student readiness and business sector demand?* To address this research question through both quantitative and qualitative approaches, blockchain usage data from emerging crypto-related platforms were analyzed, alongside a review of relevant literature focusing on the Albanian context. Additionally, two surveys were conducted: one involving 100 university students from academic disciplines in which blockchain applications may be relevant to their future careers, and another involving 50 Albanian businesses.

2. The Rise of Cryptocurrency Adoption in Albania

Albania has followed the broader European trend of increasing cryptocurrency adoption. By the end of 2024, the country's cryptocurrency market revenue reached approximately $1,197 million, with an estimated 126,200 users projected by 2025 (Statista, n.d.). According to Chainalysis, more than 28,500 wallets are registered on centralized global cryptocurrency exchanges (CEXs), including platforms such as Binance, Crypto.com, and Kraken (PwC, 2024).

Approximately 60% of these CEX wallets hold the majority of their assets in Ethereum, 10% in Bitcoin, and 30% in other cryptocurrencies. However, these figures do not account for the segment of the population that stores assets offline in cold wallets for long-term investment and security purposes.

Participation in non-fungible tokens (NFTs)—which represent unique digital assets such as art and music stored on blockchain networks—is considerably lower than participation in decentralized finance (DeFi) assets. Specifically, there are approximately 1,706 NFT users compared to 7,853 users engaged in DeFi activities.

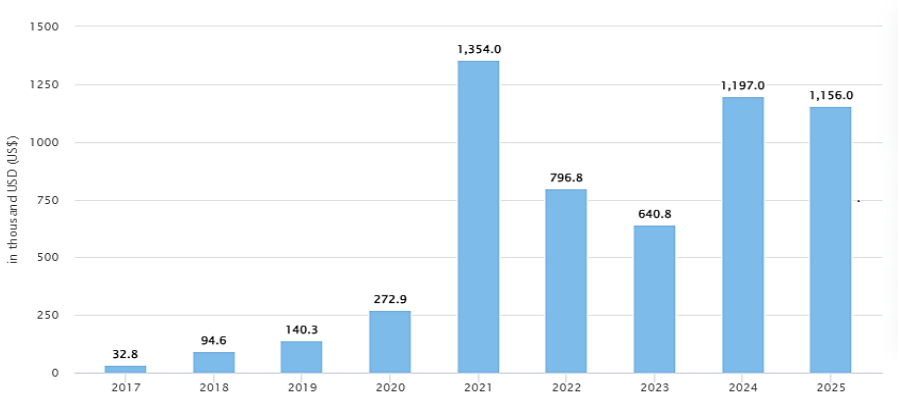


Figure 2. Crypto-market assets revenue in thousand USD for Albania. *Source: Statista (2025)*

Despite the relatively low user penetration of decentralized finance (DeFi) assets in Albania, data from Chainalysis highlight a significant growth trend. Specifically, the country experienced a 180% increase in DeFi asset inflows between January–July 2022 and January–July 2023, surpassing growth rates observed in many European countries (Chainalysis, n.d.).

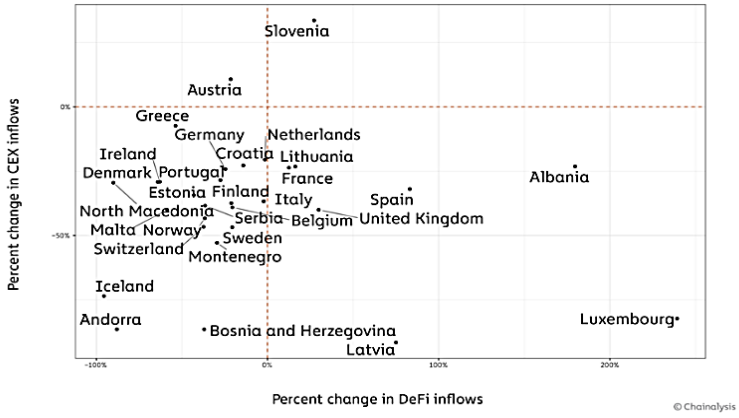


Figure 3. *Percentage Change in CEX and DeFi Use in CNWE Countries, January–June 2022 vs. January–June 2023 Source: Chainalysis (2023).*

This growth is not driven solely by younger users seeking to benefit from the cryptocurrency ecosystem, but also by public institutions, private companies, and startups that are increasingly integrating blockchain into their operations. In parallel, a growing number of Web3 and blockchain-related startups are selecting Albania as

a destination to develop and implement their technological infrastructure.
Albania offers a favorable fiscal environment, including a reduced corporate income tax (CIT) rate of 5% for entities engaged in software production and development, provided they were registered by December 31, 2023, with benefits extending through at least December 31, 2029. Additionally, startups benefit from comparatively lower operational costs, including competitive labor expenses for locally based software developers and reduced utility costs, such as rent and electricity, relative to major European technology hubs (KPMG, 2023).

3. Research Background and Motivation

A growing body of research has examined the awareness and adoption of blockchain technology among students and businesses across various international contexts (Bahtiyar et al., 2020; Radanovic et al., 2018; Sharma et al., 2020; Sokołowski et al., 2023). These studies generally identify factors such as technological familiarity, perceived usefulness, and organizational readiness as key determinants of adoption. However, much of this literature focuses on developed economies, leaving transition and emerging contexts particularly in Southeast Europe relatively underexplored.
In the Albanian context, research in this field remains limited and tends to focus on specific sectors of the economy. Notably, a questionnaire-based study on the potential of distributed ledger technology (DLT) in medical tourism surveyed two groups: 70 medical professionals and a second group of highly educated individuals outside the medical field. The findings indicated that only 8.6% of the first group and 6.9% of the second group believed that DLT lacked growth potential in Albania (Pilkington & Kumaraku, 2020).
To further support the analysis of Albania's pathway toward DLT adoption, a framework for implementing blockchain technology in ID card management has been proposed (Lleka et al., 2022). Subsequent research has expanded this work by examining the integration of blockchain technology within the Albanian banking system, highlighting its potential to enhance transparency, security, and efficiency in financial operations, particularly in cross-border payments and digital identity verification (Lleka et al., 2023). Additionally, Pilkington et al. (2023) present a comprehensive DLT roadmap for Albania, including initiatives such as e-voting systems, adoption of Ethereum 2.0, attraction of foreign direct investment (FDI), and broader applications of Web3 and blockchain technologies.
These initiatives provide a strong foundation and motivation for the present study, which employs two questionnaire-based surveys targeting businesses across various sectors, as well as students enrolled in IT- and finance-related academic programs.

4. Methodology

To capture and better understand the perspectives of the two key stakeholder groups involved in this digital transformation students as the future workforce and business owners as implementers two structured questionnaires were administered via Google

Forms between September 1, 2025, and October 15, 2025. The aim was to reflect both viewpoints, recognizing that students represent the emerging human capital that will engage with these technologies, while businesses provide the operational context in which such solutions are implemented.

The first questionnaire targeted students enrolled in economics and IT-related programs at Fan S. Noli University, focusing on their awareness, experience, and expectations regarding blockchain and related technologies. The sample consisted of 100 students, distributed across the following programs: 40 from the Bachelor in Information Technology program, 9 from Bachelor in Information Engineering, 17 from Bachelor in Finance and Accounting, 7 from Bachelor in Business Informatics, 11 from Bachelor in Management, 3 from Bachelor in Mathematics and Informatics, and 13 from the Professional Master in Modern Telecommunications and Internet Systems Technologies. The questionnaire was initially distributed to 244 students across these programs, and the first 100 respondents who volunteered to participate fulfilled the predefined sample quota.

The second questionnaire was completed by 50 business owners representing a range of sectors to ensure broad coverage of potential blockchain application areas. The sample included 16 businesses (32%) from the IT and fintech sector, 13 businesses (26%) from the retail sector, 10 businesses (20%) from construction and infrastructure, 5 businesses (10%) from tourism and hospitality, and 6 businesses (12%) from the agriculture and food industry.

Table 1 . The Overall Methodology and Structure of the Questionnaires. *Source:Author*

No	Available quota	Aim of questionnaire
1	100 students from Economy and IT related program fields Albanian: *Pyetësor për vlerësimin e qasjes së studentëve rreth aplikimeve të teknologjisë së rregjistrave* *të shpërndarë* Google Form Link: https://forms.gle/zwpJWR7N-qGJMqEAc7	The survey explored whether students had previously heard of cryptocurrencies and which types they were familiar with. It also asked whether they had encountered information related to cryptocurrencies or other blockchain-based applications. For those familiar with the topic, we further inquired about their primary sources of information, Additionally, participants were asked to share their perspectives on the potential of blockchain technology—including non-fungible tokens (NFTs)—to influence and transform future payment systems. Finally, the survey examined students' willingness to engage with and explore applications of artificial intelligence (AI) and blockchain technologies within their future professional or academic environments.

2	50 businesses from various sectors Albanian: *"Pyetësor për Bizneset, për Nivelin e Njohjes dhe Aplikueshmërinë e* *Teknologjive të Reja në Proceset e tyre të Punës"* Google Form Link: https://forms.gle/PBfYtPgyVMqdo3uG7	Gather information from businesses about their current practices and attitudes toward digital transformation. It asked which economic sector the business operates in, whether the business relies on third parties for service delivery (such as notaries or intermediaries. Businesses were also asked which services they would consider automating. In addition, respondents were asked to rate the importance of several factors on a scale from 1 (not important) to 5 (very important), including data traceability, data security, and readiness to integrate innovative services such as AI or blockchain. The survey also explored how interested they would be in hiring employees with knowledge of new technologies. Finally, it asked whether they would be interested in using software that improves transparency toward consumers—for example, by showing real-time price changes or product availability, all of which are values that blockchain solutions may offer.

5. Result and Discussion

5.1. Students' perspective

Students' familiarity with blockchain applications provides an important starting point for understanding their level of awareness and engagement with these technologies. When asked about their familiarity with Blockchain applications, 63% of students reported having heard of Blockchain primarily in the context of cryptocurrencies, while 25% were aware of its applications across various domains. This suggests a promising level of awareness of cryptocurrencies among students. Online media is crucial for the dissemination of information and the coverage of cryptocurrencies (Varghese 2024). This is also supported by our questionnaire results which shows that 87 % of students have got information regarding blockchain application via digital media (6% from online media, 33% from social networks and 48% from different digital means of information).

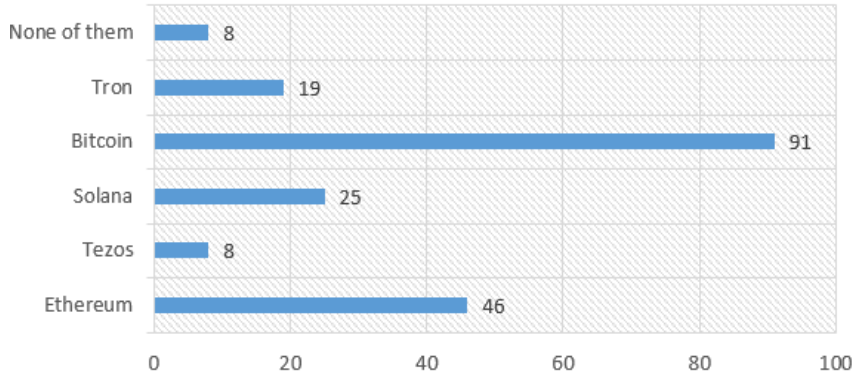


Figure 4. Familiarity of students with Blockchain Technology.
Source : Derived from Survey No.1

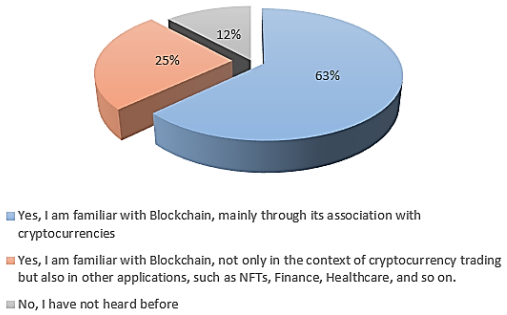


Figure 5. Familiarity of students with Cryptocurrencies.
Source : Derived from Survey No.1

Bitcoin, being the oldest cryptocurrency, is the most well-known among students, with 91 out of 100 students recognizing it, followed by Ethereum, which is known to 46 out of 100 students. Interestingly, 41.5% of those students who were familiar with Ethereum reported possessing knowledge of other blockchain applications beyond just cryptocurrency. This aligns with the widely accepted view that Ethereum serves as a utility token, enabling decentralized applications (dApps) to be built on top of it (Cai et al. 2018).

This generation is taking proactive steps toward adopting blockchain technology. For example, 36% of respondents reported having signed up on a CeFi platform or having conducted at least one blockchain transaction. In addition when *asked "How do you perceive the impact of these technologies, including those supporting the trade of unique digital assets such as Non-Fungible Tokens (NFTs), in the future?"* – 65% responded that these technologies have the potential to bring about fundamental changes in payment

methods, while 23% believed they would lead to gradual but significant change. 65% of students responded that they would like to explore dApps development on blockchain networks if they had previous knowledge to the
blockchain development stack.
To the question" What *are the two main benefits of using blockchain systems for storing and managing information? (up to 2 alternatives)"*, High security was among the top benefits of using blockchain systems (56 responses) followed up by transaction speed (52 responses).

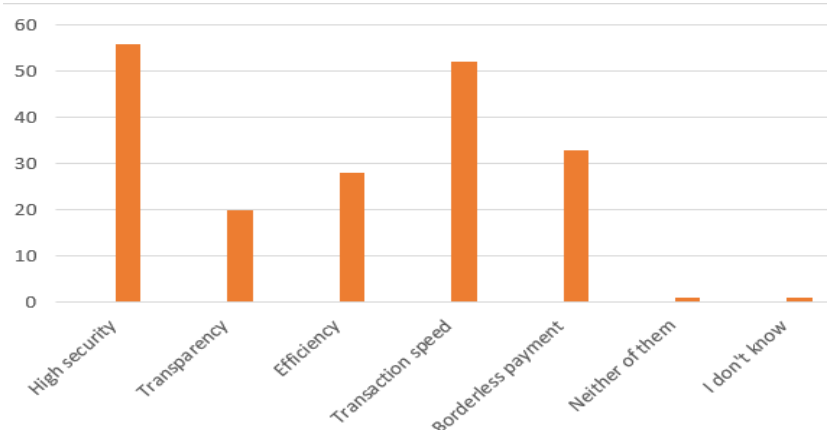


Figure 6. Benefits of using blockchain systems for storing and managing information regarding to students. *Source: Own Processing, Derived from Survey No.1*

Beyond technical familiarity, student responses reflect a growing sense of curiosity and openness toward the possibilities of blockchain and AI. Rather than passive observers, many see themselves as future users—or even builders—of these technologies. This mindset, emerging from a university setting, signals the importance of education in shaping how and where innovation will take hold. Their input enriches the broader picture of digital readiness from a generational perspective.

5.2. Business owners' perspective

The survey results demonstrate that innovation, data security, and traceability are key priorities in business workflows, with a significant majority of respondents expressing either agreement or strong agreement to integrate innovative services in these areas. When combining *"Agree"* and "*Strongly Agree"* responses, 68% of business owners support innovation integration (16% + 52%), 86% highlight the importance of data security (36% + 50%), and 82% emphasize the need for traceability (26% + 56%) in their daily processes.

Table 2. Business owners' perspective on data security, traceability and innovative services integration to their business workflows. Source: *Derived from Survey No.2*

Statement	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
"We, as a business unit, are ready integrate innovative services (AI, blockchain applications) to optimize our business workflow"	0%	8%	24%	16%	52%
Data Security is a priority to my business	0%	4%	10%	36%	50%
Data Traceability is a priority to my business	0%	6%	12%	26%	56%

Blockchain technology provides an ideal solution by offering robust encryption-based security, transparent and immutable data recording, and alignment with emerging technological trends. The high cumulative agreement percentages clearly indicate that respondents not only recognize the relevance of these factors but are also prepared to endorse solutions that address them.

In addition business owners were asked *"If you are to automate, or are currently automating, certain aspects of your business workflow through a computer software, which specific services would be (or are) selected for automation (they were allowed to make more than one choice)?"*

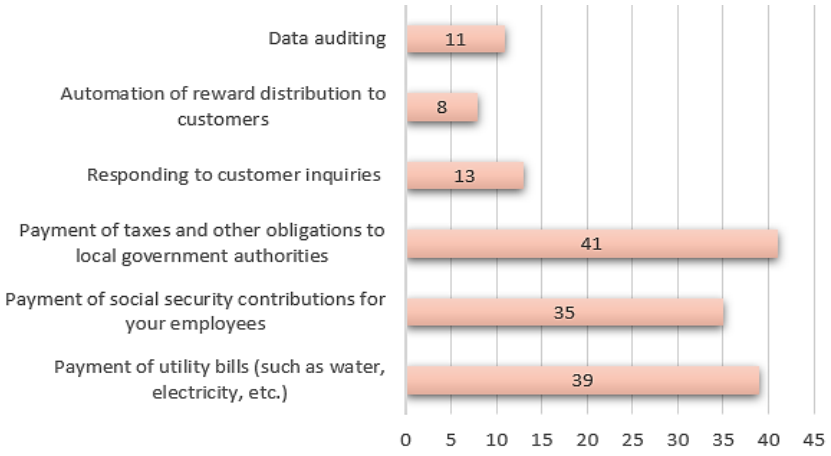


Figure 7. Overview of business processes selected for automation by surveyed businesses. *Source: Own processing,* Derived *from Survey No.2*

The automation of the payment of taxes and other obligations to local government

authorities has become a key area of focus, with 41 business owners reporting the implementation or interest in such systems.

One area of growing interest is the application of distributed ledger technology (DLT) to tax components, such as value-added tax (VAT). Louvieris et al. (2024) present the Making Tax Smart (MTS) prototype, which uses the open-source R3 Corda DLT framework. This system allows for real-time VAT split payments, provides better oversight, and ensures controlled access to transaction data. Their research shows how integrating tax compliance into central bank digital currencies (CBDCs) can streamline tax collection processes, reduce administrative burdens, and increase transparency. Wijaya, E., et al. (2023) proposes a transparent and secure VAT system that requires taxpayers to obtain valid tax receipts before issuing tax invoices in order to reduce fraud. Regarding to automation of payment of utility bills, which is chosen by 39 businesses, Zhang, Y., et al. (2022) discusses the challenges and opportunities associated with the application of blockchain technology in the energy sector, including utility billing systems.

A similar amount of business owners (35 business owners) reported that they would like to automate the payment of social security contributions for their employees. The European Commission (2020) found that blockchain could enhance the transparency and security of welfare and pension payments by reducing fraud and improving traceability. While Albania, as a non-EU country, faces some challenges with policy and infrastructure, it has great potential to benefit from these advancements in the future. There are even some businesses which would like to experiment with their auditing and automation of reward distribution to customers via blockchain. We would like to mention the study by IBM and LoyaltyXpert (2018), which demonstrates how blockchain can enhance loyalty programs by automating reward distribution through smart contracts. The study highlights that blockchain's decentralized nature reduces the risk of fraud and prevents double-spending, ensuring a more secure and efficient reward management system.

Business owners were asked if they rely on intermediaries, such as notary systems, for data processing. 30 businesses (60%) rely on third parties consistently, while 14 (28%) do so occasionally. This points to the potential for blockchain to reduce reliance on intermediaries by offering a secure, transparent alternative. If Albania's legal framework were to align with EU regulations like MiCA, it could create a more supportive environment for businesses to adopt decentralized solutions, ensuring both legal certainty and trust.

In addition, business owners were asked whether they wo8uld be interested in utilizing a software (computer program) that enhances transparency in their interactions with consumers. In this context, transparency refers to the real-time display of price fluctuations, product availability, and other relevant information. 68% of businesses expressed their readiness, stating that this would strengthen their relationship with the customer base, followed by 22% of business owners that would seek additional information about the type of this software.

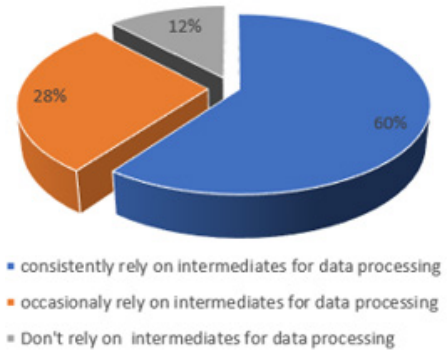


Figure 7. The reliance of businesses on intermediate parites for data processing.
Source : Own processing, Derived from Survey No.2

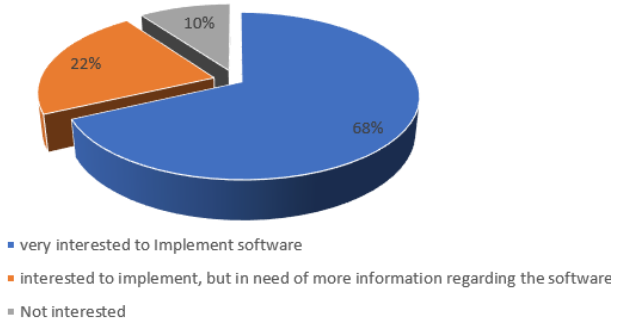


Figure 8. Willingness of businesses to enhance transparency and improve loyalty scheme for their clients via software implementation
Source : Own processing, Derived from Survey No.2

Lastly, business owners were asked, *"How interested would you be in hiring employees who are familiar with the applications of new technologies (AI and Blockchain)?*' Only 10% of them expressed no interest in integrating these technological advancements into their hiring practices. From our perspective, this suggests that proficiency in Artificial Intelligence and Blockchain is starting to serve, and will continue do so, as a key factor for ensuring future success in the Albanian business landscape.

Acknowledgment
This work was carried out with the support of a research grant provided by the University "Fan S. Noli," Korçë, Albania. I extend my appreciation to the institution for its financial support and its consistent encouragement of academic research.

AI Acknowledgment
The author acknowledges the use of ChatGPT (OpenAI, GPT-5.1) to assist in the

linguistic enhancement and refinement of this article, particularly for the purpose of improving the quality of English use in an academic context. The output generated was used to improve the clarity, accuracy, and academic tone of the English version of the manuscript, without altering the original content or meaning. While the author acknowledges the usage of AI, he maintains that he is the sole authors of this article and take full responsibility for the content therein, as outlined in COPE recommendations.

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