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# INNOVATIVE APPROACHES TO FINANCIAL SECURITY IN BUSINESS MANAGEMENT: CASE STUDY OF AZERBAIJAN

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## Abstract

**Purpose:** This study aims at a comprehensive disclosure of the concept of financial security of business management in the context of economic challenges, with a focus on enterprises in Azerbaijan.

**Methods:** The study applied expert interviews (n=12), sectoral analysis of Azerbaijani enterprises, and secondary data from Statista and Eurostat to assess financial security threats and the impact of blockchain, AI, fintech, and biometrics across industries.

**Findings:** The study considered the essence, directions, objects, and subjects of financial security of business management. It was established that the main objects of financial security are financial resources and assets of enterprises, and the subjects are enterprise management, investors, state regulatory authorities and other stakeholders. The assessment of innovative technologies of financial security management, such as blockchain, artificial intelligence, financial technologies and biometric technologies, has shown their significant potential to increase the transparency of financial transactions, reduce fraud risks and improve the efficiency of resource management.

**Originality:** The study identified the main threats to the financial security of enterprises, including oil price fluctuations, political instability, corruption, administrative barriers, dependence on imports, low levels of innovation and technology, changes in tax legislation, low-skilled labour force and low levels of digitalization of economic processes.

**Keywords:** financial security, business management, innovative technologies, Azerbaijan, risk management

**JEL index:** G32, L21, O31.

## 1. Introduction

In the context of globalization and economic uncertainty, the issue of financial security of enterprise business management is becoming increasingly important. The financial security of the enterprise is a set of measures and strategies aimed at protecting its financial interests from internal and external threats. This aspect of management becomes relevant in the context of ensuring the sustainability of the enterprise, its competitiveness in the market and long-term development (Nechyporenko, 2023; Teymurova et al., 2025, Dankiewicz et al., 2024). Threats to financial security can range from financial fraud and cyber-attacks to macroeconomic risks such as inflation, currency fluctuations and changes in tax policy. Effective financial security management involves not only identifying and assessing these risks, but also developing and implementing appropriate measures to minimize them (Kovalska et al., 2023; Abdullayev et al., 2024). The relevance of the study of financial security management of enterprises in Azerbaijan can be considered from several points of view.

From the economic point of view, financial security is the basis for the stable development of enterprises, especially in the conditions of currency fluctuations and economic crises characteristic of Azerbaijan (Aliyev, 2014; Shafa, 2021). The social aspect is manifested in the fact that ensuring financial security promotes stable employment, and payment of

salaries and taxes, which, in turn, supports social stability in the country. With the development of information technology and digitalization of the economy, businesses in Azerbaijan face increased risks of cyber-attacks and financial fraud, which requires modern methods of protecting financial assets and data (Aliyev et al., 2023). Finally, in terms of globalization and Azerbaijan's active integration into the Eurasian Economic Union (EAEU), global aspects also affect the financial security of enterprises in Azerbaijan, as globalization creates additional challenges related to fluctuations in global financial markets, political instability in different regions and global economic trends, which requires detailed analysis and management (Khuseynov, 2024).

The importance of digital innovation technologies for the financial security of business management cannot be overemphasized. Modern financial technologies such as blockchain, artificial intelligence, and financial and biometric technologies play a pivotal role in providing strong defences against threats arising in the digital age (Hajiyev et al., 2025; Kuzmienko et al., 2021). Integrating these technologies into the financial management of businesses helps to improve their financial resilience and reduce their vulnerability to cyber threats. Thus, digital innovations not only improve management and operational processes, but also significantly enhance protection against financial threats, making them an important element of modern financial security management.

The scientific base of the study of financial security of enterprise activity management in Azerbaijan is based on numerous studies that consider various aspects of financial security, its threats and mechanisms of ensuring. Many researchers note that the financial security of enterprises is a complex and multifaceted problem that requires a comprehensive approach. Alpysbayev et al. (2020) studied economic security at industrial enterprises, identifying the key factors affecting its provision. The authors emphasized the importance of integrating management decisions to improve financial security. Khalatur et al. (2021) focused their attention on the management of business development in the context of financial security, pointing to the need for an integrated approach to protecting enterprises from internal and external threats.

Considerable attention was paid to technological aspects of financial security. Zhang & Zhang (2023) studied the adoption of blockchain technology to enhance financial security in supply chains, noting that the latest technology can significantly reduce fraud risks and provide transparency in financial transactions. In support of this, a study by authors Shoetan & Familoni (2024), analysed the impact of blockchain technologies on financial security and efficiency, going beyond the traditional use of cryptocurrencies.

Ren (2022) investigated the optimization of financial management and decision-making systems based on big data to improve financial risk management. Delas et al. (2015) analysed in their study the financial security of enterprises, emphasizing the need for internal control and risk management system to ensure sustainability. Research conducted by Aghazade (2024) aimed to explore ways to strengthen the financial stability of small enterprises in Azerbaijan, identifying key strategies to improve their sustainability. A great contribution to the study of financial security management in Azerbaijani enterprises was

made by author Zeynalli (2023), who focused on the directions of financial control development to increase the transparency of the financial environment in Azerbaijani enterprises, pointing out the need to improve control methods.

The importance of financial security in today's challenges is reflected in the study by Berzhanir (2023) and Nurmara et al. (2023) who studied the aspects of enterprise financial security management and financial technology security respectively. Although many aspects of financial security have been investigated in detail, there are gaps that require further study. Hence, the study of enterprise financial security management remains an urgent task that requires further analyses and developments. The purpose of the study was to identify threats to the financial security of entrepreneurial activity management on the example of enterprises in Azerbaijan. In order to achieve the goal, the following tasks were defined in the course of the research:

1. Disclosing the essence, objects, and subjects of financial security of entrepreneurial activity management.
2. Evaluating innovative technologies of financial security management in enterprises.
3. Forming a number of threats to the financial security of entrepreneurial activity management on the example of enterprises in Azerbaijan.

This research question is important to the international scientific community as it addresses the growing global need to understand how digital innovations and systemic risks affect financial security in emerging markets. By focusing on Azerbaijan, the study offers insights into the challenges and strategies relevant to transitioning economies, contributing to comparative analyses in financial risk management, digital transformation, and enterprise resilience.

## 2. Literature review

The concept of financial security in business management has garnered increasing academic attention in light of intensified economic, technological, and geopolitical challenges. A multidimensional understanding of financial security now integrates both classical risk management frameworks and the influence of innovative technologies, regulatory transformations, and organizational digitization. This literature review synthesizes current scholarly contributions, focusing on the intersection between financial risk, innovation, and business resilience with special attention to international and sector-specific contexts.

Several recent studies have explored the structural foundations and conceptualization of financial security. Buha, Bychin, and Ozerna (2023) define financial security as a multifaceted construct encompassing capital stability, investment capacity, and risk resistance, emphasizing its systemic role in ensuring enterprise sustainability. Zadorozhnyy et al. (2023) develop this framework further by analyzing the configuration of threats in financial security management systems, identifying a growing interdependence between

internal control mechanisms and external economic risks. The influence of digital transformation and technology on financial security is prominently discussed in the literature. Alazzam et al. (2024) demonstrate that the management of international logistics in recreational enterprises is susceptible to risk-induced disruptions, which directly impact financial security, requiring robust methodological approaches for risk assessment. In parallel, Trachenko et al. (2022) argue for the application of optimization models to design more adaptive business process management systems, reinforcing resilience against such disruptions. Technological innovation is further emphasized by Davydenko et al. (2019), who highlight the necessity of financial support for innovation activities to maintain enterprise competitiveness. Davydenko, along with Dibrova and Nehoda (2020), extends this argument by focusing on financial provision as a critical element in the competitiveness of agricultural enterprises, reinforcing the need for industry-specific strategies to maintain financial security.

The role of digitalization is elaborated by Cherep & Chernikova (2019), who advocate for innovative methods to quantify the economic digitization processes occurring within enterprises. Sommer (2023) provides a cautionary perspective, discussing the "digital talent trap" among SMEs and the strategic dilemmas between in-house talent development and outsourcing, which have direct implications for cost efficiency and financial security. The growing role of artificial intelligence (AI) and financial technologies (FinTech) is a recurring theme in the reviewed literature. Chakraborty et al. (2024) explore how AI redefines trading and business transaction practices, enhancing financial efficiency while raising novel risk dimensions. Complementing this, Kumar et al. (2025) demonstrate how generative AI (GAI) can improve forecasting accuracy in financial processes, offering new pathways for strategic decision-making. The conceptual intersection of AI, digital finance, and financial inclusion is articulated by Yanting & Ali (2023), who present a framework linking technological accessibility with economic resilience.

The regional dimension of financial innovation is discussed by Khan & Al-Harby (2022), who compare the application of FinTech in Saudi Arabia with other GCC economies. Their analysis underscores both the opportunities and regulatory constraints posed by digital financial instruments, which resonate with the economic characteristics of countries like Azerbaijan. Internationally, the extroversion of foreign trade facilitated by digital transformation is examined by Anastasios & Filenta (2023), using Greece as a case study. Their findings demonstrate how digitization can enhance external financial flows and mitigate risks associated with domestic economic fluctuations. Similarly, Bilan et al. (2019) emphasize the relationship between ICT adoption and economic growth, noting that effective integration of information technologies is positively correlated with enhanced enterprise-level financial performance.

In sum, the reviewed literature converges on the recognition that financial security in business management is contingent upon a complex interaction of internal financial discipline, strategic innovation, digital integration, and contextual risk management. The combination of blockchain technologies, artificial intelligence, financial innovations, and

optimized business processes is considered pivotal in reinforcing financial transparency and mitigating fraud (Chakraborty et al., 2024; Kumar et al., 2025; Khan & Al-Harby, 2022). This multidimensional perspective provides the analytical foundation for assessing Azerbaijan's enterprise financial security mechanisms in light of both local vulnerabilities and global innovation trends.

## 3. Materials and methods

This study applied a mixed-methods research design that integrated both secondary data analysis and primary empirical data collection through expert interviews. The research was structured in three analytical stages: conceptual clarification, technology impact assessment, and identification of financial security threats in Azerbaijani enterprises.

At the first stage, a systematic literature review and content analysis were carried out to clarify the theoretical foundations of financial security in business administration. Definitions, objects, and subjects of financial security were synthesized from academic sources, reports by international financial institutions (e.g., World Bank, IMF), and regulatory documents relevant to Azerbaijan. This phase formed the conceptual basis for subsequent empirical analysis.

In the second stage, the study employed secondary statistical data to assess the integration of innovative technologies into enterprise financial management. Specifically, data on global spending on blockchain technologies from 2017 to 2020 (with projections for 2024) were retrieved from Statista (2020). Additionally, data from Eurostat (2024) were used to analyze the adoption of artificial intelligence (AI) technologies by European enterprises of different sizes across financial, ICT, and logistics sectors. The aim was to identify the extent and direction of technological integration and its influence on financial security indicators. Complementary information was drawn from publicly available reports, academic literature, and financial technology white papers regarding the application of fintech solutions (e.g., digital payments, crowdfunding, algorithmic credit scoring) and biometric authentication technologies (e.g., fingerprint and facial recognition).

The third stage involved the collection of primary data through expert interviews conducted in January–February 2024 in Azerbaijan. A purposive sampling method was used to select experts with substantial experience in financial management, enterprise risk assessment, and technology implementation. The final sample included twelve participants: six financial managers of medium-sized enterprises (50-250 employees), three senior executives from large enterprises (more than 250 employees) in the energy and logistics sectors, and three consultants from Azerbaijani business development organizations. The selection ensured sectoral and functional diversity while maintaining relevance to the topic of financial security and technology adoption. All interviews followed a semi-structured format, allowing for both guided discussion and elaboration on specific enterprise-level challenges. Interview questions covered perceived financial threats, the effectiveness of technological

tools (blockchain, AI, fintech, biometrics), and the regulatory environment in Azerbaijan. Interviews were conducted in person or via secure video conferencing and were transcribed for thematic analysis. Additionally, an expert-based risk assessment was conducted to identify the most critical threats to financial security in Azerbaijan. Experts were asked to evaluate predefined risk factors (e.g., oil price volatility, corruption, political instability, digitalization gaps) on a five-point scale in terms of impact and probability. This evaluation helped triangulate the qualitative findings from literature and secondary data analysis.

Overall, the methodology provided a robust triangulated foundation for exploring financial security in business management. It combined theoretical systematization, empirical analysis of digital technology trends, and context-specific threat identification, supported by both quantitative indicators and expert-based qualitative insights.

## 4. Results

### 4.1. The essence of financial security in business administration: Objects and subjects

Financial security of business management can be viewed from different approaches. The economic approach views the financial security of business management as the ability of an enterprise to use financial resources efficiently, manage risk and protect itself from economic threats, such as inflation and currency fluctuations, which require constant adaptation to unstable market conditions. For example, for businesses that import raw materials, exchange rate fluctuations can significantly increase costs, requiring the use of hedging or other financial instruments to mitigate risks. The managerial approach suggests that the financial security of business management is seen as an area for strategic planning and optimizing financial flows and controlling costs to achieve long-term goals, which requires the development and implementation of comprehensive financial strategies and policies. For example, implementing a budgeting system to effectively control costs and adjust them to changes in the market environment (Rahman & Joy, 2024).

The technological approach is based on the fact that financial security requires the use of modern information technologies and systems to ensure reliable storage and processing of financial data, monitoring of financial transactions and automation of financial management processes, which minimizes human error and increases efficiency. For example, the use of innovative technologies such as artificial intelligence, blockchain technologies, and biometric technologies that integrate all financial processes of an enterprise allows obtaining relevant data in real time and making informed management decisions. Thus, the financial security of business management provides enterprises with the ability to function effectively, develop and achieve their goals in the face of constant challenges and changes, applying effective strategies and technologies in practice. Hence, financial security in business management refers to the ability of an entrepreneur or enterprise to effectively manage

its financial resources, processes, and risks to ensure the sustainability and success of the business. And it can be viewed from several directions (Table 1).

**Table 1:** Directions of financial security of entrepreneurial activity management

| Direction | Description | Author's comment |
|---|---|---|
| Liquidity management | Ensuring that sufficient funds are available to meet current liabilities and operational requirements | For example, a company may use short-term bank loans to temporarily cover liquidity shortfalls during periods of temporary decline in sales. Planning of short-term financial flows and regular updating of cash forecasts play an important role in liquidity management |
| Capital management | Efficiently utilizing and raising capital to finance business growth and development | For example, a technology start-up can attract venture capital investment to scale production and expand the market. It is crucial to develop an attractive investment proposition and establish effective investment asset management mechanisms |
| Financial risk management | Identifying, measuring and managing financial risks such as foreign exchange risks, interest rate risks and credit risks | For example, an exporter may use financial derivatives to protect against currency risk in international transactions. Regular monitoring and analysis of financial risks helps to minimize potential losses |
| Managing financial transparency and reporting | Ensuring accuracy, timeliness, and reliability of financial reporting, compliance with reporting standards and regulatory requirements | For example, a company must strictly comply with local and international financial reporting standards, such as IFRS, to ensure transparency to investors and financial institutions. Regular internal and external audits help to maintain a high level of accountability |
| Management of operating expenses | Optimization of operating costs and improvement of business process efficiency | For example, a company may implement an inventory management system to reduce the costs of products, goods and optimize their use. Regular analyses and comparisons of operating costs help identify and eliminate redundancies and inefficiencies |
| Performance management | Maximizing productivity and efficiency in the use of the company's resources | A manufacturing company can implement Lean Manufacturing to reduce production cycle times and minimize wastage. Regular monitoring of production processes and implementation of innovative technologies help to improve overall business efficiency |

| | | |
|---|---|---|
| Management of tax liabilities | Compliance with tax legislation, minimization of tax risks and optimization of tax payments | A company should correctly classify tax liabilities and utilize tax credits and allowances provided for by local legislation. Regular consultation with tax specialists and lawyers helps to avoid tax disputes and penalties |

*Source: compiled by the authors based on Dahliah et al. (2023), Khalatur et al. (2021), and Delas et al. (2015).*

Thus, it is possible to identify the main objective of financial security of business activity management, which is to ensure the sustainability and reliability of financial processes and decisions within the business, with minimization of financial risks and ensuring sustainable financial growth of the organization. Objects and subjects of financial security of business activity management can be presented as follows (Table 2).

**Table 2.** Objects and subjects of financial security of business activity management of the enterprise

| Objects/subjects | Characterization |
|---|---|
| **Objects** | |
| Financial resources | Cash, financial assets, investments, working capital and other financial resources of an enterprise, which are the financial basis of its economic activity |
| Financial information | Includes accounting reports, financial indicators, analytical data and other information necessary for management decision-making |
| Tangible assets | Property, plant and equipment, real estate and other tangible assets that have financial value |
| Financial flows | Revenues, expenses, profits, cash flows, operating and investment flows to be monitored and optimized |
| Information systems | Management systems, software, and technologies that support the financial activities of an enterprise |
| **Subjects** | |
| Owners, shareholders | Persons or groups of persons who own the enterprise and have an interest in its financial stability and security |
| Top managers, managerial staff (COO, CEO) | Senior executives, CFOs, middle managers who are responsible for strategic and operational management of financial resources |
| Financial Services | Accounting department, financial planning department, auditors, controllers who are directly involved in accounting, analysing and controlling financial performance |

| | |
|---|---|
| State authorities | Tax services, regulatory authorities that oversee compliance with laws and financial regulations |
| Lenders and investors | Banks, financial institutions, investors who provide financial resources and are interested in the stability and financial reliability of the company |
| Partners and suppliers | Companies co-operating with the enterprise and interested in its solvency and stability |
| Consumers | Customers of the enterprise who may be interested in the stability of its financial performance, especially in the case of long-term contracts or large volumes of purchases |

*Source: compiled by the authors based on Berzhanir (2023), Zhou & Weng (2022), and Nurmara et al. (2023).*

Thus, all the above-mentioned objects and subjects form a complex system of interaction, in which ensuring the financial security of the enterprise requires a comprehensive approach and consideration of the interests of all parties involved.

## 4.2. Analysing innovative technologies of financial security management at enterprises

It should be realized that innovative technologies play a pivotal role in ensuring the financial security of business management. Traditional financial security methods, while important, are increasingly inadequate in dealing with modern and complex financial threats that are constantly changing. They often do not provide sufficient speed and depth of analysis to effectively detect risks (Figure 1).

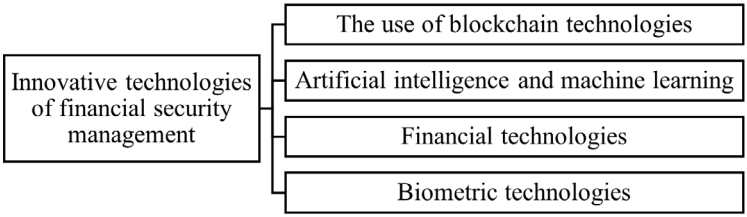


**Figure 1.** Main innovative technologies of enterprise financial security management
*Source: compiled by the authors.*

The use of blockchain technology represents a significant breakthrough in the financial security of business management. This innovation improves the security and transparency of financial transactions by decentralizing data storage, cryptographically securing transactions and reducing the cost of administrative processes. Blockchain provides entrepreneurs with an effective tool to minimize risk, improve governance and increase trust from customers and partners (Jiang, 2024; Shoetan & Familoni, 2024). Attention should be paid to the popularity and prevalence of such technologies in the world. Over

2017-2022, blockchain technologies have been successfully adapted for corporate use and have demonstrated a number of benefits. It is important to note that global spending on blockchain technologies is actively growing, with significant growth expected by the end of 2024 (Figure 2).

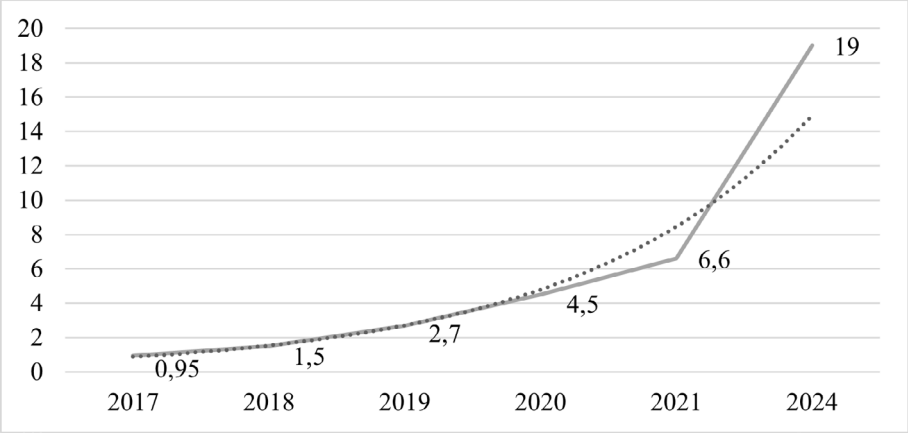


**Figure 2.** Global spending on blockchain solutions from 2017 to 2020, with forecasts for 2024, billion USD

*Source: compiled by the authors based on data from Statista (2020).*

As the graph in Figure 1 shows, interest in blockchain technology is growing strongly, as evidenced by the growth in global spending on blockchain solutions. Artificial intelligence (AI) offers significant opportunities to improve financial security in business management. One of the main applications of AI is data analytics: machine learning systems are capable of processing and interpreting large volumes of financial data, enabling the identification of patterns and trends that are not accessible to human perception. This is particularly crucial for forecasting financial risks, optimizing investment strategies and minimizing losses. It should also be noted that AI is capable of automating routine tasks such as analysing financial reports, monitoring transactions and detecting anomalies (Shamim, 2024). This not only increases the efficiency of finance departments, but also improves the accuracy of decisions by minimizing human error and reducing the likelihood of errors. Finally, AI plays a major role in improving cybersecurity. Machine learning systems are used to develop adaptive and intelligent defence systems that can respond quickly to new threats and attacks. This enhances the protection of financial data and customers' personal information, building trust in businesses and ensuring the stability of their operations.

While global investment trends highlight the increasing importance of blockchain technologies in securing financial processes, the practical application of other innovative tools such as AI can be observed more concretely at the regional level. In particular, the European Union provides a useful empirical context for analyzing how AI is being integrated

into enterprise-level financial management and security systems. The following section presents statistical data on the adoption of AI technologies across EU enterprises of various sizes, offering insights into their functional deployment and strategic value in enhancing financial security. In 2023, EU businesses at different scales used AI software or systems for different purposes. For example, 26.2% of enterprises using AI technologies implemented these systems for ICT security, using machine learning techniques to detect and prevent cyberattacks. For accounting, control or financial management, 25.8% of businesses used AI technologies. At the same time, the least use of AI software or systems was observed in logistics, where only 9.6% of AI-enabled enterprises used these technologies (Figure 3).

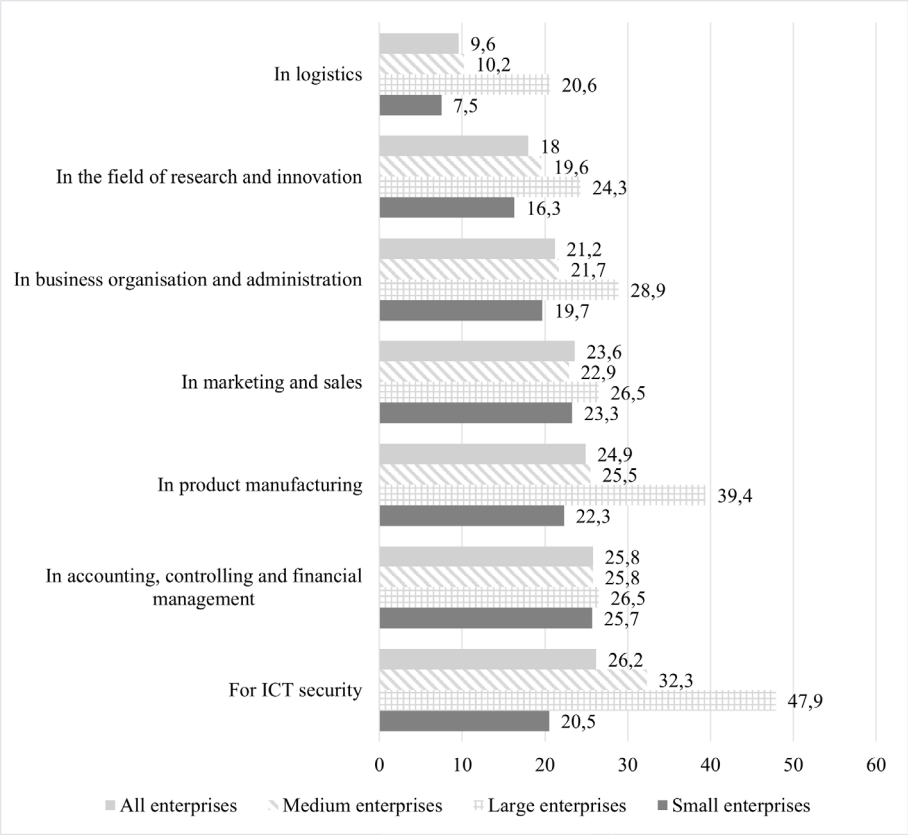


**Figure 3.** Areas of AI use in EU enterprises of different sizes in 2024, percentage of enterprises using at least one AI technology

*Source: compiled by the authors based on data from Eurostat (2024).*

As the graph in Figure 3 shows, the accounting, controlling and financial management areas are using AI extensively, with the level of use in this area being almost the same for all types of businesses (25.7% to 26.5%). This confirms that automation and data analysis with AI play a pivotal role in optimizing financial processes and improving management decisions in various market segments. In 2024, new financial technologies (hereinafter referred to as fintech) offer innovative solutions for enterprise financial management, including digital platforms for credit management, electronic payment systems, crowdfunding and other ways to raise and manage financial resources.

One of the uses is improved data protection through advanced encryption and multifactor authentication methods, which helps minimize the threats of cyber-attacks and financial fraud. Automation of financial processes, including account management and bookkeeping, not only improves efficiency but also reduces the likelihood of errors and human intervention, which also contributes to improved financial security. In addition, in 2024, fintech companies are offering new, innovative approaches to assessing creditworthiness and providing financing for SMEs. The use of algorithmic solutions and data analytics helps to predict financial risks and make informed decisions, which is especially significant in a volatile market (Arroyabe et al., 2024; Xiao et al., 2024). Blockchain technologies also play a pivotal role in ensuring transaction security and transparency of transactions, which promotes trust and reduces risk in doing business. Thus, fintech significantly improves the level of financial security and efficiency of financial management in today's business environment. Biometric technologies play an important role in modern financial security systems, providing a high level of protection for access to financial systems and data. They use a person's unique physiological or behavioural characteristics to identify and authenticate users. One of the most common examples is the fingerprint scanner, which analyses unique finger patterns and lines, creating a resilient and secure access system.

The benefits of biometric technologies include high accuracy and difficulty of forgery, making them particularly useful for financial institutions where security is a priority. They also eliminate the need to remember and manage complex passwords or pin codes, which simplifies the user experience and reduces the risk of compromising sensitive information. Thus, biometric technologies play a critical role in securing financial transactions and data in today's world. Thus, the above-mentioned innovative financial security technologies for business management help entrepreneurs not only to cope with today's financial security challenges, but also to create more effective and reliable financial strategies for their businesses.

### 4.3. Identification of threats to financial security of entrepreneurial activity management on the example of enterprises of Azerbaijan

Azerbaijan, being a dynamically developing economy, is the object of increased attention in the context of the study of threats faced by enterprises in the field of financial security. Especially relevant is the identification and analysis of threats that may affect the

financial management of business structures in this region. In this context, digitalization is becoming a crucial factor, which provides new opportunities to improve management efficiency and minimize risks. Digital technologies allow businesses to adapt more quickly to changes in market conditions, improve the transparency of financial operations and increase control over resources. However, alongside the benefits of digitalization, new threats such as cyber-attacks and fraud are emerging, making financial security issues even more pressing (Khan et al., 2024).

The integration of artificial intelligence (AI) into enterprise management processes, as illustrated in Figure 3, reflects a broader European trend toward digital transformation across key economic sectors. The data from Eurostat (2024) clearly show that AI technologies are most commonly used for ICT security (26.2%) and financial management (25.8%) among European enterprises, regardless of their size, while their application in logistics remains comparatively low (9.6%). This distribution of AI applications reflects strategic priorities and technological readiness within the EU digital economy. In this context, the EU4Digital initiative emerges as a pivotal framework for aligning Azerbaijan's digital development with the EU's digital agenda. Through its support for digital infrastructure, harmonization of digital markets, and promotion of electronic public services, EU4Digital lays the foundation for Azerbaijan to replicate similar patterns of digital integration as seen in the EU Member States. The initiative facilitates institutional convergence and technological standardization, particularly through reforms aimed at digitalizing business operations and expanding broadband coverage. For example, the joint investment by the European Union and the European Bank for Reconstruction and Development (EBRD) – amounting to USD 50 million for broadband expansion via Aztelecom – directly contributes to reducing the urban–rural digital divide. This infrastructural development enables more equitable access to digital technologies, such as cloud-based AI solutions and secure financial platforms, which are essential prerequisites for the type of AI deployment illustrated in Figure 3.

Moreover, the EU4Digital program promotes regulatory alignment with EU norms, including standards for digital finance, open banking, and cybersecurity, which are critical for increasing the trust and capacity required to implement AI-driven tools for financial management and ICT security in Azerbaijani enterprises. The prevalence of AI applications in these domains within the EU provides both a benchmark and an achievable model for Azerbaijan's transition. In sum, the connection between the EU's digitalization trends (as quantified in Figure 3) and Azerbaijan's ongoing reforms under EU4Digital illustrates not only the direction of technological change but also the practical mechanisms through which Azerbaijan can adopt and scale similar AI applications. This alignment is essential for strengthening the financial security infrastructure of Azerbaijani enterprises and increasing their resilience in a rapidly evolving digital economy.

The use of artificial intelligence in the financial sphere at Azerbaijani enterprises is gaining momentum, although it remains at an early stage of development (Ismayilov et al., 2024). It should be noted that the Central Bank of Azerbaijan and the Ministry of Digital

Development and Transport (MDT) signed a memorandum of co-operation aimed at developing projects, initiatives, and ideas in the field of artificial intelligence. This includes introducing joint projects in financial markets, organizing events to build AI skills and technologies, and supporting AI start-ups and companies (Azertag, 2023). Analysing the practical aspect of using artificial intelligence in the financial security of enterprise management, it can be noted that Azerbaijani enterprises that are gradually introducing AI are gaining significant benefits. For example, the use of AI to automate financial processes allows reducing costs and increasing the accuracy and speed of data processing. At the same time, the lack of government support and the low level of digitalization of economic processes hinder the development of AI in this area. It is also important to note that the IT sector in Azerbaijan has never been a priority for state-supported industries, so the web industry has developed independently, in small steps and solely on the basis of market demand (Kobis, 2023).

In Azerbaijan, about two million transactions are made through Apple Pay and Google Pay every month. In 2022, the volume of transactions through Google Pay and Apple Pay in the country totalled about AZN 744 million (Azertag, 2023). More than 70% of bank cards in the country are contactless, which allows them to be linked to these payment systems and used for payment from mobile phones and smartwatches. In addition, a large part of the components of the national payment system are already compliant with the international standard ISO 20022, which regulates the exchange of electronic messages in the financial industry. As of 2025, the implementation of ISO 20022 in Azerbaijan remains in progress, with no official data available on its current completion status. The implementation of this standard will simplify the automation of payment processes and increase the efficiency of reporting. A critical step in this direction was the creation of a legal and regulatory framework that includes the introduction of Open Banking. Fluctuations in oil prices, political instability, corruption, dependence on imports, low level of innovation, changes in tax legislation, low-skilled labour force and low level of digitalization – all these threats create various financial and operational risks for businesses. Together, these factors reduce competitiveness, increase costs and complicate long-term financial planning, which threatens the financial security and sustainability of Azerbaijani enterprises (Table 3).

**Table 3.** Impact of threats on the financial security of business management in enterprises

| Threats | The process of influencing the financial security of enterprises |
|---|---|
| Oil price fluctuations | Fluctuations in oil prices affect the manat (national Azerbaijan currency, AZN) exchange rate. A decline in oil prices often leads to a devaluation of the AZN, which increases the cost of imported goods and services. This, in turn, increases transaction costs for businesses, especially those dependent on imported inputs and technology. Fluctuations in oil prices often also cause inflation or deflation. High inflation reduces the purchasing power of the population and increases business costs, while deflation reduces profits and slows economic growth. |
| Political instability in the region | Political instability often reduces investment activity of foreign investors due to increased risks. For example, the conflict between Azerbaijan and Armenia over Nagorno-Karabakh in 2020 caused investor concern and led to a temporary decrease in investment flows into the region. During times of political instability, there are often disruptions in the supply of necessary materials and resources. For example, military actions interrupt supply chains, which negatively affects production and trade, which significantly complicates the financial security of business management |
| Corruption and administrative barriers | Corruption increases transaction costs for businesses as companies are forced to pay bribes to obtain necessary permits, licences, or contracts. This increases costs and reduces business profitability. Corruption also leads to a decrease in the quality of public administration and enforcement of laws, which often creates additional risks for businesses. |
| Dependence on imports | Import dependence in Azerbaijan increases the vulnerability of enterprises to currency fluctuations, price increases for imported goods and disruptions in global supply chains, leading to higher costs, lower profitability and more complex long-term financial planning |
| Low level of innovation and technology | The low level of innovation and technology in Azerbaijan limits the competitiveness of enterprises, reduces their ability to adapt to changing market conditions and hinders the efficient use of resources. The lack of modern technologies and innovative solutions leads to low productivity and high production costs, which in turn reduces the profitability and sustainability of business against the background of global competition. It also limits opportunities for diversifying production and introducing new products, which is critical for the long-term development and financial security of enterprises. |

| | |
|---|---|
| Changes in tax legislation | Changes in tax legislation in Azerbaijan can significantly affect the financial security of enterprises, creating additional financial burdens and changing the business environment. Higher tax rates or the introduction of new taxes increases transaction costs, leading to a decrease in profitability and investment attractiveness of Azerbaijani companies. Instability of tax policy leads to uncertainty in long-term planning, which makes strategic management difficult. |
| Low level of labour force qualification | The low level of qualification of the labour force in Azerbaijan limits the productivity of enterprises, increases the costs of training and adaptation of employees, reduces the quality of products and services, which negatively affects the competitiveness and financial stability of businesses. |
| Low level of digitalization of economic processes | The low level of digitalization of economic processes in Azerbaijan limits enterprises in the effective use of modern technologies to improve operational efficiency, manage resources and adapt to changing market conditions. This creates significant barriers to improving competitiveness, reduces opportunities for innovation and makes it more difficult to diversify products and services, which may ultimately threaten the financial sustainability and long-term development of Azerbaijani enterprises. |

*Source: compiled by the authors.*

Thus, the financial security of business management of Azerbaijani enterprises is assessed through the prism of several serious threats that limit their operational sustainability and development. Fluctuations in oil prices significantly affect the AZN exchange rate, increasing the costs of imported goods and services and creating the need for frequent adjustments in the financial strategy of enterprises, which increases operational risks for companies, especially those that depend on external suppliers and market conditions. In turn, political instability in the regions reduces investment activity and increases operational risks due to possible supply disruptions and regulatory uncertainty (Shi, 2024). All the threats listed in Table 3 above require Azerbaijani companies to take a comprehensive approach to risk management and strategic planning to maintain financial sustainability and long-term success in Azerbaijan's volatile economic and political environment.

## 5. Discussion

As it was found out, the financial security of business management includes a set of measures and strategies aimed at protecting the financial interests of the enterprise from internal and external threats. This covers the management of risks such as financial fraud, cyberattacks, macroeconomic fluctuations, changes in tax policy and other factors that can negatively affect the stability and development of the enterprise. The implementation of modern financial technologies such as blockchain and artificial intelligence can ensure transparency in financial transactions, improve resource management and reduce fraud

risks. An important aspect is also the creation of a system of internal control and monitoring of financial processes, which allows timely identification and response to potential threats. Thus, the financial security of enterprises ensures their sustainability, competitiveness and long-term development in today's dynamic market.

Comparing the results of this study with the works of Alpysbayev et al. (2020), it should be noted that the main factors identified in their study of economic security in industrial enterprises coincide with the findings of this study. The authors also emphasized the importance of integrating management decisions to improve financial security. This confirms the need for an integrated approach to risk management that includes monitoring external economic conditions and internal operational processes (Wu, 2024). In a study by Khalatur et al. (2021), the authors also pointed out the management of business development in the context of economic security, which is also in line with the findings of this study on the need to support enterprises in an unstable economic situation. The authors pointed out the importance of developing and implementing strategies that reduce the impact of external and internal threats on entrepreneurial activity.

This study analysed the main innovative tools that affect the financial security of business management, in particular, blockchain technologies, artificial intelligence, fintech and biometric technologies. To assess the impact of blockchain technologies, statistics on global spending on blockchain solutions from 2017 to 2020, as well as forecasts for 2024, were used to assess the dynamics and trends in the adoption of this technology in different sectors of the economy.

Fintech and biometric technologies also play an important role in financial security (Kavaldzhieva, 2019). The study examined the current techniques used in the fintech sector to improve financial security, such as authentication systems, cryptographic data protection and automated risk management systems. The analysis showed that the adoption of these technologies helps to reduce transaction costs and improve the reliability of financial transactions, which supports the findings of Nurmara et al. (2023) in their review of security in fintech. Thus, this study not only systematizes the existing knowledge on innovative technologies for financial security management, but also presents new data on their implementation and impact on enterprises in different sectors of the economy, confirming the importance of these technologies in modern business. These findings are confirmed in the work of Zhang & Zhang (2023), who studied the adoption of blockchain technologies to improve financial security in supply chains. Their findings on the reduction of fraud risks and transparency of financial transactions through blockchain technology are consistent with observations on the positive impact of digital innovation on the financial security of businesses.

In the studies of Berzhanir (2023) and Nurmara et al. (2023), the authors also noted the importance of managing the financial security of enterprises through the use of innovative technologies (artificial intelligence, fintech), which have a significant potential for improving the financial security of enterprises, providing effective protection from modern cyber threats. A significant contribution to the study of financial security of enterprises was made

by Delas et al. (2015) who emphasized the need for internal control and risk management system to ensure the sustainability of enterprises. The study of financial security of business management supports this position by showing that effective internal control and risk management are important to protect enterprises from financial threats. This study has several significant advantages that make it a valuable contribution to the financial security industry of business management. The study proposes a comprehensive approach to analysing financial security, covering both traditional and innovative tools such as blockchain technology, artificial intelligence, fintech and biometric technology. This has provided a comprehensive view of the current state and future prospects of financial security in a rapidly digitalizing economy. The study is supported by empirical data, including statistical analyses of global spending on blockchain solutions and AI adoption in European Union enterprises, which ensured high validity and reliability of the findings. The study also conducted a comparative analysis with previous studies by scholars, which provided a better understanding of the context and significance of the findings. The study also highlighted the importance of improving financial control methods and increasing the transparency of financial transactions, which are essential areas for reducing corruption and ensuring the stable development of enterprises.

A key part of this study was to identify the characteristics of the impact of threats on the financial security of business management in Azerbaijani enterprises. Various factors were analysed, including oil price fluctuations, political instability, corruption and administrative barriers, dependence on imports, low levels of innovation and technology, changes in tax legislation, low levels of workforce skills and low levels of digitalization of economic processes. The analysis showed that each of these phenomena has a significant impact on financial security, altering transaction costs, reducing profitability, limiting long-term planning and increasing vulnerability to external and internal risks. The results obtained in the study showed that the overall situation with the financial security of business management has a number of significant threats, such as oil price fluctuations, political instability, corruption and administrative barriers, dependence on imports, low level of innovation and technology, changes in tax legislation, low level of labour force skills and low level of digitalization of economic processes. In addition, the works of Zeynalli (2023) on the development of financial control to increase the transparency of the financial environment in Azerbaijan is supported by the results of this study, as it confirms the importance of improving the methods of financial control and transparency, which reduces corruption and increases the financial security of enterprises. Consequently, the results of the current study confirm and complement the conclusions of previous research works.

The findings of this study underscore the growing importance of integrating modern innovative technologies into financial security systems of enterprises. The analysis demonstrates that blockchain technologies significantly enhance transparency and integrity in financial transactions by creating decentralized, tamper-proof records. This reduces the likelihood of fraud and accounting manipulation, which are critical threats to the financial interests of enterprises operating in unstable or weakly regulated markets. Artificial

intelligence (AI), in turn, offers powerful tools for real-time risk assessment, fraud detection, and financial forecasting. Machine learning algorithms can process large volumes of financial data to identify subtle anomalies and patterns that human analyst might overlook (Damyanov et al., 2021). As shown in the European context (Figure 3), the widespread application of AI in financial management and ICT security reflects its strategic value for safeguarding corporate finances and ensuring operational resilience.

Fintech solutions further contribute to financial security by automating core financial operations, improving payment efficiency, and enabling alternative financing channels such as crowdfunding and peer-to-peer lending. These tools help mitigate liquidity risks and reduce transaction costs, especially for SMEs. Biometric technologies, including fingerprint and facial recognition, enhance access control and protect sensitive financial data, minimizing internal threats and unauthorized system breaches. Beyond technological tools, the study also highlights the need for comprehensive risk management frameworks tailored to specific threats such as oil price volatility, import dependency, and administrative barriers. Solutions include strengthening internal audit systems, enhancing regulatory compliance mechanisms, and promoting digital skills training for financial personnel. Together, these innovations and institutional measures form a multi-layered defense system that not only protects the financial interests of enterprises but also builds long-term resilience against future risks in the rapidly evolving global economic landscape.

## Conclusions

This study revealed that financial security in business management is a multidimensional construct encompassing the protection of financial resources, the stability of financial flows, and the strategic management of risks. A key finding is the confirmation that an integrated model, combining traditional risk control with digital innovations, is essential for ensuring resilience in volatile economic environments. The analysis highlighted the transformative potential of blockchain in enhancing transactional transparency, artificial intelligence in automating financial analytics and anomaly detection, and biometric technologies in strengthening data access security. These tools, when embedded within an enterprise-wide strategy supported by staff training, significantly enhance financial robustness. Azerbaijan's case illustrates specific vulnerabilities, such as dependency on oil exports, administrative inefficiencies, low digital penetration, and limited innovation capacity, all of which present structural threats to financial security. These findings suggest that policy interventions should not only focus on technology adoption but also on systemic reforms to promote regulatory efficiency, human capital development, and digital infrastructure investment.

Future research should explore sector-specific implementations of financial security technologies through case studies and longitudinal data. Emphasis should also be placed on measuring the effectiveness of policy-driven digital reforms in improving enterprise-level

resilience. From a policy standpoint, promoting interoperability, AI governance standards, and secure digital ecosystems should become central to national economic strategies focused on enterprise sustainability.

**Limitations.** The study's limitations include reliance on secondary data and a relatively small expert-based sample, selected through purposive sampling. This constrains generalizability and hinders broader empirical extrapolation. Moreover, while the methodology combined qualitative and quantitative components, the absence of large-scale primary data limits the statistical depth of the findings.

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