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Cryptocurrency and its impact on the development of commercial law: Building an improvement mechanism

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Abstract

The study aims to identify cryptocurrency and its impact on the development of commercial law to achieve the sustainable development goals: building an improvement mechanism. Special attention is paid to the analysis of effective ways to develop cryptocurrency in the context of commercial law to achieve sustainable development goals. The research methodology involves the use of the DFD method. As a result, an effective mechanism for improving commercial law has been built, taking into account the basics of using cryptocurrency. Our primary finding is the necessity for modernizing commercial law to integrate the basics of cryptocurrency, particularly through mechanisms like smart contracts. Smart contracts based on blockchain technology can provide a sufficient and stable level of security and reliability, and also minimize the need for intermediaries in the process of carrying out transactions through cryptocurrency. Therefore, the scientific task involves building a modern mechanism for improving commercial law, taking into account the basics of using cryptocurrency to achieve sustainable development goals.

Keywords: Cryptocurrency, Commercial law, Sustainable development goals, Regulation of commercial activities, Improvement mechanism

Introduction

Today, cryptocurrencies have a significant impact on the development of commercial law, which reflects the growing role of digital currencies in the economic and regulatory sphere of each country. Cryptocurrencies such as Bitcoin or Ethereum operate on the basis of blockchain technology (Alshehadeh et al., 2025). Their activities in themselves already pose a challenge to the modern legal system, since their activities do not fall under any of the established forms of financial activity and cannot be compared with traditional financial transactions (Al-Raggad & Al-Raggad, 2024). Decentralization and limitlessness are characteristic features of cryptocurrency and, above all, require proper regulation by commercial legislation. Thus, the very existence of cryptocurrency requires a new legal definition of the concepts of "money" and "property". In addition, legal systems must address the classification of cryptocurrency and its definition in terms of its essence (Jarah et al., 224). In most legal systems of modern countries, cryptocurrencies have not yet found their basic definition: whether they are a currency, a commodity, a security, or require a new classification place (Al-Zaqeba et al., 2022).

Cryptocurrencies, as the newest electronic means of payment, currently do not have their legislative enshrinement in Ukraine, and therefore no regulatory definition. There is a general understanding that cryptocurrencies are units of value stored on electronic devices, used as a means of payment, and transactions carried out through cryptography (Alajarmeh & Alqudah, 2023). The modern world is developing quickly and confidently due to new information technologies and engineering inventions. Modernization processes cover all spheres of human activity and society, and in recent decades they, in particular, have led to the renewal of the economy as such, as well as finance and economic processes (Alraggad, 2024, Al-ayaedeh, 2024). Cryptocurrencies are economic innovations that have the potential to change the existing structure of the

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economy and the way financial institutions operate. These changes can have positive and negative consequences. Understanding the processes taking place in the cryptocurrency market is important for shaping the financial policy of the state, developing the infrastructure of the cryptocurrency market and the private sector of the economy (Abu-Eid, 2024, Homayoonnezhad et al., 2025).

The formation of such a classification will allow appropriate taxation of cryptocurrency and the formation of basic norms for its transactions. Secondly, the smart contract functionality of many cryptocurrencies, particularly those on platforms like Ethereum, has introduced new paradigms for contract law. Smart contracts are self-executing contracts with the terms of the agreement directly written into code (Gharaibeh & Ibrahim, 2024). These automated and enforceable agreements can reduce the need for intermediaries and increase transaction efficiency. However, they also raise legal questions about enforceability, interpretation, and liability (Goudjili, 2023). Commercial law must adapt to define the legal standing of smart contracts, determine how traditional contract principles apply, and establish guidelines for dispute resolution. Moreover, the anonymous or pseudonymous nature of cryptocurrency transactions has significant implications for regulatory compliance, especially concerning anti-money laundering and know-your-customer regulations (Al-majali, 2023). Commercial law must evolve to ensure that these digital transactions are not used for illicit activities while balancing privacy concerns. This involves creating new regulatory frameworks that can monitor and trace cryptocurrency transactions without stifling innovation or infringing on individual privacy rights (Alqudah et al., 2024, Jam et al., 2025, Waheed et al., 2010).

Furthermore, the rise of Initial Coin Offerings (ICOs) and Security Token Offerings (STOs) as fundraising mechanisms has transformed the landscape of corporate finance and securities regulation. ICOs and STOs allow companies to raise capital by issuing digital tokens, which can represent a variety of assets or rights. These fundraising methods challenge existing securities laws and regulations, prompting the need for new legal frameworks to protect investors and ensure market integrity. Commercial law must address the legal status of these tokens, the requirements for disclosure, and the rights of token holders. Finally, the influence of cryptocurrency on commercial law is crucial because it reflects broader societal shifts towards digitalization and decentralization. As economies increasingly rely on digital technologies, legal systems must adapt to ensure that commerce remains secure, fair, and efficient. The development of commercial law in response to cryptocurrency not only addresses immediate regulatory challenges but also sets precedents for future technological innovations. By updating legal frameworks to accommodate digital currencies, the law can provide a stable foundation for the continued growth and integration of new financial technologies into the global economy. Studying the influence of cryptocurrency on the development of commercial law is essential due to the transformative impact of digital currencies on the global financial system and legal frameworks. Cryptocurrencies, through their decentralized nature and innovative technologies like blockchain, challenge traditional concepts of money, property, and contractual agreements. Understanding these challenges is crucial for developing legal frameworks that can accommodate new financial instruments while ensuring regulatory compliance, protecting consumers, and maintaining market integrity. As cryptocurrencies become more prevalent, legal professionals and policymakers must be equipped to navigate the complexities they introduce to ensure a stable and secure financial environment.

The main purpose of the article is to characterize the influence of cryptocurrency on the development of commercial law in general. The object of the study is the system of commercial law. The structure of the article involves a review of the literature, coverage of key research methods, presentation of the main results and their discussion.

Literature Review

The issue of interaction between modern types of cryptocurrency and commercial law today is of considerable interest among the academic community and practicing lawyers and economists. The interest of the scientific community in the legal regulation of cryptocurrency is due to its significant influence on modern economic systems both at the level of an individual country and at the global level. In view of this, an important stage of our research is

a detailed analysis of modern literature concerning the issue of legal regulation of cryptocurrency (Jarah, 2025). Thus, the study by Shi et al. (2019) provides a detailed analysis of the cryptographic features of e-commerce at the international level. At the same time, the authors note the importance of creating powerful elements and mechanisms for protecting transactions in a decentralized financial environment. The work of these authors supports the paradigm that modern commercial law, in attempting to regulate such an innovative area as cryptocurrencies, should use similar advanced monitoring and protection technologies. This work also lays the basis for the formation of a modern system for protecting transactions carried out through cryptocurrencies.

The volatility of cryptocurrencies, examined by Samson et al. (2023), offers insights into the financial stability challenges posed by digital currencies. Utilizing skewed error innovation distributions within GARCH model frameworks, they analyze the erratic price movements of cryptocurrencies, which have significant implications for commercial law, particularly in terms of regulatory compliance and consumer protection. Their findings suggest that legal frameworks must be adaptive and resilient to address the financial risks and uncertainties inherent in the cryptocurrency market. Luu et al. (2016) delve into the development of smart contracts, a pivotal innovation in blockchain technology that automates and enforces contractual agreements. Their research demonstrates how smart contracts can revolutionize commercial transactions by reducing the need for intermediaries and enhancing the execution reliability of agreements. This advancement necessitates a reevaluation of traditional contract law principles and the development of new legal standards to address the unique features and potential risks of smart contracts.

The study by Mohammed and Babu (2018) explores the application of cryptographic techniques and Pk-anonymization methods to maintain multi-level confidentiality in big data environments. Their findings are particularly relevant to commercial law, as they highlight the need for legal mechanisms that protect data privacy and confidentiality in digital currency transactions. The integration of such techniques into commercial law can help ensure the secure handling of sensitive financial data, fostering greater trust and compliance in cryptocurrency usage. Bai (2020) presents a hierarchical model of e-commerce sellers based on data mining, which offers valuable insights into the commercial dynamics of digital marketplaces. This model can inform the development of commercial laws that better accommodate the unique characteristics of e-commerce platforms and the use of cryptocurrencies within these systems. By leveraging data mining techniques, commercial law can be more precisely tailored to address the operational realities and challenges of digital commerce. Zhang and Wei (2022) contribute to the literature with an image classification and retrieval algorithm for product display in e-commerce transactions. This study highlights the technological innovations that can enhance the efficiency and effectiveness of e-commerce platforms. These advancements are crucial for developing commercial laws that support digital trading environments and the integration of cryptocurrencies. Prasad and Ramachandram (2022) address the security aspects of Ethereum smart contracts, focusing on mechanisms to prevent and detect reentrancy attacks and other vulnerabilities. Their research underscores the need for robust legal frameworks that can manage and mitigate the risks associated with smart contract technologies. Bani-Meqdad et al. (2024) explore the cyber-environment in the human rights system, particularly concerning intellectual property law and sustainable development. Their findings are pertinent to the development of commercial law in the context of digital currencies, emphasizing the need for legal protections that ensure the integrity and sustainability of digital transactions.

Brauneis et al. (2021) analyze the factors driving the liquidity of cryptocurrencies in their study published in Finance Research Letters. They perform a long-term analysis to identify the determinants of cryptocurrency liquidity, such as market capitalization, trading volume, and investor interest. The study reveals that higher liquidity is associated with lower transaction costs and increased market stability, making certain cryptocurrencies more attractive to investors. This finding is crucial for investors seeking to understand the dynamics of cryptocurrency markets and to identify the most liquid and stable investment options. Bondarenko, Kichuk, and Antonov (2019) examine the potential of using cryptocurrency-based investment tools to spur

national economic development. They highlight the advantages of cryptocurrencies, such as lower transaction costs and increased financial inclusion, which can benefit national economies. However, the study also points out the need for robust regulatory frameworks to ensure the stability and security of cryptocurrency markets.

Lastly, the study by Alazzam et al. (2023) focuses on developing an information model for e-commerce platforms in the context of global digitalization and legal compliance. Their research emphasizes the importance of aligning commercial law with the rapid advancements in e-commerce technology and the increasing use of cryptocurrencies. The proposed information model can serve as a blueprint for creating legal frameworks that support the sustainable development and regulatory compliance of digital commerce. Despite the comprehensive insights provided by the existing literature on the influence of cryptocurrency on commercial law, several significant gaps remain that warrant further exploration (Table 1).

Table 1. The main gaps in literature review

Gaps	Characteristics
Limited Scope of Jurisdictional Analysis	One of the primary gaps in the literature is the limited scope of jurisdictional analysis. Most of the studies reviewed focus on specific national contexts or generalized global perspectives without addressing the nuanced differences in commercial law across various jurisdictions
Insufficient Focus on Dynamic Regulatory Environments	Another significant gap is the insufficient focus on the dynamic and rapidly evolving nature of regulatory environments surrounding cryptocurrencies
Lack of Interdisciplinary Approaches	The third gap identified is the lack of interdisciplinary approaches in the existing literature. Most studies focus narrowly on either the legal, technological, or economic aspects of cryptocurrency without integrating these perspectives to provide a holistic view

Addressing these gaps through targeted future research will be crucial in developing a more nuanced and effective mechanism for integrating cryptocurrency into commercial law, ultimately leading to a more secure, efficient, and transparent legal environment for digital transactions.

Methodology

The key method that will be used in our study is the Data Flow Diagram (DFD) method. This method is modern and makes it possible to graphically display the vectors and key characteristics of information flows within the systems under study. This key feature makes it the best method for analyzing, understanding and then graphically depicting the complex relationships between technologies and various types of cryptocurrency and commercial law frameworks. The DFD method allows you to graphically and clearly depict the complex processes of accumulation, movement and transformation of various types of cryptocurrencies and their parallel regulation by commercial law. The use of this method will allow us to reflect all these processes not only as static elements, but also their dynamics, demonstrating ways of integrating cryptocurrency and blockchain into modern systems of commercial law and, finally, into the economic system. A significant advantage of this method is the block construction system, which simplifies the process of forming models and its further understanding.

Unlike IDEF0 arrows, which represent rigid relationships, DFD (data flow) arrows show how objects (including data) actually move from one function to another. This data flow representation ensures that the physical characteristics of the system, such as object movement, object storage, and object propagation, are reflected in the DFD model. DFD diagrams provide a convenient way to describe

the information being transferred both between parts of the system being modeled and between the system and the outside world.

To apply the DFD method effectively, the study began with a thorough literature review and data collection phase. This phase involved gathering information on existing commercial law practices, the characteristics and functionalities of various cryptocurrencies, and the current regulatory landscape. By synthesizing this information, the study identified key areas where commercial law intersects with cryptocurrency usage. The DFD diagrams were then constructed to depict these intersections, focusing on critical processes such as transaction validation, smart contract execution, and regulatory compliance. Furthermore, the DFD method facilitated the identification of bottlenecks and inefficiencies within the current commercial law system when dealing with cryptocurrencies. By mapping out these areas, the study was able to propose targeted improvements and innovations. For instance, the integration of smart contracts into legal processes was explored as a means to automate and secure transaction terms. This methodological approach not only provides a clear blueprint for enhancing commercial law but also ensures that the proposed mechanism is grounded in a detailed and accurate representation of current practices and potential technological advancements.

The positive side of using the Data Flow Diagram (DFD) method in this study is its ability to clearly and systematically represent complex interactions between cryptocurrency and commercial law. The DFD method's visual nature helps to simplify intricate processes and data flows, making it easier to identify key areas where improvements are needed. This clarity is particularly valuable when dealing with the multifaceted and decentralized nature of cryptocurrencies, as it allows for a comprehensive understanding of how digital currencies can be integrated into existing legal frameworks. Additionally, the DFD method facilitates the identification of specific bottlenecks and inefficiencies, enabling targeted and effective enhancements to the legal system. This structured approach ensures that proposed solutions are both practical and well-grounded in the current operational realities of commercial law.

On the negative side, the DFD method can have limitations in capturing the full complexity and dynamic nature of the legal and technological environment surrounding cryptocurrencies. While DFDs are excellent for illustrating static processes and data flows, they may not fully account for the evolving and unpredictable nature of cryptocurrency markets and regulatory landscapes. This limitation can result in oversimplified representations that might overlook important nuances or future developments. Furthermore, the DFD method's focus on visual and data-centric analysis may not adequately address qualitative aspects of legal practices, such as interpretative nuances or the human elements involved in legal decision-making. As a result, while the DFD method provides a solid foundation for understanding and improving commercial law in relation to cryptocurrency, it should be complemented with other methodologies to ensure a more holistic and adaptable approach.

Results

Before directly forming the models, the key functions of improving commercial law in the context of cryptocurrency regulation should be presented and briefly described. We have identified three main functions:

1. Adaptability and flexibility of regulation: The first and most important feature from a cryptocurrency perspective should be the adaptability and flexibility of commercial law. This is critical given the dynamism of cryptocurrencies and the environment in which they are used. The implementation of this function involves the formation of a regulatory framework that can quickly adapt to new technological solutions and innovations, as well as changes and market challenges. By introducing adaptive and flexible rules and regulations, the regulation of cryptocurrency from the point of view of commercial law will remain relevant in the future and will be effective, despite external and internal challenges and changes.

2. Enhanced security and risk management: The second function is to enhance security and risk management within the commercial legal framework. This includes developing robust legal standards and protocols for securing cryptocurrency transactions and protecting against cyber threats, fraud, and other

risks associated with digital currencies. Effective security measures are crucial for maintaining market integrity and consumer trust.

3. Transparency and trust in transactions: The third function is to promote transparency and trust in commercial transactions involving cryptocurrencies. This function includes mandating clear disclosure requirements, transparent auditing processes, and accountability measures for parties involved in cryptocurrency transactions. Increased transparency helps build trust among market participants, reducing the risks of fraud and mismanagement (Fig.1).

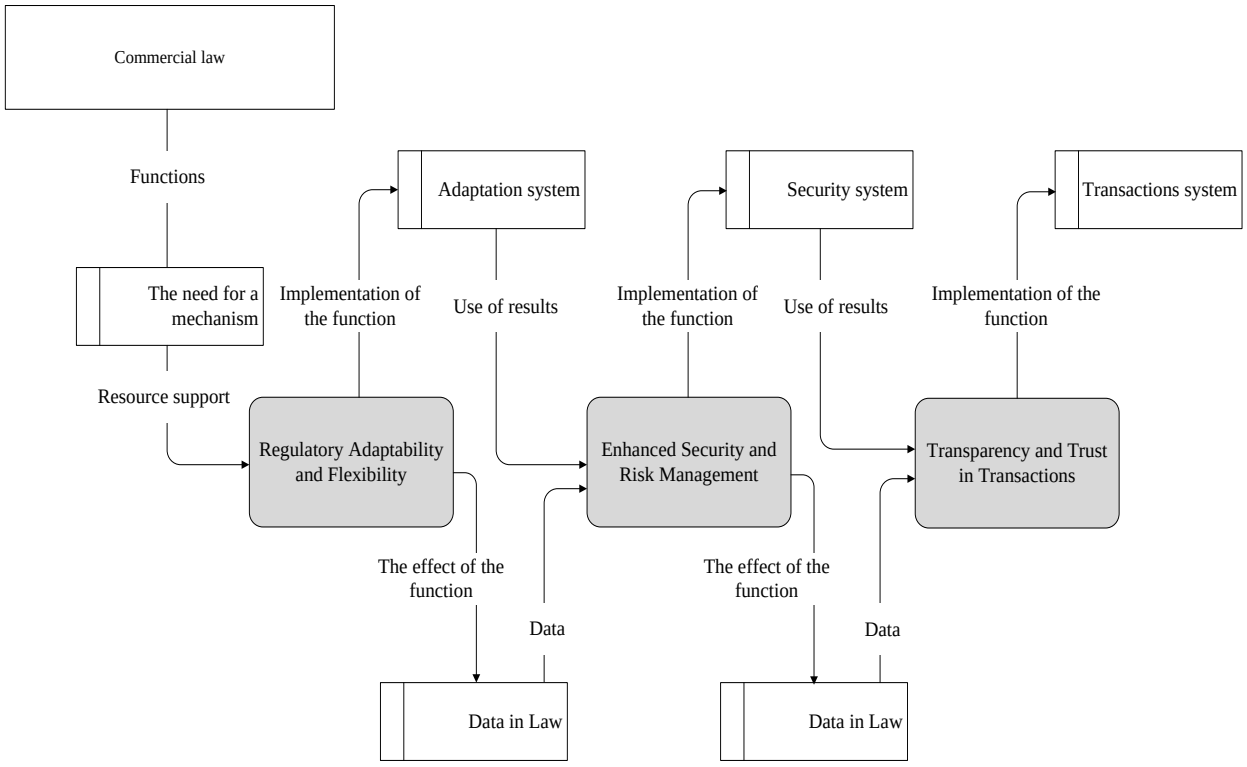

Figure 1. Functional model for ensuring the implementation of a mechanism for improving commercial law in the context of cryptocurrency accounting

These three functions—regulatory adaptability and flexibility, enhanced security and risk management, and transparency and trust in transactions—are interdependent and reinforce each other. Regulatory adaptability ensures that the legal framework can incorporate the latest security measures and protocols, while enhanced security measures bolster the framework's ability to protect transparent and trustworthy transactions. Transparency, in turn, supports security by making it easier to identify and prevent fraudulent activities, which feeds back into the need for adaptive regulations to address new challenges as they arise. This interconnected approach creates a robust and resilient commercial legal system capable of effectively integrating and managing the complexities introduced by cryptocurrencies.

Let's build mechanism for improving commercial law under the influence of cryptocurrency:

A1. Assessment and analysis. The first stage involves a comprehensive assessment and analysis of the current commercial law landscape and the specific impacts of cryptocurrency.

A2. Development and implementation. The second stage focuses on the development and implementation of new or revised legal frameworks that address the identified gaps and challenges.

A3. Monitoring and continuous improvement. The third stage involves the ongoing monitoring and continuous improvement of the legal framework to ensure its effectiveness and adaptability (Fig.2).

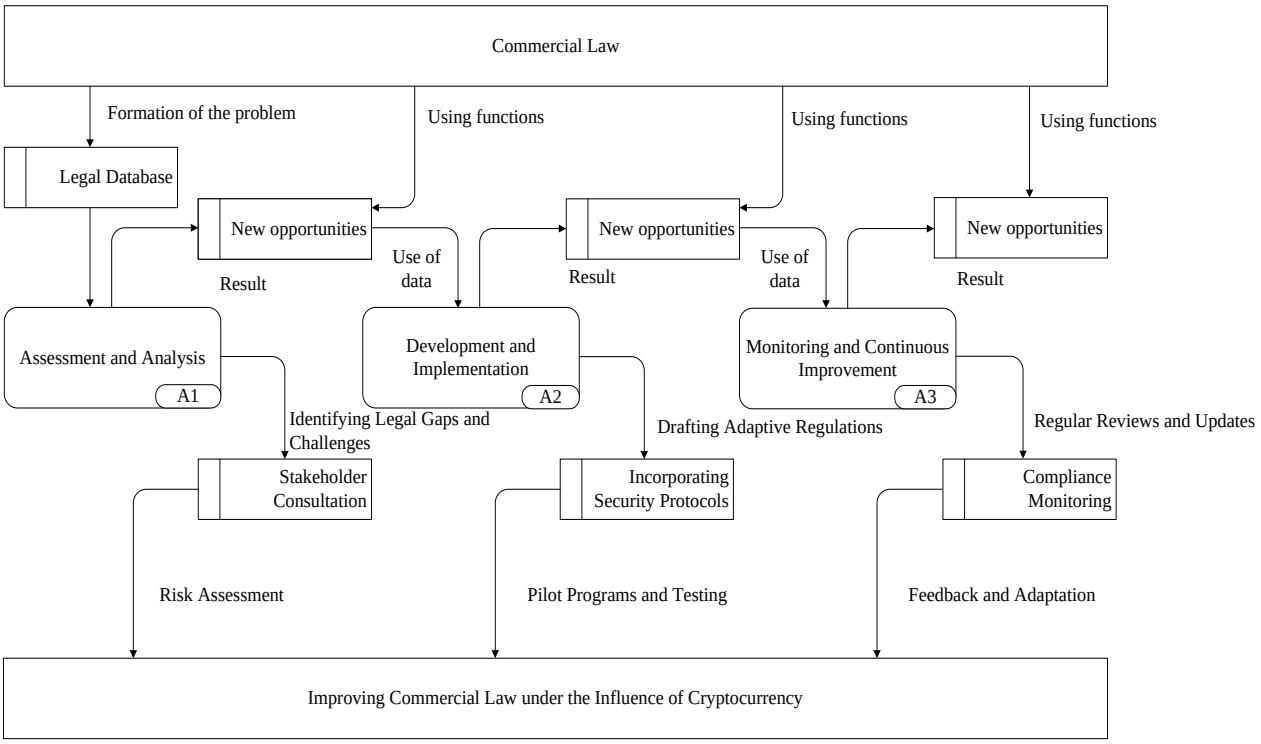

Figure 2. Mechanism for improving commercial law under the influence of cryptocurrency

This stage ensures that the legal framework remains dynamic and capable of responding to ongoing changes in the cryptocurrency landscape. The continuous improvement process relies on the data and experiences gathered from the implementation stage, ensuring that the regulatory environment evolves in line with technological and market developments. Each stage is interdependent, with the findings and outcomes of one stage informing and enhancing the subsequent stages. This comprehensive approach ensures that commercial law can effectively integrate and regulate cryptocurrencies, providing a secure, efficient, and transparent legal environment for digital transactions.

Discussion

The results of our study on the influence of cryptocurrency on the development of commercial law align with and expand upon existing research in various ways. Our primary finding is the necessity for modernizing commercial law to integrate the basics of cryptocurrency, particularly through mechanisms like smart contracts (Almatarneh et al., 2024). This aligns with Praitheeshan et al. (2019), who emphasize the security vulnerabilities in Ethereum smart contracts and the need for robust security analysis methods. Both studies underscore the importance of addressing security concerns to ensure the reliability and enforceability of smart contracts, which can significantly enhance transaction efficiency and trust in commercial relationships. Our study also identifies the potential for cryptocurrencies to drive innovation in business law, facilitating the adoption of new technologies that ensure security, efficiency, and ease of transactions. This finding is consistent with the insights of Nugroho et al. (2024), who discuss the mediating role of e-commerce adoption in improving SME performance with government support. Both studies highlight how technological advancements, supported by appropriate legal frameworks, can enhance business performance and economic development. While Nugroho et al. focus on the broader impact of e-commerce adoption in developing countries, our study narrows down to the specific role of cryptocurrencies within commercial law.

Additionally, the impact of external factors such as the COVID-19 pandemic on financial markets, explored by Lahmiri and Bekiros (2020),

complements our findings by highlighting the stability issues in cryptocurrency markets. Our results suggest the need for adaptive and resilient legal frameworks to manage the financial risks associated with cryptocurrency volatility, echoing Lahmiri and Bekiros' analysis of market instability during the pandemic. This parallel emphasizes the necessity for commercial law to incorporate mechanisms that can mitigate such risks, ensuring stability and protection for all market participants. Furthermore, Alazzam et al. (2024) provide a methodical approach to business management strategy within changing commercial activities, which resonates with our objective of building a modern mechanism for improving commercial law. Both studies stress the importance of strategic adaptation in legal and business frameworks to cope with dynamic market conditions. Our research extends this concept by specifically focusing on the integration of cryptocurrency regulations into commercial law, providing a more targeted approach to managing legal changes in response to technological advancements. The role of data mining and intelligent services in e-commerce, as explored by Zhang et al. (2018), further supports our findings on the need for advanced technological integration in commercial law. Their research on e-commerce services based on data mining aligns with our emphasis on leveraging technology like blockchain and smart contracts to enhance legal frameworks. Both studies advocate for the use of sophisticated technological tools to streamline operations and improve transparency and efficiency in commercial transactions. Jasińska-Biliczak, (2022) discusses the challenges and future implications of e-commerce, especially in the wake of the pandemic. This perspective supports our findings on the importance of adapting commercial law to new digital realities. Our study, like Jasińska-Biliczak's, highlights the need for legal frameworks that can accommodate rapid changes in digital commerce, driven by both technological advances and external crises.

Panagiotidis et al. (2022) explore the volatility of cryptocurrencies, providing empirical data that aligns with our findings on the necessity for flexible legal frameworks. Their research on the unpredictable nature of cryptocurrency markets underscores our recommendation for commercial law to develop adaptive regulations that can handle such volatility. This approach ensures legal systems can better protect investors and maintain market stability. Saleh et al. (2020) examine the legal aspects of managing cryptocurrency assets within national security systems. Their findings underscore the need for comprehensive legal frameworks that address both the economic and security dimensions of cryptocurrency. Our study builds on this by suggesting a modern mechanism that integrates security considerations into commercial law, ensuring that digital currency transactions are both secure and legally compliant. Kryshtanovych et al. (2023) focus on optimizing state regulation in the business security field, which aligns with our findings on the need for enhanced regulatory frameworks for cryptocurrencies. Their emphasis on local approaches to regulation complements our recommendation for adaptable and resilient legal systems that can effectively manage the unique challenges posed by digital currencies.

Juškaitė and Gudelytė-Žilinskienė, (2022) investigated the feasibility of incorporating different cryptocurrencies into investment portfolios to enhance diversification They argue that the inclusion of cryptocurrencies can potentially reduce portfolio risk while maintaining or even improving returns. The study provides a comprehensive analysis of various cryptocurrencies, emphasizing the need for investors to understand the distinct characteristics and volatility of each cryptocurrency to make informed investment decisions. Dasman, (2021) provides an in-depth analysis of the returns and risks associated with Bitcoin, one of the most prominent cryptocurrencies. However, the study also acknowledges the substantial returns that Bitcoin has generated, making it an attractive yet risky investment option. This dual nature of high risk and high reward is a critical consideration for investors contemplating cryptocurrency investments. Bondar et al. (2020) explore the efficiency of using cryptocurrencies as investment assets. The authors argue that while cryptocurrencies can offer high returns, they also come with significant risks due to their inherent volatility and regulatory uncertainties. The study underscores the importance of conducting thorough risk assessments and developing robust investment strategies to mitigate potential downsides. Demiralay and Bayracı (2021) investigate whether stock investors should include cryptocurrencies in their portfolios, focusing on the conditional diversification benefits. By analyzing

various market conditions, the authors conclude that cryptocurrencies can serve as a hedge against traditional market downturns, thereby enhancing portfolio resilience. Now, let's mark our innovations as well (Table 2).

Table 2. The main innovation in our study

Innovations	Characteristics
Development of an Effective Mechanism for Improving Commercial Law	This innovation provides a structured approach to updating and refining commercial law, ensuring it remains relevant and capable of addressing the unique challenges and opportunities presented by cryptocurrencies. This mechanism helps in maintaining a dynamic and adaptive legal system
New method	The DFD method was employed to analyze how the incorporation of cryptocurrency can stimulate innovation within the legal framework, identifying key areas for technological enhancement and integration

In conclusion, our study contributes to the existing body of research by providing a detailed analysis of how cryptocurrencies can stimulate innovation in commercial law. By building on the insights from the referenced studies, we propose a modern mechanism that integrates the basics of cryptocurrency into legal frameworks, addressing security, efficiency, and regulatory challenges. This holistic approach underscores the importance of continuous adaptation and interdisciplinary collaboration in developing robust legal systems that can effectively manage the complexities of the digital economy.

Conclusion

To summarize, the key result of this study was the analysis and recommendation for the use of smart contracts in the system of regulation of cryptocurrency by commercial law. Smart contracts based on blockchain technology can provide a sufficient and stable level of security and reliability, and also minimize the need for intermediaries in the process of carrying out transactions through cryptocurrency. This innovation makes it possible to increase the overall level of conversion and accumulation of cryptocurrency, as well as to take the first steps in the process of integrating the latter into modern economic and financial systems. In addition, the results of the study confirm and further actualize the importance of flexibility and adaptability of any regulatory act relating to cryptocurrency. This is primarily due to the fact that the cryptocurrency environment itself is characterized by dynamism and decentralization, and cannot be controlled through static regulations of commercial law. At the same time, the flexibility and adaptability of modern commercial law will ensure a sufficient level of security and reliability for every user of digital finance.

Cryptocurrencies are a special type of electronic (or digital) money that have their own decentralized payment system and usually operate on the basis of blockchain technology. The essence of the blockchain is that the information encoded in it is stored on different computers independent of each other, that is, there is no single server for it. When transferring cryptocurrency, a peer-to-peer network is created between the sender and the recipient, which may not have intermediaries (without the consent of the users themselves). That is why cryptocurrencies began to develop rapidly, since this concept is completely new to the market: cryptocurrency transactions cannot be controlled or monitored - they are carried out exclusively between two users.

However, the study also acknowledges its limitations, particularly the focus on the specifics of commercial law in only one country. This narrow scope means that the proposed mechanism may not fully account for the diverse legal, economic, and cultural contexts in which cryptocurrencies operate globally. Future research must expand the analysis to include multiple jurisdictions, providing a more comprehensive understanding of how different legal systems can integrate and regulate cryptocurrency. Another limitation lies in the DFD method's potential oversimplification of the complex and dynamic nature of the cryptocurrency market and regulatory environment. While DFDs are effective for illustrating static processes, they may not fully capture the evolving nature of digital currencies and the regulatory responses they provoke. Future research should incorporate additional methodologies that

can address these dynamic aspects and provide a more nuanced analysis of the interplay between cryptocurrency and commercial law.

Looking forward, future research should aim to expand the constructed mechanism to encompass more aspects of cryptocurrency regulation. This includes exploring the legal implications of emerging technologies such as decentralized finance (DeFi) and non-fungible tokens (NFTs), as well as the broader impact of digital currencies on global trade and commerce. By continuing to build on this foundation, future studies can provide more robust and adaptable legal frameworks that support the sustainable growth and integration of cryptocurrency into the global financial system.

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