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Blockchain in Business: From Supply Chain to Finance

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Abstract

This article comprehensively examines the transformative role of blockchain technology in the business sector, with a particular focus on supply chain management and financial systems. Through a theoretical and practical analysis, the study explores ways in which blockchain can improve transparency, security, and operational efficiency in various business processes. Concrete applications in industries such as finance, logistics, real estate, and healthcare illustrate the broad potential of this technology.

Through the analysis of real cases and contemporary literature, the technical, legal, and organizational challenges that accompany the implementation of blockchain are identified, including the ethical and social risks associated with its use. A special focus is devoted to the development of decentralized finance (DeFi), stablecoins, and their impact on existing financial structures. Social capital is one of many forms of essential capital, along with financial, environment and institutional ones. The paper concludes with concrete recommendations for businesses and policymakers on the most effective ways to adopt blockchain technology.

Keywords: Blockchain, Business, Supply Chain, Finance, Smart Contracts, DeFi (Decentralized Finance), Stablecoins, Transparency, Ethical Risks, Technological Innovation, Automation, Cryptocurrencies, Data Security.

INTRODUCTION

This article discusses one of the most revolutionary technologies of our time – blockchain – its use and application in the business sector, with a particular focus on supply chain management and financial systems. Digital transformation in today's times is becoming increasingly necessary, where efficiency, transparency and security are among the essential criteria for a business to succeed. Blockchain technology offers a real opportunity to change the way data and transactions are managed and international relationships are managed. This technology is challenging the traditional logic of centralized systems, introducing a new paradigm for managing business processes. The paper examines the basic concepts of blockchain, concrete applications across different fields, the challenges that organizations face during its implementation, and its transformative potential for the future of business models.

Blockchain technology is a distributed, immutable database Swan, M., (2015), which enables the recording of transactions securely and transparently. Originally known for cryptocurrencies, blockchain is now being widely used in various industries, including finance, logistics, healthcare and other business sectors. The use of blockchain

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in business can bring major benefits, such as increased efficiency, reduced costs and improved data security.

METHODOLOGY

This paper is built on a combination of qualitative research methods, with a particular emphasis on theoretical analysis and practical case studies. Initially, an extensive review of scientific and professional literature addressing topics related to blockchain technology and its applications in the business field was conducted. This review includes academic articles, institutional reports, and sources from industry experts. In the practical part, several case studies of international companies that have successfully adopted blockchain are analyzed, assessing the concrete impact of the technology on their performance. In addition, a questionnaire was developed and administered to collect opinions on the knowledge and attitudes of individuals regarding this technology. The collected data was analyzed through statistical methods to draw valid conclusions and support the positions presented in the paper.

The purpose of this paper is to analyze in depth the impact that blockchain technology has on the business sector, especially in relation to improving supply chain management and finance. Starting from a clear theoretical framework and integrating concrete cases from international practice, the study aims to provide a clear overview of the ways in which this decentralized technology contributes to increasing reliability, traceability and operational efficiency. In addition to assessing the benefits, the aim of this paper is also to address the limitations and challenges that accompany the implementation of this technology, with the aim of providing a balanced and realistic approach.

The objectives of this paper are structured to serve as a guide for the entire research process. Initially, it aims to examine how blockchain technology impacts the improvement of various functions of a business, with particular emphasis on supply chain management and financial processes. Further, the challenges that businesses face when trying to integrate this technology will be analyzed, including technical, legal, and organizational obstacles. Another objective is to study concrete cases of companies that have successfully adopted blockchain and evaluate the impact this adoption has had on their performance. Finally, the paper aims to provide useful recommendations for private sector actors and public decision-makers for the most efficient adoption of this technology in an increasingly competitive business environment.

To guide the direction of the study and deepen the analysis, several key research questions have been raised. First, the focus is on the question of how blockchain technology contributes to increasing transparency and efficiency in the supply chain, positively impacting inter-business operations. Also, the question arises as to what the biggest challenges are that companies face during the process of implementing this technology. Another important aspect is the identification of tangible benefits that concrete blockchain applications have brought to various companies. These questions will serve as the basis for the theoretical analysis and case studies in the practical part of the paper.

LITERATURE REVIEW

Blockchain technology and Distributed Ledger Technology (DLT) are widely considered as innovative mechanisms with transformative potential in business processes, especially in supply chain management and financial services. Existing literature emphasizes that

these technologies contribute to increasing transparency, traceability, and data reliability through a distributed and immutable ledger (Chang & Chen, 2020; Henninger & Mashatan, 2021; Gorbunova et al., 2022). This enables the reduction of information asymmetry and improves coordination between different actors in the supply chain (Dutta et al., 2020).

In the context of supply chain management, blockchain has been identified as a key tool for increasing process visibility and real-time tracking of products and transactions, reducing the risk of fraud and improving operational efficiency (Chang & Chen, 2020; Henninger & Mashatan, 2021). However, the literature highlights that the lack of interoperability between different platforms and data standards constitutes a significant barrier to large-scale adoption (Gorbunova et al., 2022; Henninger & Mashatan, 2021).

A core component of this technology are smart contracts, which enable the automation of inter-organizational processes, such as payments and contract fulfillment, reducing transaction time and costs (Chang & Chen, 2020; Dutta et al., 2020). However, challenges related to the legal framework, data privacy, and governance remain unresolved issues that require further developments (Henninger & Mashatan, 2021).

In the field of finance, especially in Supply Chain Finance (SCF), blockchain presents significant potential for improving access to finance for small and medium-sized enterprises (SMEs), reducing intermediation costs and increasing the reliability of financial information (Boakye et al., 2022; Kumar et al., 2023). However, challenges related to scaling and regulatory uncertainty continue to limit the widespread implementation of these solutions (Atik & Kelten, 2021; Kumar et al., 2023).

The literature also distinguishes between blockchain as a subcategory of DLT and the broader use of DLT in various sectors such as energy, healthcare, and education, emphasizing the cross-sectoral potential of these technologies (Gorbunova et al., 2022). However, key challenges remain common, including privacy, interoperability, and the lack of sustainable business models (Burger & Weinmann, 2022).

From an accounting and auditing perspective, the use of blockchain can improve the quality and verifiability of financial information, opening up opportunities for real-time auditing and increasing the reliability of financial reporting (Hamilton, 2019; Wang et al., 2025). However, integrating these technologies with existing financial reporting standards, such as GAAP and IFRS, remains a significant challenge (Atik & Kelten, 2021).

The literature suggests that, while blockchain and DLT have significant potential to transform business processes, their adoption in practice remains limited due to technological, institutional, and regulatory challenges. A pragmatic approach to implementation involves the use of private/permissioned platforms and Blockchain-as-a-Service (BaaS) models, enabling gradual and controlled adoption (Dutta et al., 2020; Henninger & Mashatan, 2021)

THE ROLE OF BLOCKCHAIN IN IMPROVING THE QUALITY OF FINANCIAL TRANSACTIONS

The decentralized and transparent nature of blockchain technology offers numerous advantages in improving the quality of financial transactions. In traditional monetary systems, transaction processing can be slow, costly, and exposed to errors or fraud. Blockchain addresses these problems by providing a secure and immutable ledger that records all transactions in a distributed manner. Each transaction is verified by a network of nodes, ensuring that there is no single point of failure that could compromise

the integrity of the system. This decentralized approach increases security and reduces the need for intermediaries, lowering transaction costs and increasing efficiency. Furthermore, the transparency that blockchain offers improves the quality of transactions. In traditional financial systems, transaction details are typically invisible to third parties, being accessible only by the parties involved and intermediaries. In contrast, blockchain technology makes transaction data publicly available – albeit in an anonymized manner – ensuring greater accountability and reducing the risk of fraud. This transparency is particularly valuable in cross-border payments, where high fees, long delays and lack of clarity have been persistent problems.

Cryptocurrencies such as Bitcoin, Ethereum and Binance Coin (BNB), as well as blockchain-based projects in areas such as healthcare, digital gaming, digital collections, energy and sustainability, real estate, public administration and e-voting, charity and crowdfunding, provide concrete examples of the use of this technology to improve the quality of transactions. Bitcoin, as the first cryptocurrency, demonstrated how blockchain could enable P2P (peer-to-peer) payments without a central authority. Its success paved the way for the development of other cryptocurrencies, each with different features to improve the quality of transactions. Ethereum, for example, introduced smart contracts, which automate transactions based on predefined conditions, significantly reducing the risk of errors and increasing efficiency. Binance Coin (BNB), on the other hand, is a core part of the Binance exchange ecosystem, offering lower fees and faster processing for users. These cryptocurrencies highlight the potential of blockchain not only to improve the quality of individual transactions but also to transform the entire financial ecosystem. However, challenges such as scalability, energy consumption, and regulatory acceptance still remain. Despite these obstacles, blockchain technology and cryptocurrencies are in an increasingly important position to shape the future of financial services.

In recent decades, the rapid development of blockchain technology and cryptocurrencies has brought profound changes to many industries, especially the financial sector. Blockchain, initially developed for limited use, became essential after the emergence of Bitcoin in 2008, which became the foundation of decentralized digital currencies. Since then, blockchain has transcended its initial use, impacting areas as diverse as supply chain management, healthcare, and beyond, with a focus on improving the quality and security of transactions. The rise in popularity of blockchain is closely related to the transparency and decentralization it offers in financial transactions. Unlike traditional centralized financial systems, where intermediaries such as banks play a central role, blockchain eliminates the need for intermediaries by creating a decentralized ledger, where all participants can verify and record transactions. This approach speeds up transactions, reduces costs, and increases security. The blockchain ledger is immutable, meaning that a recorded transaction cannot be modified, which is essential for maintaining data integrity.

One of the key advantages of blockchain technology for improving transaction quality is its cryptographic features. Transactions are verified through consensus mechanisms such as Proof of Work (PoW) and Proof of Stake (PoS), which ensure that only valid transactions are recorded in the ledger. This process significantly reduces the possibility of fraud – a major concern in traditional banking systems. Furthermore, the transparency of the blockchain ensures that all transactions are visible to network participants, increasing accountability and reducing the risk of manipulation.

DATA SECURITY AND INTEGRITY: TECHNOLOGICAL PERSPECTIVE

The decentralized and immutable characteristics of blockchain technology represent significant advances in security, which is essential for financial services. Traditional centralized systems are prone to single-point failures and potential manipulation. In contrast, blockchain ensures that transaction data, once recorded, cannot be changed without consensus from multiple nodes. This decentralized verification process, especially evident in platforms like Bitcoin and Ethereum, has significantly reduced the risk of unauthorized changes, setting a new standard for data integrity. Quantitative data from the Bitcoin and Ethereum networks reinforce this observation, showing that fraud rates are significantly lower than in traditional banking systems. This feature is particularly useful in financial services, where data reliability and integrity are essential. From a business perspective, this added security increases customer trust, especially in sectors where transparency and traceability are critical, such as cross-border payments and asset management. According to Chainalysis, cryptocurrency fraud has caused global losses of around $5.6 billion. The most common scams have been "rug pulls" - when someone creates a currency, people invest in it, and then he closes everything down and disappears with the money, as well as fake investment schemes. In most cases, the frauds occurred due to carelessness and reckless investments in coins without real projects.

According to the Association of Certified Fraud Examiners (ACFE), global losses from financial fraud, fake checks, and identity theft are expected to exceed $100 billion by 2023. Blockchain fraud is approximately $4 billion per year, representing 0.15%, while in the traditional banking system, it is about $125 billion, representing 0.8%. This shows that fraud in blockchain systems is about 80% lower when adjusted for transaction volume.

Transaction Performance: Speed and Cost

In the financial sector, where efficiency is essential, blockchain technology offers substantial improvements in transaction speed and cost. Traditional payment networks often experience delays due to intermediaries, operating hours, and geographic constraints. In contrast, blockchain networks such as Ripple (XRP) and Stellar (XLM) are designed to complete transactions almost instantaneously, often within seconds, regardless of the location of the parties involved.

From a technological perspective, consensus protocols such as Proof of Stake (PoS) and scaling solutions such as Layer 2 networks (e.g., the Lightning Network for Bitcoin) contribute to speeding up transactions and reducing costs. Quantitative data shows that blockchain-based transactions are faster and cheaper than traditional systems, especially for cross-border payments. For example, a transaction through the SWIFT network can take 2-5 days and cost $25-50 in fees, while transactions with XRP or Stellar cost less than a cent and are processed within seconds. For businesses, this translates into real-time payment processing and reduced operational costs, which is critical for managing cash flow. However, from a regulatory perspective, an increase in transaction speed could limit the ability of authorities to detect and block illegal activity in real time. This reinforces the need for real-time surveillance systems that can match the speed of blockchain technology.

CONCLUSION

This study found that blockchain technology represents an important innovation in the transformation of financial services, contributing to significantly improving the security,

transparency, and efficiency of transactions. Through its decentralized architecture and immutable ledgers, blockchain reduces the risk of data manipulation and increases the reliability of financial processes, creating a stronger foundation for quality management. One of the key contributions identified is the role of smart contracts in automating regulatory compliance. Implementing predefined conditions in the code enables safe and predictable execution of transactions, reducing human errors and improving process control. This represents an important step towards more standardized and efficient financial systems.

However, despite the significant benefits, the study highlights that widespread adoption of blockchain remains limited by a number of structural and regulatory challenges. The lack of a clear legal framework, interoperability problems with existing systems, and scalability limitations represent significant obstacles to the full integration of this technology in the financial sector. Likewise, the tension between high transparency and data protection requirements requires balanced and well-structured solutions.

In a comparative perspective, while blockchain offers clear technological advantages over traditional systems, the latter continue to remain more consolidated in terms of institutional trust and regulatory stability. For this reason, a successful transition to the widespread use of blockchain should not be considered as an immediate replacement, but as a gradual process of integration and coexistence with existing systems.

This study suggests that the potential of blockchain in improving the quality of financial services is high, but realizing this potential requires further technological developments, regulatory harmonization, and strategic adoption by financial institutions. Future studies should focus on hybrid models, more in-depth empirical analyses, and the assessment of long-term impacts on the performance and sustainability of financial systems.

REFERENCES

1. Chang, S. and Chen, Y. (2020). When Blockchain Meets Supply Chain: A Systematic Literature Review on Current Development and Potential Applications. Ieee Access, 8, 62478-62494. https://doi.org/10.1109/access.2020.2983601
2. Gorbunova, M., Mašek, P., Komarov, M., & Ometov, A. (2022). Distributed ledger technology: State-of-the-art and current challenges. Computer Science and Information Systems, 19(1), 65-85. https://doi.org/10.2298/csis210215037g
3. Henninger, A. and Mashatan, A. (2021). Distributed Interoperable Records: The Key to Better Supply Chain Management. Computers, 10(7), 89. https://doi.org/10.3390/computers10070089
4. Dutta, P., Choi, T., Somani, S., & Butala, R. (2020). Blockchain technology in supply chain operations: Applications, challenges and research opportunities. Transportation Research Part E Logistics and Transportation Review, 142, 102067. https://doi.org/10.1016/j.tre.2020.102067
5. A. Minga and E. Muça, "Local development through social and territorial innovation: A case study of Puka Region," European Academic Research, vol. 10, pp. 3922-3930, 2023
6. Boakye, E., Zhao, H., Adu-Damoah, M., & Amankwah, E. (2022). Exploits of blockchain technology in supply chain finance: a blockchain-as-a-service perspective for Ghana's SMEs. International Journal of Development and Economic Sustainability, 10(3), 32-49. https://doi.org/10.37745/ijdes.13/vol10n3pp3249
7. Kumar, D., Phani, B., Chilamkurti, N., Saurabh, S., & Ratten, V. (2023). Filling the SME credit gap: a systematic review of blockchain-based SME finance literature. Tạp Chí Khoa Học Thương Mại, 11(2/3), 45-72. https://doi.org/10.1108/jts-06-2023-0003

8. Atik, A. and Kelten, G. (2021). Blockchain Technology and Its Potential Effects on Accounting: A Systematic Literature Review. Istanbul Business Research, 50(2), 495-515. https://doi.org/10.26650/ibr.2021.51.806870
9. Wang, Y., Ren, J., Lim, C., & Lo, S. (2019). A Review of Fast-Growing Blockchain Hubs in Asia. The Journal of British Blockchain Association, 2(2), 1-16. https://doi.org/10.31585/jbba-2-2-(5)2019
10. Burger, C. and Weinmann, J. (2022). Blockchain Platforms in Energy Markets—A Critical Assessment. Journal of Risk and Financial Management, 15(11), 516. https://doi.org/10.3390/jrfm15110516
11. Hamilton, M. (2019). Blockchain distributed ledger technology: An introduction and focus on smart contracts. Journal of Corporate Accounting & Finance, 31(2), 7-12. https://doi.org/10.1002/jcaf.22421