International Journal of Applied Research and Sustainable Sciences (IJARSS)
Vol. 3 No.6, 2025: 497 - 510

The Effectiveness of Using Blockchain Technology in Digital Finance to Achieve Cybersecurity and Reduce Costs

Manal Dhahir Rashad
University of Mustansiriyah
Corresponding Author: Manal Dhahir Rashad
manal.d76@uomustansiriyah.edu.iq

A R T I C L E I N F O

Keywords: Blockchain, Digital Finance, Cybersecurity, Cost rationalization

Received : 26 April
Revised : 25 May
Accepted: 26 June

A B S T R A C T

The world today is witnessing an information revolution and technological advancements accelerating, known as the Information Revolution. Various technologies have entered economic activities, and the issue of regulating digital technologies is a key issue requiring multilateral consideration. Despite the novelty of these technologies, many have sought to implement them to benefit from their economic and technical advantages and improve the level of service. Blockchain technology, both as a currency and as a technology, requires a unified, multilateral approach to regulation. It has also become influential in the field of digital finance, reducing costs, and achieving speed and quality. Therefore, there are several attempts to implement blockchain in financial markets and institutions, identify various current and future challenges, and explore ways to address them. This attempt is an attempt to study a number of variables in the Iraqi banking environment. By demonstrating the relationship and effectiveness of this technology in achieving cybersecurity and how to rationalize costs in digital financial transactions using it.

DOI: https://doi.org/10.59890/ijarss.v3i6.61
E – ISSN : 3026-0205
https://jpnmultitechpublisher.my.id/index.php/ijarss/index

INTRODUCTION

First: The study problem.

Blockchain technology is still unknown to many, despite its adoption by many countries and in various fields of activity. Blockchain technology still faces various challenges. Many of our institutions, particularly financial institutions or those dealing with electronic payment methods, still suffer from the methods used not keeping pace with technological developments, particularly in payment systems and technologies. Furthermore, there are various challenges facing the implementation of the Blockchain business model, given that the technology is still emerging and constantly evolving. Furthermore, there is a lack of clear regulatory guidelines, making it difficult for companies to know how to comply with the law. The topic of cybersecurity has yet to reach its practical application, despite its becoming a reality in light of the spread of artificial intelligence.

The most important questions that can be formulated include:

- Is the legislative and technical reality a reason for the weak implementation of the Blockchain business model?
- Does reality allow for the implementation of cybersecurity through the activation of technologies in financial institutions?
- Is there an effective relationship between the use of Blockchain technology in digital finance?
- Does the use of Blockchain technology contribute to achieving cybersecurity and rationalizing costs?
- How does Blockchain technology contribute to enhancing cybersecurity in digital finance?

Second: The Importance of the Study

A. Increasing awareness among institutions and employees of the importance of using modern technologies to enhance performance efficiency and effectiveness.
B. Identifying the potential use of Blockchain technology. Known for its transparency and stability, it provides strong security features, but it is not immune to vulnerabilities.
C. Identify the most important benefits offered by Blockchain technology in rationalizing costs in digital financial transactions.

Third: Developing financial institutions through the use of modern, advanced technologies.

A. Identifying the impact of the digital blockchain on the auditor's responsibility toward the expected beneficiary identified in the financial statements.

Third: Study Objectives

The study seeks to achieve the following objectives:

- Understand and understand the mechanisms for applying Blockchain and its impact on enhancing cybersecurity in the digital finance environment.

- The extent of the implementation of Blockchain-based business programs and systems and the challenges they face in rationalizing cost decisions.
- Analyze the causes and factors, highlight strengths and weaknesses, and identify the potential benefits and opportunities available.
- Develop mechanisms, results, and procedures that contribute to activating the role of Blockchain in rationalizing costs and achieving a cybersecurity system.

Fourth: The Study Hypothesis

The research hypothesis can be formulated in two directions:

The first hypothesis: There is a direct relationship between the use of Blockchain technology in digital finance to achieve cybersecurity.

The second hypothesis: There is a relationship between the use of Blockchain technology and cost rationalization.

LITERATURE REVIEW

Previous Studies

While searching for the accumulated knowledge and studies that addressed some related variables, and the possibility of benefiting from them, whether through the theoretical framework, methodology, or results of these studies.

1. Study / Muhammad Ahmad Thabet Muhammad / 2024

The study aims to identify the potential features of blockchain technology applications in the academic library environment. One of its most prominent results was the presence of Relative statistical differences in the direction of the potential features of blockchain technology applications in the academic library environment according to the variables of gender, language, technological expertise, type of experience, and years of experience. The study recommended that decision-makers develop professional executive strategies to develop blockchain applications in library activities and functions.

2. Study/Sayed (2020)

Aimed to analyze and evaluate a creativity engine for Arab intellectual production, while developing a proposal for a blockchain platform for researchers and academic institutions. The study recommended the establishment of a blockchain platform for intellectual production for Arab researchers, meeting the following criteria: basic information about the platform, the platform's responsibilities, its purpose and objectives, its target audience, its coverage areas, the platform's content, its technical structure, links, and other services.

3. Al-Qaisi's Study / 2021

This study aimed to identify the impact of blockchain technology and its association with certain financial items on financial statements (the statement of profit or loss and other comprehensive income, the statement of financial position, the statement of changes in equity, and the statement of cash flows) in

Jordanian commercial banks. The study reached several recommendations, the most important of which is the importance of enhancing and developing the use of blockchain technology in banks, given its positive impact on evaluating financial performance and achieving the appropriate competitive advantage to achieve the bank's objectives of increasing profits and achieving sustainability through reducing costs, improving the quality and efficiency of banking services, increasing the volume of banking transactions, increasing profits, facilitating access to local and global markets, saving time and effort, and providing banking services around the clock.

4. Al-Hariri's Study / 2023

The study aimed to determine the moderating role of financial knowledge in the relationship between digital finance and financial inclusion. The researcher relied on a stratified random sampling method to select the research sample items. The sample size amounted to (382) items from bank customers. The study concluded that digital finance, represented by online banking services and banking services via the Internet, Mobile phones, credit and debit cards, and mobile wallet applications lead to increased financial inclusion. Furthermore, financial literacy improves the level of financial inclusion, as increased customer knowledge of financial instruments encourages them to increase access to and use financial services and choose higher-quality financial services, thus achieving financial well-being. This positively impacts increased financial inclusion.

5. Study / Al-Hamamsi 2024

The study aimed to design a structural model to measure the impact of digital finance, with its three dimensions: coverage, depth of use, and level of leadership, on the growing banking performance of banks in the Egyptian banking sector that adhere to the Global Reporting Initiative (GRI) standards. The results of the study concluded that the proposed structural model is highly appropriate. Path analysis among the study variables revealed a positive impact of digital finance, with its dimensions of coverage, depth of use, and level of digitization, on the inter-sustainable banking performance of the banks under study, contributing to the construction of an inter-sustainable digital banking system.

6. Study / Sodring & Reinholdtsen & Olnes 2020

The study aims to examine the potential role of digital finance. Blockchain technology plays a role in government record-keeping. By exploring information from record-keeping systems that can be published on blockchains, it was demonstrated that the application of blockchain technology to record-keeping has the potential to increase social trust by adding an independent layer of reliability to record-keeping.

7. Abrella (2018) This study analyzed the concept of blockchain, where companies such as Factomy Libras Vardy have implemented this technology. It also addressed the advantages that this technology can offer to professional

auditors, including reducing the workload on auditors by making data available, as well as reducing the chances of fraud and deception. It also indicated the need to develop the system to match this modern technology.

8. Bonson and Bednarova (2019) This study provided a general vision of the shape of the accounting and auditing system in light of the use of blockchain technology, through an analysis of previous studies in this field. It highlighted the need to leverage this modern technology and integrate it into accounting information systems to benefit from its advantages. It also indicated its impact on the auditing profession.

METHODOLOGY

To achieve the research objectives, we find that there is more than one method that can be used: the descriptive method and the analytical method, as they are appropriate for the data and variables of the study. The research methods and tools are implemented through the following:

Sixth: Study Limits:

- Spatial Limits:
- Temporal Limits: Year 2025

RESEARCH RESULT

The Conceptual Framework for Study Variables

First: A Conceptual Introduction to Blockchain Technology

1. The Concept of Blockchain Technology and Its Origins

Blockchain technology did not begin in 2008, as is commonly referred to, but rather was the result of accumulated experience and work since 1991. Work then began on producing a cryptographically secure blockchain that no one could tamper with. Also, in 2000, Stefan Knots published his theory on cryptographically secure chains, along with ideas for implementation. Nakamoto then announced the Blockchain Model Design Paper in 2008. The following year, Nakamoto made the first application of Blockchain as a public ledger for transactions using Bitcoin, a form of cash that can be sent peer to peer without the need for central banks or other authorities to operate (Al-Qaisi 2021, p. 16).

This technology began to appear in the field of application in November 2008, when Satoshi Nakamoto's blockchain technology, which was first implemented in 2009, has been called fully encrypted and is fundamentally based on blockchain technology. Many researchers have been skeptical about the scale and nature of its impact and its potential use in currencies, a significant technological development the world has witnessed, especially in light of the erosion of confidence in the banking and financial sector as a result of the global financial crisis. (Arab Monetary Authorities, 2022, p. 5) Multiple definitions have been established for it, based on the nature of its objectives within a digital blockchain called "blocks," where each block contains its own timeline and a link to the previous block. The digital blockchain is designed to preserve the data stored in it and prevent it from being modified. That is, when information is stored in the digital blockchain, this information cannot be modified later

(ICAEW, 2018). The Oxford Dictionary defines "blockchain" as a system that restricts transactions conducted with Bitcoin and other cryptocurrencies and is stored across a number of computers connected in a peer-to-peer network. (Proposed Framework 2023, 33) Among these definitions:

- They are distributed or decentralized records that store information encrypted in the form of blocks linked through an information network or chain. These records are characterized by security and transparency. (Nakhal 2022, 18)

According to IBM and Forbes, they are defined as a real-time, encrypted, shared electronic recording system for processing and recording financial transactions, contracts, and the trading of financial assets. All participants in the chain can view the details of each record, or what is known as a block, in addition to the ability to track information over a secure network that does not require third-party verification. (Al-Khair, 2020, p. 7)

This technology aims to establish a decentralized system of trust for conducting transactions such as the transfer of assets between participating parties. It also has the potential to help maintain tamper-resistant lists of constantly growing data records, and to enable access to data and the secure exchange of money and financial assets, such as stocks and other securities. Unlike traditional systems, there is no need for an intermediary or centralized recording system to track exchange activity. Rather, all parties interact directly with each other. (Al-Hamamsi, 2024, 12)

2. Blockchain System Elements

The blockchain consists of four main elements that represent an interconnected chain: (Khalifa, 2018, pp. 1 and 2)

A. Block: This refers to the transfer of funds, recording of data, or a set of transactions or tasks to be performed or executed within the chain.
B. Information refers to the sub-process that takes place within a single block, or the single order that takes place within the block, similar to the other commands and information in the block itself.
C. Hash: This is the block chain, also called the hash function. It is a code generated by an algorithm within a program with a digital signature.
D. Timestamp: This is the time at which any transaction within the chain was performed.

3. Areas of Use of Blockchain Technology

The areas of use of Blockchain technology are numerous and varied. To understand all areas of use, they fall into two basic categories: (Thabet Muhammad, 2024, p. 19)

- The financial sector

4. Applications in the government sector or agencies

Main Advantages of Blockchain Technology

The most important advantages of using this technology can be summarized as follows: (Sharsham, 2022, p. 151)

- Security
- Transparency

5. Tamper Resistance

Risks and Challenges of Blockchain Technology

Among the most prominent of these challenges and risks are the following: (Secretariat of the Council 2022, 22)

A. Difficulty in keeping current regulations and legislation in line with the rapid growth of blockchain technologies, which places burdens on regulatory and supervisory bodies and their staff.
B. The lack of comprehensive mechanisms and a legal framework to protect users of financial services that use blockchain technology, especially in the event of a cybercrime or other failure.
C. Difficulty in determining the location of financial assets, given that transactions using blockchain technology are not held in the custody of a specific financial institution.
D. The risks of money laundering and terrorist financing arise when using blockchain technology applications that are based on the principle of anonymity.
E. The risk of cyberattacks remains ever-present, despite the security provided by blockchain technology in data storage and exchange.
F. Threats to financial stability and the effectiveness of monetary policy pursued by central banks.

Second: Digital Finance

1. The Concept and Importance of Digital Finance

Digital finance is defined as financial services provided via mobile phones, personal computers, internet cards, or cards linked to a reliable digital payment system. Digital finance encompasses a large volume of new financial products and programs, financing-related programs, and new forms of communication and interaction with customers offered by fintech companies (Al-Hariri, 2021, 223).

2. Types of Digital Finance:

Digital finance varies according to the areas used, and the literature agrees on the most important types, which are:

A. Digital Payments
B. Digital Loans
C. Crowdfunding
D. Digital Investment
C. Digital Insurance

3. Challenges in Digital Finance:

The process of implementing digital finance in the financial institutions' environment faces multiple challenges, including:

- Security and data protection
- Reliance on the Internet
- Regulation and oversight

Cybersecurity

1. The concept of cyberspace in language and terminology:

A new term in the world of knowledge. With the development of technology, the information revolution, and the evolution of digital generations, knowledge and information economies have become valuable and sought after by all, especially in light of the development of conflicts and wars and the emergence of generations of methods. Electronic or cyber warfare has come to dominate the global system, directing its leadership and facilitating the process of domination and control of capabilities, thus eliminating all development and advancement among others through digital wars and information domination at a breakneck speed. This has confounded the world and restructured it after the emergence of the term cyberspace and its use as a means of intelligence warfare or destruction. (Aboud, 2024, 13)

It is worth noting that many historians trace its origin to the American mathematician Norbert Wieners (1894-1964) to express automatic control. He is the founding father of cybernetics through his famous book: "Cybernetics: Control and Communication in the Animal and the Machine." He indicated in his book that cybernetics is the control and communication of animals, machines, humans, and machines, replacing the term "machine" with "computer" after World War II.

Cybernetics, in its simplest sense, is "the science of control," and it refers to how things are controlled, controlled, and directed according to methods that enable them to move toward what we design and desire.

It is concerned with protecting all information related to the computer, both inside and outside it, and not protecting the entire computer from any potential external threat such as theft or hacking. It prevents any unauthorized person from accessing it. Given the importance of this protection, Al-Watan conducted a survey of the extent of societal awareness of the importance of cybersecurity and information security by surveying the opinions of a number of interested parties. (Khraisan) (2021, 27)

The Relationship Between Cybersecurity and Cost Reduction:

Cybersecurity, when implemented well, can help reduce costs resulting from security incidents such as breaches or data loss. For example: (Al-Kamshoushi, 2023, 104)

Preventing Attacks: Instead of paying high costs to restore data or compensate customers in the event of a security breach, investing in effective cybersecurity can prevent these incidents and thus save a lot of money.

Reducing Insurance Costs: Insurance companies typically offer discounts on insurance premiums to businesses that have strong security policies to protect customer data.

Reducing Financial Damage: Security incidents such as customer data breaches can result in legal fines, in addition to loss of reputation and customer satisfaction. Therefore, providing strong protection helps avoid these huge costs.

The Relationship Between Blockchain and Cost Reduction:

Blockchain, thanks to its decentralized structure and built-in encryption mechanisms, can significantly contribute to cost reduction in several aspects:

A. Reducing costs associated with intermediaries:

In systems Traditionally, many transactions are conducted through intermediaries such as banks, financial institutions, or even lawyers. These parties incur additional costs in the form of fees and commissions. With blockchain, transactions can be completed directly between parties without the need for intermediaries, reducing costs.

For example, in the field of international payments, blockchain can enable faster and cheaper payments compared to traditional banking systems.

B. Reducing costs associated with documentation and insurance:

Blockchain can reduce the need for complex paper-based documentation processes and associated insurance costs. With blockchain-based smart contracts, contract terms can be executed automatically without the need for manual intervention or intermediaries, reducing legal costs and reliability.

C. Improving Operational Efficiency:

Blockchain is characterized by its ability to simplify operations and eliminate the need for many complex traditional systems and processes. This performance efficiency reduces operational costs for companies by reducing human error, improving tracking and verification, and streamlining procedures.

D. Reducing Security Costs:

In the field of cybersecurity, blockchain can reduce data protection costs. By utilizing encryption technologies embedded in blockchain, the need for complex and expensive security solutions is reduced. Furthermore, because blockchain relies on decentralized authentication, it reduces the risk of attacks on a single point of failure, which contributes to reducing the costs associated with data protection.

The Relationship Between Cybersecurity, Blockchain, and Cost Reduction:

A. Improving Security and Reducing Potential Costs:

Since cybersecurity can be extremely expensive, the use of blockchain in security systems helps reduce these costs. For example:

Blockchain-based identity verification can replace traditional, complex systems that require significant effort and costs associated with identity management.

Decentralized data storage in blockchain reduces the need for large and expensive infrastructure to protect data.

B. Reducing legal and procedural costs:

Smart contracts reduce the legal costs associated with contract documentation, as blockchain enables automatic contract execution after conditions are met, reducing the need for human intervention and legal resources.

C. Accelerating processes and reducing administrative costs:

In business environments that rely on complex financial and logistical processes (such as supply chain tracking or inter-company payments), blockchain enables increased efficiency and reduced costs by speeding up procedures and reducing paperwork and manual documentation.

CONCLUSIONS AND RECOMMENDATIONS

By integrating cybersecurity with blockchain, cost optimization can be effectively achieved. Blockchain helps reduce the need for intermediaries, reduce documentation costs, improve operational efficiency, and reduce the costs associated with securing and protecting data. Furthermore, cybersecurity helps protect these innovative systems from digital attacks and cyber threats, reducing the potential costs resulting from security incidents. Overall, the use of technologies like blockchain in cybersecurity systems not only improves security and efficiency, but also directly contributes to long-term cost savings.

REFERENCES

A Proposed Framework for Using Blockchain Technology as a Pillar for Enhancing the Quality of the Audit Process in a Digital Transformation Environment, with a Field Study in the Egyptian Business Environment, p. 7, vol. 15, no. 3, 2023

Abreu, P. W., Aparicio, M., & Costa, C. J. (2018). Blockchain technology in the auditing environment. Paper presented at the 13th Iberian Conference on Information Systems and Technologies (CISTI), Caceres, Spain.

Ahmed Mahmoud Abdullah, "Cybersecurity in the Age of the Digital Revolution", Publisher: Studies in Social Sciences Journal, 2020

Ahmed, Abu Bakr Sultan (2018), Al-Faisal Scientific Journal, King Faisal Center for Research

Ali Hassan Al-Ali, "Cybersecurity Management: A Protection Strategy in Modern Institutions," Publisher: Journal of Computing and Security Sciences, 2022

Alrahili & Aldahawi (2020). Journal of Information Studies & Technology, Vol. (1).

American Institute of CPAs and Chartered Professional Accountants of Canada (AICPA and CPA Canada).)2017(Blockchain technology and its potential impact on the audit and assurance profession.

Appelbaum, D. and S. S. Smith. (2018). Blockchain basics and hands-on guidance. Available at: https://www. cpajournal.com/2018/06/19/blockchain-basics-and-hands-on-guidance/

Atlam, H., & Wills, G. (2019). Technical Aspects of Blockchain and IoT. Advances in Computers, 115, 1-39 jcr: 945bb1c8-dacf-4e48-8499 da9b9b155b80/Wet-zel_Livia_AbAr_Lg17-18.pdf.

Ayman Mohamed Sabry Nakhal, The Impact of Using Blockchain Technology on Auditor Responsibility, Lecturer in the Accounting Department, Faculty of Commerce, Kafrelsheikh University.

Basma Mohamed Idris Al-Hariri, The Impact of Using Digital Finance in Promoting Financial Inclusion: The Moderating Role of Financial Knowledge: An Applied Study on Egyptian Bank Customers.

Bassem Ali Khreisan, Cybersecurity in Iraq: A Reading of the Global Cybersecurity Index 2020. Al-Bayan Magazine, July 27, 2021, Policy and Research Papers, Security and Defense.

Bonson, E., & Bednárová, M. (2019). Blockchain and its implications for accounting and auditing. Meditari Accountancy Research, 27(5), 725-740.

Brincat, A. A., Lombardo, A., Morabito, G., & Quattropani, S. (2019). On the use of blockchain technologies in wifi networks. Computer Networks, 162(1), 1-9.

Corten, P. A. (2018). Smart contracts in governmental services (master's thesis).

Delft University of Technology, Holland. Retrieved from https://repository.tudelft.nl/is-landora/object/uuid:87709465-b9a1-48da-9ba5-eba98bc263d7/datastream/OBJ/download

Daniel Drescher Book Title: "Blockchain Basics: A Non-Technical Introduction in 25 Steps" Publisher: Apress Year: 2017

Daniel, F., & Guida, L. (2019). A service-oriented perspective on blockchain smart contracts. IEEE Internet Computing, 23(1), 46-53. doi:10.1109/MIC.2018.2890624.

Dhillon V., Metcalf D., Hooper M. (2021) Blockchain in Healthcare. In: Blockchain Enabled Applications. Apress, Berkeley, CA. https://doi.org/10.1007/978-1-4842-6534-5_9.

Dr. Abdul Rahman Ali Al-Laqani, Integrated Cybersecurity Risk Management, Al-Yazouri Publishing and Distribution House, Jordan, 2022

Dr. Ahmed Mohamed Al-Sanhouri, Cybersecurity in the Face of Unethical Crimes, Al-Yazouri Publishing and Distribution House, Jordan, 2022

Dr. Falah Hassan Thuwaini, "Digital Banks and Easy Access to Transfers: A Study of the Expansion of Financing and the Banking Customer Base Through Digital Banks in Iraq, Baghdad," Al-Bayan Center for Studies and Planning, January-September 2024

Dr. J. Smith, Dr. A. Johnson Research Paper: "Cybersecurity and Blockchain: A Survey": Publisher: Springer Year: 2020

Himes , A. A. ., Aghasi, S. ., Buraa Jawad , A. ., & Korang Beheshti, S. . (2025). Designing a Human Resource Performance Model with a Thematic-Based Strategic Value Development Approach. Digital Transformation and Administration Innovation, 3(1), 1-8. https://journaldtai.com/index.php/jdtai/article/view/48

ICAEW. (2018). Blockchain and the future of accountancy

Ihab Khalifa, Blockchain: The Coming Technological Revolution in the World of Finance and Management, Academic Papers / Future for Advanced Research and Studies / Abu Dhabi Think Tank 2018, Issue 5, 2018, pp. 1 and 2.

Iman Fathi Abdo El Hamamsy, "The Impact of Digital Finance on Sustainable Banking Performance: An Applied Study on Egyptian Banking Sector Banks", Journal of the Institute for Strategic Research and Studies, Nile Basin Countries, Fayoum University, Issue 1, Vol. 15, 2024

Jawad, A. B. (2018). The role of organizational culture in activating the philosophy of sustainable development: An analytic Research at the Ministry of Industry and Minerals. Journal of Economics & Administrative Sciences, (29).

Jawad, A. B., & Al-Kubaisy, S. A. D. (2021). Measuring range the application of

Organizational Identification philosophy in the Zain Company for Communications. Turkish Journal of Computer and Mathematics Education (TURCOMAT), 12(13), 7872-7876.

John Doe, Alice Brown Journal Article: "The Role of Blockchain in Cybersecurity": ublisher: Journal of Cybersecurity Studies Year: 2022 Link: Journal of Cybersecurity Studies, 2022

Khalil Abeer, Alwani Nawal, The Role of Blockchain Technology in Commercial Transactions, Master's Thesis, Faculty of Law and Politics, Department of Business Administration, University of May, Algeria, 2023

Muhammad Ahmad Thabit Muhammad, "Applications of Blockchain Technology and Features of Change in the Academic Library Environment: A Future Outlook," Journal of the Faculty of Arts, Suez University, Issue 7, 2024 p. 19

Muhammad Al-Sasi Balour, Ashraf Muhammad Dawaba, "Blockchain and its Applications in Islamic Banking," Economic Visions Magazine, Issue 2, 2022, p. 64, and Islamic Studies, July Issue, pp. 1-9. Available at http://www.alfaisal-scientific.com/?p=2638

Muhammad Mahmoud Youssef: "Blockchain: Applications in Cybersecurity," Journal of Information Technology and Cybersecurity: 2019

Mu'nis Abdul Latif Al-Tilmisani, "Cybersecurity, Sociological Analysis, and Internet Protection from Viruses," Dar Al-Yazouri Publishing and Distribution, Jordan, 2023, p. 51

Nafsiyat Al-Khair, Modern Financial Technologies, Introductory Booklet Series, Issue 4, Arab Monetary Fund, 2020

Prabakaran, N., Patrick, H. A., & Jawad, A. B. (2024). Global Regionalization of Consumer Neuroscience Behavioral Qualities on Insights From Google Trends. In Explainable AI Applications for Human Behavior Analysis (pp. 258-274). IGI Global.

Rawan Thaer Issa Al-Qaisi, "The Impact of Using Blockchain Technology on Financial Statements in Jordanian Commercial Banks," submitted in fulfillment of the requirements for a Master's degree in Accounting, Department of Financial and Accounting Sciences, College of Business, Middle East University, November 2021

Safar Muhammad Sharsham Muhammad, "The Reality and Challenges of Blockchain Technology in the Financial and Banking Sector (The Experience of Some Countries)," Journal of Economics and Comprehensive Development, Issue 2, 2022, pp. 151

Salih Alzahloli, G. S., Mirtavousi, S. H., Jawad Alaameri, A. B., & Korang Beheshti, S. . (2024). Designing a Strategic Human Resource Planning Model Based on Artificial Intelligence Development. Digital Transformation and

Administration Innovation, 2(3), 32-41. https://journaldtai.com/index.php/jdtai/article/view/70

Satoshi Nakamoto, et al.Paper Title: "Blockchain Technology: Applications and Challenges in the Context of Cybersecurity" Publisher: IEEE Xplore Year: 2018

Secretariat of the Council of Arab Central Banks and Monetary Authorities Governors, "The Uses of Blockchain Technology in Payment Transactions: Prospects and Opportunities", Arab Committee for Payment and Settlement Systems, Arab Monetary Fund, Abu Dhabi, United Arab Emirates, 2022

Tariq Al-Sayed Abdel Rahim, Cybersecurity Policy on Information Quality, Dar Al-Ilm Wal-Iman Publishing and Distribution House, Egypt, 2024

Tawfiq Mahmoud Muhammad Al-Qazzaz, Cybersecurity for Information Resources, Taiba Publishing House, Egypt, 2022