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The Challenges of Blockchain in Digital Era

Malisa Othman[1], Logaiswari Indiran[2*]

[1] Department of Commerce, Politeknik METrO Johor Bahru, Malaysia
[2] Faculty of Management, Universiti Teknologi Malaysia, Skudai, Johor, Malaysia

*Corresponding Author: logaiswari@utm.my

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Abstract: *The adoption of blockchain technology presents a number of challenges that are causing its widespread adoption. This in-depth investigation looks into blockchain adoption's major challenges, such as stakeholders' lack of awareness and understanding. The study emphasizes the importance of addressing this issue through education and training initiatives to improve knowledge and understanding of blockchain technology. Furthermore, conflicts between organizations emerge as a significant impediment, as divergent interests and competing agendas limit collaboration and consensus-building. Again, the existing business culture frequently resists change, making integrating blockchain solutions difficult. Overcoming this challenge necessitates organizational restructuring and the creation of a culture that values innovation and technological transformation. Furthermore, the high cost and investment required to implement blockchain infrastructure and protocols stymies adoption, necessitating careful cost-benefit analysis and strategic planning. The absence of clear guidelines and frameworks raises legal compliance and consumer protection concerns, exacerbating the challenges. To address these challenges, industry stakeholders, regulatory bodies, and policymakers must collaborate to create supportive regulatory frameworks and promote best practices for governance. Organizations can unlock the transformative potential of blockchain technology and pave the way for its successful integration into various sectors by recognizing and mitigating these challenges.*

Keywords: Blockchain, challenges, technology

1. Introduction

Blockchain is a distributed database that allows for the safe, open, and immutable storage of data and transaction records over a network of computers. The term "blockchain" refers to the sequence of blocks that hold the data that constitutes a blockchain. Agreement mechanisms and digital signatures function in tandem to ensure the security of the blockchain by preventing any single entity from controlling the network or modifying the data. Blockchain is a type of shared database that differs from traditional databases in the way data is stored; blockchains store data in blocks linked together using cryptography. Blockchain is a technology that encrypts and stores data and transactions in an immutable manner over a network of many locations. According to Mckinsey, blockchain is a secure database shared across a network of users, where all members simultaneously have access to up-to-date information. It cannot be denied that blockchain opens a window of opportunities, and there are numbers of challenges that will be discussed in the following sections.

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2. The Challenges of Blockchain

(i) Lack of Awareness and Understanding

The principal challenge associated with blockchain is a lack of awareness of the technology, especially in sectors other than banking, and a widespread lack of understanding of how it works. Blockchain is a complex and relatively new technology requiring a certain level of technical knowledge and understanding to grasp its concepts and potential applications fully. Therefore, a lack of awareness and understanding about blockchain can hinder its adoption and implementation across various industries.

Many people may have heard about cryptocurrencies like Bitcoin, Ethereum, Litecoin, Monero, etc. Still, they may not fully comprehend the underlying technology or its potential beyond financial transactions (Amsyar et al., 2020). Cryptocurrency operates inside a developing regulatory and legal framework. Individuals and enterprises participating in Bitcoin transactions may struggle to keep up with the shifting regulatory landscape and comprehend the compliance requirements in different jurisdictions. Furthermore, Rugeviciute and Mehrpouya (2019) discovered that clients are unaware of blockchain and lack appropriate information about its application in other industries. In a nutshell, they should be educated on the advantages of blockchain technology and the ramifications of its use for data ownership, access, and privacy so that enterprises boost their blockchain adoption rate to improve customer adoption of blockchain.

(ii) Conflicts among Organizations

The blockchain adds the most value to organizations when they collaborate on areas of common pain or opportunity, particularly those unique to each industry sector. The issue with many existing systems is that they are siloed, where organizations are creating their blockchains and applications to operate on top of them. Many distinct chains are thus built to many different standards in any given industry area by many different organizations (Ahl et al., 2022). This violates the goal of distributed ledgers, fails to capitalize on network effects, and may be inefficient compared to current alternatives.

Following that, because blockchain networks are decentralized, reaching an agreement on crucial issues, such as protocol upgrades or adjustments, can be challenging (Goldsby & Hanisch, 2022). Disagreements among network participants can result in disputes and possibly blockchain forks, resulting in separate network versions. Coordination among participants is essential, therefore, to maintain the seamless operation and development of the blockchain ecosystem, effective collaboration is necessary. Coordination of network upgrades, conflict resolution, and change implementation can be difficult when numerous stakeholders have competing interests and objectives.

In the context of safety and security, blockchain networks are responsible for handling several security concerns, such as protecting private keys, preventing destructive activities, and defending against hacking or other forms of assault. The crucial organizational problem here is to both promote a sense of trust among the members and maintain the reliability of the blockchain network (Wenhua et al., 2023).

(iii) Conflicts with The Existing Business Culture

Even for fields that have already seen considerable change due to the introduction of digital technology, a blockchain marks a radical departure from the conventional methods used up until now. It delegates confidence and authority to a decentralized network rather than to a

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powerful institution in the organization's centre. Blockchain technology causes existing centralized models to become obsolete and gives rise to trustless, decentralized, and transparent infrastructures. This move might be faced with opposition from persons or groups that are content with the structures and procedures that are now in place (Kumar & Chopra, 2022). Cultural biases, including aversion to risk and a preference for tried-and-true methods, may slow the adoption of blockchain technology. Businesses and individuals may hesitate to use blockchain technology out of worries regarding security, regulatory compliance, and the possibility of disrupting current operations.

(iv) High Cost and Investment

The speed and efficiency with which blockchain networks can perform peer-to-peer transactions come at a high aggregate cost, which is more significant for some blockchain types than others. To be the first to find a solution, each node performs the identical activities as every other node on its copy of the data. For example, building and maintaining the infrastructure required for blockchain networks can be costly. This comprises hardware, software, network infrastructure, and data storage costs. Furthermore, the energy consumed by blockchain mining might contribute to operational costs (Li et al., 2019).

In addition to the infrastructure cost, it is also necessary to have educated developers and technical skills (Islam et al., 2021), which may result in increased development expenses compared to traditional software solutions' costs. For businesses to use blockchain technology efficiently, additional costs may arise related to the education of employees and the modification of company practices.

Besides, the scalability of blockchains can present a substantial barrier in terms of costs (Andoni et al., 2019). The cost of processing and validating transactions may rise along with the growth and usage of blockchain networks. Increasing the capacity of blockchain networks to process vast numbers of transactions promptly may involve financial investments in infrastructure upgrades and optimization, which will add to the total cost.

Furthermore, blockchain networks require continual maintenance (Li et al., 2021), security measures, and regular updates. Monitoring, patching vulnerabilities, and delivering essential updates are all costs for protecting the blockchain ecosystem's security and integrity (Srivastava et al., 2020). Furthermore, corporations may need to allocate resources for blockchain network troubleshooting, conflict resolution, and governance-related obligations.

(v) Lack of Regulation and Governance Support

Regulation and governance support might be significant barriers to blockchain implementation. While blockchain technology promotes decentralization and transparency, it also functions within existing legal and regulatory structures. Due to uncertainty and ambiguity, the regulatory landscape for blockchain technology is still emerging in many countries (Ahl et al., 2022). Uncertainty can be created for firms trying to implement blockchain due to a lack of defined regulations and guidelines. Ambiguity in legal frameworks, particularly in data protection, intellectual property, and smart contracts, might stymie adoption since businesses may be unaware of their rights, obligations, and potential liabilities.

Blockchain adoption may require organizations to navigate complex regulatory requirements (Choobineh et al., 2022). Compliance with anti-money laundering (AML) and know-your-customer (KYC) regulations, data privacy laws, financial regulations, and sector-specific regulations can pose challenges. The costs and efforts of ensuring regulatory compliance can

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be significant, particularly for organizations operating in multiple countries. Blockchain networks often use across borders, making regulatory compliance even more challenging. Different countries have varying legal frameworks and approaches to blockchain technology, which can result in conflicting regulations. Organizations engaging in international transactions or operating globally must navigate these complexities and ensure compliance with relevant regulations in each country (Sun et al., 2021).

Besides, determining the countries in which blockchain transactions and smart contracts are legally binding can be complex (Cohn et al., 2016). The decentralized nature of blockchain raises questions about which legal systems and authorities have jurisdiction over disputes and enforcement. Resolving jurisdictional challenges and establishing legal clarity is crucial for the widespread adoption of blockchain technology.

Therefore, there is a strong rationale for blockchain applications to work within existing regulatory frameworks rather than outside of them. However, this implies that regulators in all industries need to understand the technology and its influence on the firms and consumers in their industry.

3. Discussion and Conclusion

The adoption of blockchain technology has been met with several obstacles, which have hampered the widespread implementation of the technology. This in-depth discussion investigates the primary obstacles that stand in the way of widespread implementation of blockchain technology, with a specific emphasis on stakeholders' lack of awareness and comprehension. The importance of implementing education and training initiatives that are aimed at improving knowledge and understanding of blockchain technology is emphasized in the study as an important step towards overcoming this challenge. The obstacles that stand in the way of adoption can gradually be removed if stakeholders' awareness is raised to a higher level.

The existence of disagreements between different organizations is a further significant obstacle that is investigated in this study. When it comes to implementing blockchain solutions, collaboration and the establishment of consensus are frequently hampered by various factors, including divergent interests and competing agendas. For organizations to successfully resolve these conflicts, they will need to undergo internal reorganization and cultivate a culture that welcomes technological advancement and innovation. Organizations have a better chance of successfully navigating the challenges of conflicting interests if they foster an environment that values change and encourages collaboration.

The culture existing within businesses is another barrier preventing blockchain technology's widespread adoption. Many companies have procedures and routines that have been in place for a long time and are difficult to alter. Integrating blockchain solutions becomes more difficult when applied to a culture like this. For organizations to overcome this obstacle, they will need to go through a process of cultural transformation and adopt a mindset that encourages innovative thinking and is receptive to new forms of technology. Organizations can more effectively facilitate the integration of blockchain solutions if they adopt a business culture that is flexible and open to change. This can be accomplished by shifting the business culture to be adaptable and receptive to change.

In addition, the high costs and investments required to implement blockchain infrastructure and

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protocols present a significant barrier to the technology's widespread adoption. To ensure that their financial investment in blockchain technology is commensurate with their organizations' aims and purposes, businesses must conduct exhaustive cost-benefit analyses and engage in strategic planning. Before deciding to implement blockchain technology, this financial obstacle requires careful consideration of the possible benefits and returns on investment.

Another difficulty brought to light by the study was the lack of well-defined standards and frameworks for the regulation and governance of blockchain technology. The unclear nature of the regulatory requirements raises concerns about both legal compliance and the protection of consumers. Industry stakeholders, regulatory bodies, and policymakers need to work together to develop supportive regulatory frameworks and promote governance best practises in order to address this challenge. Establishing clear guidelines and regulations will provide organizations with the necessary guidance and assurance to navigate the legal landscape and foster trust in blockchain technology. These guidelines and rules should be written in an easily understandable way.

Organizations are able to capitalize on the transformative potential of blockchain technology if they acknowledge the challenges involved and take measures to mitigate them. To address the lack of awareness, conflicts, cultural resistance, high costs, and regulatory gaps, this calls for a concerted effort by stakeholders from various industries. By overcoming these challenges, organizations can pave the way for successful blockchain integration, unlocking the benefits of blockchain technology and driving innovation across multiple industries.

References

Ahl, A., Goto, M., Yarime, M., Tanaka, K., & Sagawa, D. (2022). Challenges and opportunities of blockchain energy applications: Interrelatedness among technological, economic, social, environmental, and institutional dimensions. Renewable and Sustainable Energy Reviews, 166, 112623.

Amsyar, I., Christopher, E., Dithi, A., Khan, A. N., & Maulana, S. (2020). The Challenge of Cryptocurrency in the Era of the Digital Revolution: A Review of Systematic Literature. Aptisi Transactions on Technopreneurship (ATT), 2(2), 153-159.

Andoni, M., Robu, V., Flynn, D., Abram, S., Geach, D., Jenkins, D., ... & Peacock, A. (2019). Blockchain technology in the energy sector: A systematic review of challenges and opportunities. Renewable and sustainable energy reviews, 100, 143-174.

Cohn, A., West, T., & Parker, C. (2016). Smart after all: Blockchain, smart contracts, parametric insurance, and smart energy grids. Geo. L. Tech. Rev., 1, 273.

Choobineh, M., Arab, A., Khodaei, A., & Paaso, A. (2022). Energy innovations through blockchain: Challenges, opportunities, and the road ahead. The Electricity Journal, 35(1), 107059.

Goldsby, C., & Hanisch, M. (2022). The boon and bane of blockchain: getting the governance right. California Management Review, 64(3), 141-168.

Islam, M. R., Rahman, M. M., Mahmud, M., Rahman, M. A., & Mohamad, M. H. S. (2021, August). A review on blockchain security issues and challenges. In 2021 IEEE 12th Control and System Graduate Research Colloquium (ICSGRC) (pp. 227-232). IEEE.

Kumar, N. M., & Chopra, S. S. (2022). Leveraging blockchain and smart contract technologies to overcome circular economy implementation challenges. Sustainability, 14(15), 9492.

Li, J., Li, N., Peng, J., Cui, H., & Wu, Z. (2019). Energy consumption of cryptocurrency mining: A study of electricity consumption in mining cryptocurrencies. Energy, 168,

Copyright © 2023 ASIAN SCHOLARS NETWORK - All rights reserved

160-168.
Li, X., Zheng, Z., & Dai, H. N. (2021). When services computing meets blockchain: Challenges and opportunities. Journal of parallel and distributed computing, 150, 1-14.
Rugeviciute, A., & Mehrpouya, A. (2019). Blockchain, a panacea for development accountability? A study of the barriers and enablers for blockchain's adoption by development aid organizations. Frontiers in Blockchain, 2, 15.
Sharma, M., Sehrawat, R., Daim, T., & Shaygan, A. (2021). Technology assessment: Enabling Blockchain in hospitality and tourism sectors. Technological Forecasting and Social Change, 169, 120810.
Srivastava, G., Parizi, R. M., & Dehghantanha, A. (2020). The future of blockchain technology in healthcare internet of things security. Blockchain cybersecurity, trust and privacy, 161-184.
Sun, P., Doh, J. P., Rajwani, T., & Siegel, D. (2021). Navigating cross-border institutional complexity: A review and assessment of multinational nonmarket strategy research. Journal of International Business Studies, 52(9), 1818-1853.
Wenhua, Z., Qamar, F., Abdali, T. A. N., Hassan, R., Jafri, S. T. A., & Nguyen, Q. N. (2023). Blockchain Technology: Security Issues, Healthcare Applications, Challenges and Future Trends. Electronics, 12(3), 546.

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