

1. Introduction

In recent years, cryptocurrencies have significantly risen in popularity due to emerging technologies. Some cryptocurrency enthusiasts argue it may become a financial revolution and the future of finance. While this statement is debatable, cryptocurrency technology has undoubtedly brought numerous opportunities and challenges. The objective of this literature review is to analyze existing studies to explain why cryptocurrencies are important, identify the main issues associated with cryptocurrency technology, and discuss potential solutions.

2. Literature review

To understand cryptocurrencies' impact, it is essential to explore their history. Limba et al. (2019) discussed the theoretical insights of cryptocurrencies, noting that Bitcoin, created in 2008 by Satoshi Nakamoto, was the first cryptocurrency. Bitcoin emerged due to Blockchain Technology, allowing secure transactions without intermediaries. Initially, Bitcoin was not taken seriously, but it later attracted significant attention. Many authors proposed that cryptocurrencies have substantial growth potential and could be considered disruptive technology. Limba et al. concluded that cryptocurrencies possess all the required features of a currency and offer many advantages over traditional currencies, such as the lack of financial intermediaries, instant transactions, low costs, and a secure system. This suggests that cryptocurrencies could change the financial world, but it is crucial to address the associated issues.

One major issue is the use of cryptocurrencies in criminal activities. Kethineni and Cao (2020) detailed how cryptocurrency technology facilitates criminal activities due to features like decentralization of authority, cross-border accessibility, anonymity, and security. Consequently, cryptocurrencies have become popular for Ponzi schemes, extortion, money laundering, and tax evasion. The authors also discussed how oppressive governments and illegal organizations use cryptocurrencies to bypass regulations, indicating a significant long-term threat.

Another critical drawback is the environmental impact of cryptocurrencies. Mohsin (2021) researched the environmental costs, particularly of Bitcoin and other proof-of-work cryptocurrencies. Proof-of-work mining involves high-powered machines solving complex problems for cryptocurrency rewards. This process consumes substantial energy, often from non-renewable sources, leading to negative environmental impacts. Additionally, electronic waste from mining operations, especially from ASICs, is a significant concern. These factors highlight the need for minimizing the operational costs of cryptocurrencies and appropriate regulatory responses.

All the mentioned authors agree on the necessity of regulatory responses to these issues. Kethineni and Cao (2020) argued that the insufficient regulation of cryptocurrencies contributes to their popularity in criminal activities. Similarly, Limba et al. (2019) noted that the unclear legal status of cryptocurrencies in the Baltic States creates loopholes in financial regulations. Regarding environmental issues, Mohsin (2021) suggested that different environmental implications and appropriate regulations could address these problems.

Unlike the unresolved issue of cryptocurrency-related crime, efforts to reduce environmental costs are underway. Developments in ASIC-resistant cryptographic algorithms promise to eliminate computational advantages for ASICs (Asanuma & Isobe, 2022; Ren & Devadas, 2017). This could make consumer hardware more competitive and reduce the need for new mining hardware. Moreover, it could further decentralize networks, enhancing security. Saleh (2021) discussed a new protocol called proof-of-stake, which aims to replace proof-of-work and be more efficient while maintaining security. If these technologies continue to develop, environmental issues could be resolved soon.

3. Conclusion

This literature review has highlighted the significance of cryptocurrency technology and its potential positive impact on the financial system, while also identifying several key issues. I reviewed various author opinions on possible solutions and discussed ongoing changes to make the cryptocurrency ecosystem more environmentally friendly. The goal of this study is to show that cryptocurrency offers significant benefits, but there are also concerning issues that can be overcome. Future research could explore successful cryptocurrency regulations by authorities.

4. Resources

- Asanuma, T., & Isobe, T. (2022). A Proof of Work based on Preimage Problem of Variants of SHA-3 with ASIC Resistance. *Journal of Information Processing*, 30, 75-83. <https://doi.org/10.2197/ipsjip.30.75>
- Kethineni, S., & Cao, Y. (2020). The rise in popularity of cryptocurrency and associated criminal activity. *International Criminal Justice Review*, 30(3), 325-344. <https://doi.org/10.1177/1057567719827051>
- Limba, T., Stankevičius, A., & Andrulevičius, A. (2019). Cryptocurrency as disruptive technology: theoretical insights. *Entrepreneurship and Sustainability Issues*, 6(4), 2068-2080. [https://doi.org/10.9770/jesi.2019.6.4\(36\)](https://doi.org/10.9770/jesi.2019.6.4(36))
- Mohsin, K. (2021). Cryptocurrency and its impact on environment. *International Journal of Cryptocurrency Research*, 1(1), 1-4. <https://doi.org/10.51483/IJCCR.1.1.2021.1-4>
- Ren, L., & Devadas, S. (2017). Bandwidth Hard Functions for ASIC Resistance. In Y. Kalai, & L. Reyzin (Eds.), *Theory of Cryptography* (pp. 466–492). Springer International Publishing. https://doi.org/10.1007/978-3-319-70500-2_16
- Saleh, F. (2021). Blockchain without Waste: Proof-of-Stake. *The Review of Financial Studies*, 34(3), 1156–1190. <https://doi.org/10.1093/rfs/hhaa075>