THE PERSPECTIVE OF THE IMPLEMENTATION OF THE BLOCKCHAIN WITHIN ROMANIAN COMPANIES

Marian Simion Cernea, PhD Student,
Valahia University, Romania
Email:mariansimioncernea@yahoo.com

Oana Cristina Balacciu (Ene), PhD Student,
Valahia University, Romania
Email:oanacristinabalacciu@yahoo.com

Cosmin-Mihai Monac, PhD Student,
Valahia University, Romania
Email:cosminmihaimonac@yahoo.com

Aurelian Vrânceanu, PhD Student,
Valahia University, Romania
Email:aurelianvranceanu@yahoo.com

Ion-Ionuț Bratu, PhD Student,
Valahia University, Romanian
Email: bratuionut@yahoo.com

Abstract: Attitudes toward blockchain have visibly and measurably changed as executives and business leaders implement blockchain-enabled solutions, whether they are used specifically for digital assets or innovative applications of blockchain in general. Companies have stepped up their investments, demonstrating their commitment to blockchain technologies. The purpose of this paper is to present an analysis of the implementation of blockchain technology from the perspective of advantages and limits. The results showed that only by looking more closely and observing how companies respond to challenges with cyber security and global digital identity can we see that the blockchain has already pivoted from the realm of the possible to the practical world.

Key words: blockchain, cyber security, digitization, software architecture

JEL Classification: E51, F30, G32.

1. Introduction

In recent years, the potential of blockchain has been in continuous evolution, parallel to that of companies that direct real investments to applications developed based on technology to innovate products and services adapted to the requirements of increasingly selective stakeholders and shareholders (Ko, Hsueh & Hsueh, 2022). In addition, technology is important for the other fronts of digital transformation: IoT (Internet of Things), Industry 4.0, and AI (Artificial Intelligence). The possibilities of application extend to various industries and sectors of interest, through a process of disintermediation of the platform, in the consensus of the network contributing to the rewriting of business models, reflected in the performance of the companies, and last but not least, in the process of reporting them in the context of the objectives of sustainability, social responsibility, and corporate governance (UN SDG's).

Companies seem to be more interested than ever in the blockchain. They show this by using it as a normal part of their business, which will show up in both the performance they get and the way they report it. A distributed database that works through the consensus of network participants and is able to record the entire history of exchanges to guarantee data integrity and immutability. This is what blockchain is all about, and this is its disruptive force, which makes it relevant to the problems of trying to get a competitive edge and try new things by using technology (Roper et al., 2011).

The evolution of blockchain technology was based on three moments of technological maturity (Syed et al., 2019). The first moment (blockchain 1.0) was marked by the emergence of Bitcoin and other cryptocurrencies and focused on the applications of financial statistics and digital payments. The second moment, (blockchain 2.0) was marked by the smart contracts, which raised the level of financing applications by capitalizing on the use of the platform for the registration of securities, discounts, contracts, and shares. The third moment was 2018 (blockchain 3.0) with an emphasis on applications targeting various fields of interest: energy, health, financial services, agriculture, transport, retail, and supply chain.

As blockchain technology is in its infancy, there are some challenges that include restricted data processing, regularity challenges, and information privacy (Park & Jun, 2020). First, the existing blockchain technology is unable to handle the firm's information, which is massive. The application of blockchain requires a huge investment of capital. Secondly, due to the technical mechanism, the information can be accessed and used by anyone at any time because it comes with the features of information transparency. Data transparency can cause significant losses for a firm if it has to keep any trade secrets.

2. The Challenges, Advantages, and Limits of Blockchain Implementation

The companies of the 21st century are the companies of networks, open that are based on a new set of business models, reconfigured with a view to innovation and the creation of distributed value (Alkhabbas et al., 2022). Blockchain technology allows network companies to exchange units of value, and metadata, and reconfigure supply chains and production processes based on distributed information about demand and capacity. However, if the technology is advanced enough, as well as companies anticipate the ownership cost of disclosing information and decide how many confidential data to disclose after weighing the cost and benefits, the two problems can be solved. After solving these two problems, many firms will be attracted to using blockchain as a major voluntary disclosure platform in the short term because the flow of information will reduce the cost of capital and information asymmetry (Syed et al., 2019).

Many industries and leaders in the blockchain space have talked about the benefits of blockchain technology, which we will take into account in our research. All transactions on a blockchain are cryptographically secured and thus ensure the integrity of the network (Alkhabbas et al., 2022). Any transactions posted from nodes on the blockchain are verified based on a predetermined set of rules. Only valid transactions are selected for inclusion in a block. Blockchain is based on proven cryptographic technology that ensures data integrity and availability (Roper et al., 2011). Generally, confidentiality is not provided due to transparency requirements. This limitation is the main barrier to its adoption by financial institutions and other industries that require privacy and confidentiality of transactions.

Another way is to make protocols that allow blockchains that already exist to talk to each other (Interledger). Also, smart contracts are, in our opinion, the revolutionary feature of the blockchain because they offer flexibility, speed, security, and automation to companies in the digital economy ecosystem and respond to scenarios that can lead to a completely reliable system with significant cost reductions. Smart contracts can be set up to do whatever actions blockchain users need them to do based on their business needs (Lu, Huang, Azimi & Guo, 2019).

Lack of standardization results in disparate systems that are unable to communicate with one another (Sladić et al., 2021). Therefore, it is necessary to develop a common way of understanding the requirements to develop blockchain platforms to the same standards. This will ensure that all platforms are interoperable. However, there are still a few caveats that can compromise the security of the blockchain file. There are some examples of transaction malleability, eclipse attacks, and the possibility of double spending that have been proven to work in certain scenarios by various researchers. Transaction malleability makes it possible to withdraw or deposit twice. This is because a hacker can change a transaction's unique ID before the Bitcoin network can confirm it.

Lack of scalability is a general concern where blockchains do not meet the appropriate levels of performance expected by users when the chain is used at scale (Ko, Hsueh & Hsueh, 2022). Blockchain

networks are not as scalable as current financial networks, which is a known area of concern and an ongoing research area. The system does not have the transactional capacity to take over an exponential number of users; it would be exposed to capacity problems and unexpected errors. This problem has been the subject of intense debates and rigorous research carried out in recent years. This is the most important issue in blockchain, which could mean the difference between the wider adoption of blockchains or limited private use only by consortia. As a result of substantial research in this field, many solutions have been proposed. From a theoretical perspective, the general approach to addressing the scalability problem generally takes the form of protocol-level improvements (Park & Jun, 2020). A solution for scalability could be to increase the block size. This would mean that a larger number of transactions or operations could be grouped into a block, resulting in increased scalability.

Privacy is also of utmost importance, especially as blockchains are envisioned to be used in industries that require privacy (Alkhabbas et al., 2022). There are specific requirements regarding transaction confidentiality in the financial, legal, and healthcare industries, for example. These two issues become inhibiting factors for the wider acceptance of blockchain technology. Privacy in blockchain can be divided into two main categories based on the type of service required. These categories are user anonymity and transaction privacy. Anonymity means that the sender or recipient's identity is hidden, or that the transaction values must be hidden.

In addition to scalability and privacy, other challenges facing blockchain include adoption, regulation, integration, interoperability, adaptability, and security. Adoption is another challenge. Blockchain is seen as a nascent technology. Even if this perspective is changing rapidly, there are still many steps to be taken before the mass adoption of this technology. The challenge here is to enable blockchain networks to be easier to use so that adoption can increase. Scalability and inaccessibility are closely related to adoption, the increase in the degree of adoption is directly proportional to them. Compliance and regulation are important issues. Due to its decentralized nature, regulation is almost impossible on the blockchain. This is sometimes seen as a barrier to adoption, as consumers normally have a certain level of trust due to the existence of regulatory authorities. In the blockchain, there is no such authority in charge of regulation and control, which is a turnoff for many consumers.

3. Conclusion

The technical features of the blockchain make the information disclosed highly transparent, traceable, and tamper-proof (Ali, Ally & Clutterbuck Dwivedi, 2020). Voluntary disclosure via blockchain is an attractive option for firms seeking to minimize information asymmetry with investors. In the short term, companies can use blockchain to share some beneficial but not mandatory information, which includes earnings forecasts and corporate social responsibility reports. Investors benefit from self-disclosure because it allows them to make more informed decisions, as well as better understand the

company. Furthermore, there are numerous benefits to even disclosing publicly disclosed information via blockchain. On the one hand, historical information should provide some feedback, and investors can verify existing information by looking for historical data, especially if there are significant uncertainties. Again, the disclosure of publicly available information through the official channel may have an effect on investor decision-making.

In conclusion, more and more firms and investors will conduct voluntary disclosures after weighing the costs and benefits when they realize that voluntary disclosure is a high-quality signaling mechanism for lowering the cost of trust. Comparability of information may become an issue as more information is disclosed on the blockchain. To improve the comparability of information, regulators may require a standardization of information and even use blockchain as a major platform for mandatory disclosure, anticipating that its use will improve the authenticity, accuracy, and comparability of information disclosure, while also reducing firms that gain management.

The evolution of any new technology had to overcome some challenges that needed to be addressed in order to contribute to the development of a robust, useful, and accessible system. Blockchain technology is no exception. Both academic theorists and industry practitioners are constantly striving to overcome the challenges facing blockchain technology.

References

Ali, O., Ally, M., & Clutterbuck Dwivedi, Y (2020). The state of play of blockchain technology in the financial services sector: A systematic literature review. International Journal of Information Management, 54, 102-199.

Alkhabbas, F., Alsadi, M., Alawadi, S., Awaysheh, F.M., Kebande, V.R., & Moghaddam, M.T. (2022). ASSERT: A Blockchain-Based Architectural Approach for Engineering Secure Self-Adaptive IoT Systems. Sensors, 22, 6842.

Jevremović Milica, Staletić Nada, Orzan Gheorghe, Ilić Milena P., Jelić Zorica, Bălăceanu Cristina Teodora, Paraschiv Oana Valeria (2022), Predicting User Behaviour Based on the Level of Interactivity Implemented in Blockchain Technologies in Websites and Used Devices, Sustainability 2022, 14(4), 2216.

Ko, P.-H., Hsueh, Y.-L., & Hsueh, C.-W. (2022). A Low-Storage Blockchain Framework Based on Incentive Pricing Strategies. FinTech, 1, 250-275.

Lu, H., Huang, K., Azimi, M., & Guo, L. (2019). Blockchain Technology in the Oil and Gas Industry: A Review of Applications, Opportunities, Challenges, and Risks. IEEE Access, 7, 41426–41444.

Park, S., & Jun, S. (2020). Sustainable Technology Analysis of Blockchain Using Generalized Additive Modeling. Sustainability, 12, 10501.

Roper, A.T., Cunningham, S.W., Porter, A.L., Mason, T.W., Rossini, F.A. & Banks, J. (2011). Forecasting and Management of Technology; John Wiley & Sons: Hoboken, NJ, USA.

Sladić, G., Milosavljević, B., Nikolić, S., Sladić, D., & Radulović, A. (2021). A Blockchain Solution for Securing Real Property Transactions: A Case Study for Serbia. ISPRS International Journal of Geo-Information, 10, 35.

Syed, T.A., Alzahrani, A., Jan, S., Siddiqui, M.S., Nadeem, A., & Alghamdi, T.A. (2019). Comparative Analysis of Blockchain Architecture and its Applications: Problems and Recommendations. IEEE Access, 7, 176838–176869.