

Blockchain technology for corporate governance and IT governance: A financial perspective**Muhammad Yusuf^{a*}, Luqman Hakim^b, Joni Hendra^c, Karnawi Kamar^d, Wiwi Idawati^e, Eddy Winarso^f, Carmel Meiden^g and Mochammad Fahlevi^h**^a*Institut Teknologi dan Bisnis Bank Rakyat Indonesia Jakarta, Indonesia*^b*Universitas Muhammadiyah, Jakarta, Indonesia*^c*Universitas Panca Marga, dan Universitas Negeri Malang, Indonesia*^d*Universitas Insan Pembangunan Indonesia, Indonesia*^e*STIE Indonesia Banking School, Indonesia*^f*Universitas Jendral Achmad Yani, Indonesia*^g*Institut Bisnis dan Informatika Kwik Kian Gie*^h*Management Department, BINUS Online Learning, Bina Nusantara University, Jakarta 11480, Indonesia***CHRONICLE****ABSTRACT***Article history:*

Received: October 12, 2022

Received in revised format: October 28, 2022

Accepted: December 17, 2022

Available online: December 18, 2022

*Keywords:**Corporate Governance**IT Governance**Blockchain**Agency Problem**Financial*

The development of information technology (IT) and the adoption of blockchain have affected the world of finance today. Research on these two matters is still lacking, especially from a financial perspective. This study aims to review the latest research regarding changes in corporate governance with the adoption of IT governance and blockchain. A computerized multi-database literature search was conducted in January–March 2022, using the ScienceDirect and Emerald search engines. The terms “corporate governance”, “IT governance”, and “blockchain” were entered in the descriptor fields, with “language” limited to English and “source” limited to peer-reviewed journal articles. The implementation of good corporate governance will reduce the company's risk and protect investors. Technological advances can be used to develop better IT governance by making information transparent and adopting technological advances to support the implementation of good corporate governance. Under a blockchain framework, corporate governance might evolve in a variety of ways. There are several advantages to issuing and trading corporate securities on blockchains, but there are also certain drawbacks connected to increased ownership transparency. Businesses would seek out board members and outside advisors with various skill sets, and crucial issues like managerial incentives would probably change to account for the shifting character of corporate securities.

1. Introduction

Technological advances provide many advantages; for example, the storage, transmission, access, and processing of information or data are becoming faster (Leong et al., 2022). This technological advancement has positioned information as a resource that is very important and needs to be managed properly and correctly (Halbouni et al., 2016). Management of company information technology (IT) has been carried out but has not been managed using a structured approach and method, so it is difficult to measure how big the role of IT is in supporting business processes to achieve company goals. Therefore, the purpose of this research is to analyze the standard model for IT governance (Fahlevi et al., 2022).

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At this time, IT is an inseparable part of a company (Agarwal & Sambamurthy, 2020). Moving forward and developing science and technology creates many problems, particularly in dealing with the increasing complexity and intensity of challenges. (Ahluwalia et al., 2020). Leaders and company policymakers are required to think creatively to find various strategic breakthroughs that can create synergies, which make an optimal contribution to achieving company goals (Doornbos, 2019; Rehman et al., 2012). However we often encounter the fact that the use of IT actually consumes resources while the expected results are not achieved (Juhandi et al., 2020). As previously discussed, effective information management and utilization are required for this. IT governance is an integral part of good corporate governance (Ferguson et al., 2013). IT is a critical component of success in the information economy. Even today, IT is a central part of many business operations, especially in the field of financial management (Alreemy et al., 2016). As a result, corporate governance and IT governance can no longer be considered two separate things (Naciti et al., 2021). Effective corporate governance focuses on individuals and a group of experienced experts who work productively, where performance can be monitored and measured, and it provides assurance that any critical issues that arise can be addressed immediately. On the other hand, IT has long been recognized as an enabler for corporate strategy and is an integral part of the strategy itself (Peterson, 2006). Blockchain technology is becoming the gold standard for maintaining data integrity through decentralized data stores (Beck et al., 2018). A smart contract allows people to build an application on a decentralized server (Meiryani et al., 2022). This fact has an immediate impact on several industries. Anyone can instantly access global liquidity in the financial sector by using decentralized finance. Nakamoto developed a blockchain architecture for Bitcoin without sponsors or gatekeepers directing the inclusion of new blocks, driven by mistrust of financial institutions. Instead, a continuous rivalry that is sparked by giving away fresh bitcoins to winners decentralizes the updating function to all market players (Yermack, 2017). Blockchain in the world of companies or industries has developed quite rapidly, starting in 2014 (Clohessy et al., 2019). Forbes published a list of the Forbes Blockchain 50, which includes global corporations such as Amazon, Google, and Microsoft that have begun to investigate and even implement blockchain technology (Yermack, 2017). The blockchain service itself is included in the cloud service, so the use of this technology by companies makes cost savings possible (Beck et al., 2018).

The implementation of corporate governance is one of the long-term solutions for companies to grow and benefit shareholders and other stakeholders on an ongoing basis (Jiang & Kim, 2020). The benchmark can be seen based on the level of information disclosure, the number of dividends paid, and the value or price of the company's shares (Haider et al., 2015; Xu et al., 2022). Most importantly, corporate governance can help ensure management can run well and avoid the risks of abuse of authority, non-transparent project costs, and bribery cases. IT is one of the most important assets for an organization (Agarwal & Sambamurthy, 2020). By using IT, the company will help improve and accelerate the process of customer service. The application of IT also encourages the use of various kinds of software. The use of this variety of software also encourages the emergence of the concept of IT governance. Of course, IT governance requires good and professional implementation. IT governance is one of the responsibilities of the board of directors and top management. IT governance is an integral part of organizational governance and consists of leadership, organizational structure, and processes (Juhandi et al., 2020).

The lack of research in the scope of finance on blockchain adoption that can be utilized by corporate governance and IT governance is the latest research gap that requires further research both theoretically and empirically. This research reviews several previous studies to map possible relationships and determinants of the potential of blockchain in the financial world, especially in solving agency problems, information asymmetry, and mitigating fraudulent behavior.

2. Research method

The approach used in this study is a qualitative approach, namely a research approach without the use of statistical data but with a descriptive exposure that aims to describe the symptom, event, or incident that appears to be the focus of attention (Aspers & Corte, 2019). This study is backed up by a bibliography analysis that attempts to trace several previous studies and analyze their interrelationships with one another. Because the aim of descriptive research is to make a systematic, factual, and accurate description of the situation, facts, features, and relations between the described objects, (Miles et al., 2018). The authors of the article decided to use this approach in the research they conducted. The proposed approach made it possible to make predictions, identify the significance of the problem, and propose a solution. In the study, great emphasis was placed on obtaining the real data necessary for a correct analysis of the situation. The most frequently used data sources are stakeholders related to the studied phenomenon, such as entrepreneurs, managers, consumers, etc. (Baxter & Jack, 2008; Gerring, 2017). According to Jackson et al. (2007), Data sources can be objects, people, values, or parties who are thought to have knowledge of the social situation in the research material's subject (information sources). A computerized multi-database literature search was conducted in June–October 2022, using the ScienceDirect and Emerald search engines. The terms “corporate governance”, “IT governance”, and “blockchain” were entered in the descriptor fields, with “language” limited to English and “source” limited to peer-reviewed journal articles. This study involved 93 articles in general; after deducting several articles that were not related to business management, the remaining 72 articles Subsequent screening was carried out for papers that focused on corporate governance in the IT or technology sector, so the remaining 51 articles would be reviewed in this study.

3. Results

IT governance is a broad concept centered on the IT department or environment that provides business value to the company. It is a set of rules, regulations, and policies that define and ensure the effective, controlled, and valuable operation of the IT

department. It also provides a method for identifying and evaluating IT performance and how it relates to business growth. In addition, by following and implementing an IT governance framework such as COBIT, organizations can comply with regulatory requirements, reduce IT spending, and achieve measurable business benefits. IT governance uses, manages, and optimizes IT in a way that supports, complements, or enables an organization to achieve its goals and objectives (Yermack, 2017).

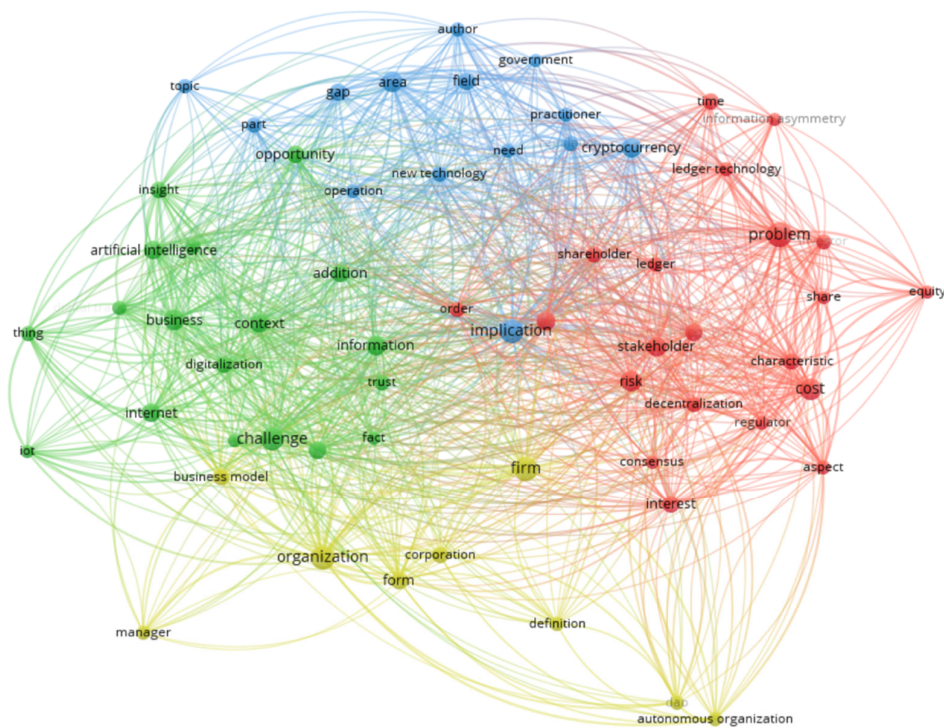


Fig. 1. Network Visualization

Based on Fig. 1, because of these corporate governance efforts to better manage increased corporate resources, special attention is paid to the role of information and supportive technology to support good corporate governance. It was soon recognized that information technology was not only an enabler of corporate governance but that, as a resource, it was also a value creator requiring better governance. In Australia, ICT Corporate Governance AS8015 was published in January 2005. This fast track was adopted as ISO/IEC 38500 in May 2008. The IT governance process enforces the direct linkage of IT resources and processes with corporate objectives as per strategy. There is a strong correlation between the maturity curve of IT governance and the overall effectiveness of IT (Shleifer & Vishny, 1997).

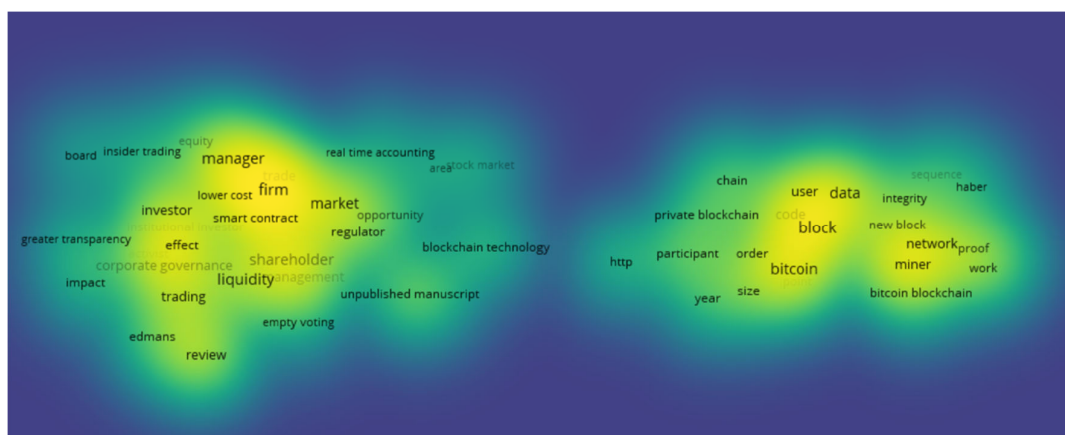


Fig. 2. Density Visualization

Density can be used to see parts of research that are rarely done (see figure 2). There are several topics that are rarely discussed in equity, corporate governance, shareholder relations, and the stock market area. Density Visualization is used to visualize a bibliography or a data set that contains bibliographical fields (title, author, journal, etc.). In the world of research, bibliometric analysis is used to look for topics that still have opportunities to be researched, the most widely used references in certain fields, and others. The "genesis block" of bitcoin, produced on January 3, 2009, in which Nakamoto encoded the front-page

headline of the Times of London that day: The Times 03/Jan/2009 Chancellor on the verge of a second bailout for bank, demonstrates his mistrust of the established financial system. In addition, Nakamoto stated in a blog post on February 11, 2009: “The basis of the problem with conventional currencies is all the trust it requires to make it work. The history of fiat currencies is replete with instances where central banks have betrayed their obligation to refrain from devaluing currencies. Banks are to be trusted with the storage and electronic movement of our funds, but they lend them in waves of credit bubbles with very little reserve. They must be trusted with our privacy and to protect our accounts from identity theft”.

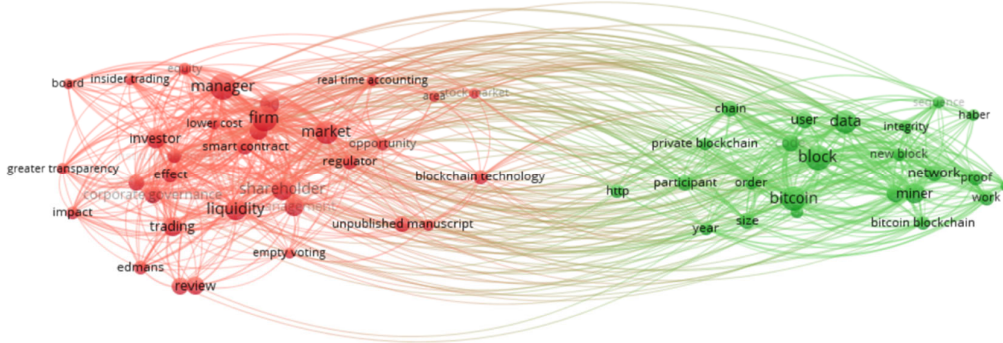


Fig. 3. Corporate Governance, IT Governance, and Blockchain

Based on Fig. 3, there are similarities in topics that allow for deeper research related to these 3 constructs, so research opportunities are still wide open given the conditions of the business climate in Indonesia, which has not widely adopted blockchain. IT governance and blockchain have several advantages to issuing and trading corporate securities on blockchains, but there are also certain drawbacks connected to increased ownership transparency and quicker, less expensive trade execution and settlement. Better transparency would have a significant impact on the profit opportunities available to managers, institutional investors, and shareholder activists, among others. This is because if their transactions were transparent in real time, the incentives to acquire and sell ownership might change significantly. The incentives for these entities to acquire and dispose of ownership would change as trading technology advanced. Since the trading incentives for knowledgeable investors may change, there may be significant side effects that affect the real economy, such as more accurate signals about the worth of certain companies. Given these adjustments, capital providers may eventually rethink the need for some restrictive covenants and make use of blockchain technology's capacity to execute "smart contracts" automatically. To deal with these developments, businesses would seek out board members and outside advisors with various skill sets, and crucial issues like managerial incentives would probably change to account for the shifting character of corporate securities (see Figure 4) (Yermack, 2017).



Fig. 4. Corporate Governance on Blockchains

Blockchain participants, such as businesses that would list their shares on a blockchain stock register, have every right to be worried about how the blockchain is governed. Open public blockchains are run by separate computer programs (more specifically, by many miners running open-source code). This code outlines the fundamental inputs for each transaction and the order and priority in which they should be encoded into the blockchain, as well as any size restrictions or contingencies that may apply, among other things. Companies agree to list their shares and allow third parties to trade them under predetermined terms and circumstances, which is like the parameters of the stock market.

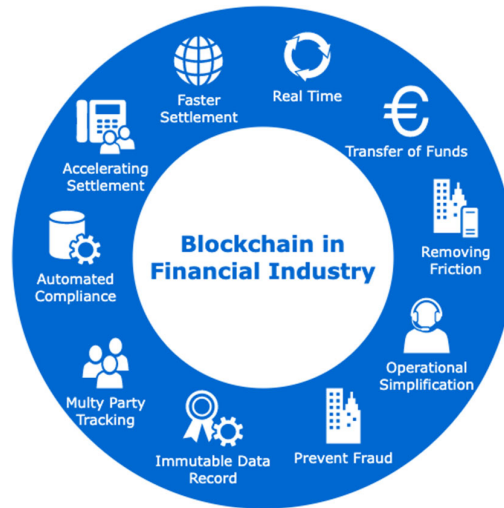


Fig. 5. Blockchain in Financial Industry

Based on Fig. 5, it is known that blockchain has many benefits when applied to the financial industry, especially banking. Blockchain technology can record customer fund transfer activities globally in real time and at low cost; currently, cryptocurrency adoption in several countries has encouraged banks to invest in blockchain technology. Blockchain technology has transparent records of information and transactions, so this technology will eliminate friction and prevent companies from taking risks. Blockchain technology makes company operations simple and efficient. Transparency is an important factor, thereby reducing information asymmetry in companies, which has an impact on fraud prevention. Stored data will be properly maintained without having to worry if the data storage or server is attacked by hacker threats. Tracing can be carried out by many parties, so agency problems can be solved by this technology because the principal can supervise the agents who run the company's operations. Company compliance procedures and directives can be omitted if the information is entered and accessible in an existing database that is secure and tamper resistant. Blockchain technology with smart contracts can accelerate transactions and settlement. Real time is one of the keys to the need to adopt blockchain technology in the financial industry because people need easy transactions, especially when transacting globally.

4. Discussion

The implementation of good corporate governance will reduce the company's risk and protect investors. Technological advances can be used to develop better IT governance by making information transparent and adopting technological advances to support the implementation of good corporate governance. Under a blockchain framework, corporate governance might evolve in a variety of ways. The ability to buy shares for less money and sell them into a market with more liquidity would be advantageous for institutional investors, raiders, and activists, but they would find it harder to conceal their moves. Due to the increased exposure of their activities, managers who receive incentives through stock-based remuneration are likely to miss out on legitimate insider trading profit opportunities. Blockchains would also make it impossible for managers to secretly pledge shares for derivative transactions or retroactively date pay awards. Voting by shareholders would become much more trustworthy and affordable. Blockchains might also be used by businesses for real-time accounting, which would diminish the need for auditing firms, and for the execution of smart contracts, which would cut down on litigation and the costs associated with financial hardship.

5. Conclusion

This research paved the way for further research based on the literature that traced the link between corporate governance and IT governance in today's advanced technology era. Blockchain plays an important role in accelerating the implementation of transparency and security, which can solve agency problems so that information asymmetry can be avoided, which will ultimately have a good impact on the company in the long term. There are several advantages to issuing and trading corporate securities on blockchains, but there are also certain drawbacks connected to increased ownership transparency. Businesses would seek out board members and outside advisors with various skill sets, and crucial issues like managerial incentives would probably change to account for the shifting character of corporate securities.

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