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**BLOCKCHAIN-POWERED CORPORATE GOVERNANCE**- Annanya Singh<sup>1</sup> & Dr Ekta Gupta<sup>2</sup>**ABSTRACT**

Blockchain technology has emerged as a disruptive force with profound implications for various sectors, including corporate governance. This paper explores the intersection of blockchain and corporate governance, investigating how blockchain technology transforms traditional governance structures, enhances transparency, and improves accountability within corporations. Firstly, the paper provides an overview of blockchain technology, highlighting its decentralized nature, immutable ledger, and cryptographic security features. It then delves into the key principles of corporate governance, emphasizing the importance of transparency, accountability, fairness, and shareholder rights. The paper discusses how blockchain technology can revolutionize corporate governance by introducing transparent and tamper-resistant systems for recording and verifying transactions. Through the use of smart contracts, blockchain enables the automation of governance processes, ensuring compliance with predefined rules and reducing the need for intermediaries.

- **From Bitcoin to Corporate Governance**

Having introduced the technology behind the blockchains and smart contracts, now this chapter will be exploring the potential uses of blockchains in the context corporate governance, which was previously studied by the pioneer in the field, Yermack (2015), who identifies the potential adoption paths of blockchains in corporate governance. He elucidates the solutions offered by the implementation of Blockchain technology in the matters concerning corporate governance

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while also expounding the changing roles of corporate actors coming with this. He argues that blockchain offers a great deal of increased accuracy, efficiency and transparency in corporate voting, share ownership and record-keeping, replacing the decades old corporate practises. Therefore, he claims that the use of blockchains will reduce corporate waste and misbehaviour noticeably.

Furthermore, after the exploring the potential uses of blockchains in corporate governance and testing those claims on the already-in-use blockchain-powered companies or platforms, the paper will try to predict the possible future of blockchains in this context and show that the Pennington's theory can be useful in responding the challenges coming with the adoption of this technology in corporate governance.

- **Securities on Blockchain**

Some of the first enthusiasts of blockchains were stock exchanges, which was not surprising. The stock exchanges we know have not changed the model they have been using for over 400 years when the Dutch East India Company became the first publicly-owned company and a central register was needed to track the transfer of its shares on the secondary market. Today, to put it very simply, when certain shares are sold on a stock exchange, an investor relies on a third party working as a 'stock transfer agent' for the stock market concerned to change the names of the seller with the buyer on the shares. Hence, this reliance on a third party in a centralized system increases the costs for transactions including administration charges, transfer fees and expenses originated from potential failures originated from the single point of failure. While also in this old model, there are apparent transparency issues caused by the information asymmetries leading to market advantages, forged securities and systemic counter party risks.

However, the problems inherent in the old model of stock exchanges can be cured by the introduction of blockchain-run platform using automated smart contracts to complete all actions without requiring human effort in its processes. And the currently available technology already allows a company to issue 'digital securities' processed on a distributed ledger. So that, shares, debt instruments and virtually any other type of securities can be issued on a distributed ledger where the transactions can be executed and confirmed. Since this would allow public to monitor transactions more effectively, there would be a greater level of transparency in

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ownership while also the execution and settlement would be cheaper due to the non-existence of a need to rely on a third party for the execution of transactions. In short, blockchain technology could promise the transfers of securities to be observed in a real-time basis while the transactions costs are reduced markedly, which can be translated into efficiency and security.

- **Practical Examples**

Traditional stock exchanges have already been experimenting with the blockchain technology and NASDAQ, the Australia Securities Exchange, the Tallinn Stock Exchange, London Stock Exchange and the Korea Stock Exchange are the pioneers in this front. Nevertheless, these institutions due to the recordkeeping and disclosure requirements of SEC and their own securities commission for the public companies, do not seem utilizing all perks of blockchain technology. Currently, the use of blockchains focus on the issuance of securities for private companies and targeting institutional buyers who require less protection by the securities commission.

For instance, NASDAQ's Linq blockchain allows private companies to record the transfer of shares owned by founders, early investors and employees. This platform enables its customers to digitally record the ownership of the company, therefore, reduces the settlement time used for the delivery of shares and eliminates the need for 'traditional paper shares'. In fact, the NASDAQ public statement suggests that the adoption of this technology in public markets could reduce the standard settlement time from three days to 10 minutes since the payment and exchange of shares could be processed almost simultaneously without any reliance on a third party to approve these transactions. Furthermore, the system also allows investors and issuers to download and upload necessary documents necessary for the transactions. It is also important to note that this platform is already operative and 'Chain.com' was the first company, which recorded its issuance of shares to a private investor on the platform.

In the same token, the Australia Securities Exchange also plans to fully implement a similar system, which will be decided in August 2018. However, the Exchange makes clear that they will also be adopting a 'private blockchain' unlike in Bitcoin. Yet, they claim that settlement

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risk exposure will still be reduced by 99%, hence the systemic risk and capital costs will be lowered significantly.

Furthermore, blockchains do not only attract stock exchanges, there is also an increasing demand from individual companies to employ blockchains in their activities. For example, Overstock.com had a keen interest in blockchains and therefore it opted to create its own blockchain to record its shares. Hence, it invested in the company named 'tzero' which became its majority-owned subsidiary, to create a blockchain-powered platform through which it could issue its shares. And ultimately, Overstock.com became the first company in the history to issue and record its preferred shares on a blockchain trading system. This is also important to note that, this issuance of shares was also pre-approved by the SEC in the US, thus there is an already existing legal approval from the regulators.

As can be understood from the given examples, the use of blockchain in the context of securities is currently limited to 'private blockchains' and focuses on private securities which cannot be circulated freely as a result of the dense regulation in the secondary market. The already existing blockchain platforms have a centralized body which executes the transactions instead of individual nodes in a public blockchain. Therefore, there are still 'trust issues' hidden in the design of these platforms while they provide certainly higher levels of disclosure and speed. Even in its basic form, this private block-chain powered platforms are simply a step up from our 400-years-old traditional stock-exchange model.

Yet, there are also interesting examples where 'public blockchains' are operated for the issuance of securities to the public. To illustrate, 'DCORP' is a virtual venture capital company or also known as Decentralized Autonomous Organization (DAO), which is another use of blockchain that will be introduced later, running as a side-chain on Ethereum public blockchain. The company started its operations with a 'Initial Coin Offering' on Ethereum through which they sold the shares of the company to the Ethereum users who paid for the coins (representing the shares of the company) with their Ether (Ethereum tokens). The amount of Ether they paid by investors were converted into the special DCORP coins at a pre-specified rate and subsequently the investors were given access to the DCORP side-chain where they act as shareholders by having certain voting and ownership rights. Hence, we are already at a point where blockchain and smart-contracts are being implemented on public channels.

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Nevertheless, the ‘Wild West’ of ICOs seems to have come to an end as we know them on July 25, 2017 when the U.S. Securities and Exchange Commission announced that ICO tokens qualified as ‘securities’ and therefore they now officially became subject to federal securities law. Thus, although now there is more legal certainty in regards to such ‘shares’, it is unknown what will be the future implications of this development for the adoption of blockchains in the secondary markets for the use of non-sophisticated investors. It seems that as the stock exchanges already doing, Ethereum DAOs may target accredited investors or change their strategy to act as crowdfunding projects as their access to the public is much more limited than before since only private placements with very limited liquidity will be allowed.

- **Blockchain-Powered Securities Platforms and Corporate Governance**

The use of both private and public blockchains used in the context of securities exchange promises to increase ‘transparency in the transfer of securities and to provide ‘efficient execution and settlement for the transactions.’ These improvements, nevertheless, do not occur in isolation, in fact they have potential to alter the dynamics between managers and investors as well as companies and the regulators.

In terms of the effect of blockchains on the corporate level, one can see that blockchain technology allows investors to see the transactions in real-time regardless of the use of private or public blockchains through a distributed ledger. Even when only limited actors can access to a blockchain, the ‘increased transparency’ will at least improve the circulation of information for those permitted while in a public blockchain the transparency of transactions will be maximized. What this means is that the activities of the parties holding securities of a company will be disclosed to the market. Even when their names are kept completely ‘anonymous’ or only disclosed to the governmental agencies, the transfers of securities and public keys of investors will be more transparent than what today’s stock exchanges offer. Therefore, the managers, institutional investors, activist shareholders, parties preparing for a hostile take-over will be hesitating to make any move that will easily arouse suspicion. Consequently, such platforms will be improving corporate governance by preventing the opportunistic behavior of these actors who would prefer complete secrecy. This means that blockchains may reduce the agency problem in companies by providing a constant monitoring of the holdings of the managers and

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insiders who have the control over the company decisions while their ‘accountability’ for these actions will make sure that they act ‘more benevolently and rationally’

One interesting feature of blockchains is that they may increase transparency in the market itself, rather than within the companies as in disclosure rules which requires the release of identity for shareholders after reaching a certain stake of ownership in a public company and other insider ownership by managers and officers. The current approach of regulations simply discloses those running and controlling the company rather than their intent. Besides, even when the insiders are disclosed, insider trading is not necessarily committed by the insiders. Therefore, the current disclosure rules do not seem provide effective solutions in preventing insider trading. However, if public blockchains could be used in securities market, the transparency of the entire market, even with anonymity, could be useful to track the intents of parties transparently and prevent insider trading.

- **Blockchain eVoting**

The fact that securities can be represented on a distributed ledger also offers also some other solutions that can be utilized in the context of corporate governance. The simplest and already existing mechanism in this sense is the use of blockchains to record the votes during virtual shareholder that redefines the concept of ‘annual shareholder meetings’ or ‘AGM’.

To put it simply, blockchains can be used to create online platforms where shareholders make proposals or vote for the proposals within a pre-determined period. To do so, such platforms distribute online coins (or shares) to the eligible shareholders, allowing them to access to the voting platform where they can vote. In this way, the votes can be recorded in a safer, cheaper and faster way while also some of the specific problems faced in the AGMs such as inexact voter lists, incomplete distribution of ballots, and chaotic vote tabulation could be addressed by the introduction of streamlined procedures and the help of ‘smart contracts’. Besides, by digitalizing AGMs, companies may also increase the shareholder turnout in the decision-making by not requiring any physical attendance and motivating them to vote with the increased transparency, speed and accuracy in voting.

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- **Blockchain eVoting and Corporate Governance**

To look at the benefits of eVoting in detail, firstly, it can be observed that corporate eVoting may improve accuracy of elections by improving the reliability in the outcome of close corporate elections, increasing ‘transparency’ in the voting process and ‘decentralizing’ the power of management to affect the results in close elections. The literature argues that there has been a constant problem in vote tabulation in the close elections where is always a dispute regarding ‘when the polls are closed and whether all votes are counted’.<sup>136</sup> Moreover, the empirical data shows that close elections tend to result in favor of the management disproportionately, which may indeed support the previous argument. Besides, such data could also point out the effects of the last-minute lobbying carried out by the management which may obtain highly accurate information about the outcome of the voting while it is going on. Hence, eVoting could indeed improve the accuracy and precision of vote tabulation, reducing the potential negative effect of human imperfections inherent in managers on close corporate elections and therefore the agency problem. Managers, in such a system, have less room for selfish decision-making and acting irrationally in their actions, as a result of the decentralization of their power in controlling the process of voting.

Secondly, eVoting could also deal with what is known as ‘Empty Voting,’ which is to simply put the act of borrowing the voting shares to influence the election outcome. This, as can be understood, is a highly questionable conduct as it affects the ‘democratic aspect of elections’ by separating the ownership of shares from the voting rights, hence, the limiting the adverse effects of the election on the voting party. This exposes other shareholders to a higher risk since a party engaging in empty voting votes without being subject to its consequences while other shareholders are. This, currently, may not be an illegal activity, it is still disconcerting for the other shareholders who can be negatively affected if the empty voting is used to harm the company or to benefit from the consequences of certain election result. Since, eVoting platforms require online share registration and identification of the shareholders, there would be increased transparency. Thus, the transfer of shares to a suspicious party, could act as a warning mechanism to alert the management and other shareholders for a potential ‘empty-voting’. In fact, if the relationship between the management and an actor with ‘full empty-

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voting' power is not transparent, the 'empty-voter' could be considered as the 'hidden owner' of the company, which could have enough power to steer the managers to act in a certain way that may not be value-maximizing for the other shareholders. This could create an 'agency problem' and under a blockchain-powered and transparent securities platform, this problem in the gray-area of law and practice, could be dealt with.

eVoting promises to improve speed, transparency and accuracy of voting in corporate decision-making though 'decentralizing' the power of certain actors to affect the election outcomes, which could possibly attract more shareholders to cast their votes and increase the shareholder involvement from the perspective of corporate governance. Therefore, a much modern relationship between the shareholders and the management could be established by the utilization of this technology, which could certainly lower the agency costs in a corporation while improving the trust between the parties in this context.

As can be understood, this particular use of blockchains and smart contracts also utilize 'increased transparency and accountability and decentralization elements' to reduce the agency problem in voting process of a company by eliminating the human factors which also lead to 'the conflict of interests between shareholders and managers'. If this technology could be developed into better functioning samples and adopted by companies, it may completely remove the human factor from the voting process. Van der Elst and Lafarre (2017) even discuss the possibility of removing 'physical AGMs' as a practice in companies by allowing shareholders to vote over a certain time span on blockchain-powered online platforms. Yet, it does not mean that removing human interaction can reduce the agency costs in a company where the physical interaction between shareholders and management may also be value maximizing.<sup>145</sup> For instance, in physical AGMs, the shareholders of a company have a chance to confront the management with unexpected questions to expose them to 'accountability' without letting them to give a strategic and fabricated answer, which shows the importance of human interaction for the functioning of a public company.

Therefore, even when the agency problem can be removed from the process of voting, eVoting platforms simply leaves the literature with newer questions. Among many, some of these could be as following: 'To what extent, does a company need the physical human interaction between shareholders and management during the voting process? and how could the desired level of

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interaction be injected into the company's decision-making process?', 'Is it absolutely necessary to have a physical AGM?', 'Is it important to disclose the position of management, possessing the most transparent information about the operations of the company?', 'Shall eVoting platforms share tentative results during an on-going voting and how it could affect the election results?', 'Could tentative results drive shareholders to irrational decision-making when voters are anonymous?'...

- **Blockchain Accounting**

The concept of modern accounting can be traced back to Luca Pacioli's work 'The Collected Knowledge of Arithmetic, Geometry, Proportion and Proportionality', published in 1474. In his work, Pacioli describes 'the double entry accounting system, debits and credits, and the trial balance', which are still the **backbones** of our accounting principles in the 21<sup>st</sup> century. However, the adoption of the blockchain technology in accounting may be a major shift in the history of accounting.<sup>147</sup> Blockchains allow a single ledger of transactions to be distributed to permitted participants in real-time, make the double entry accounting system obsolete and limit the occurrence of disparity between multiple ledgers. Therefore, one can clearly see that blockchain accounting has potential to lower the costs tremendously by eliminating the need for bookkeepers or auditors by projecting the company transactions in real-time basis.

## CONCLUSION

The main goal of this research was to demonstrate how blockchains could be devised in the context of corporate governance and how this could affect the corporate landscape. What this technology promises is to 'solve the principal-agent problem' in certain corporate processes of a company by automating the governance rules on smart contracts and running them on immutable platforms. Having analyzed the features of the existing and proposed blockchain platforms, the research could indeed observe this effect in the working examples of blockchain-run platforms offering solutions for 'the issuance and transfer of securities, corporate voting and accounting', although there is still room for improvement before a mass adoption.

Nevertheless, removing the agency problem from the equation by automating certain corporate governance rules is not an isolated development, it puts other issues under the spotlight, two of

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which are ‘the level of beneficial human interaction’ and ‘the effect of transparency on performance of a company’. Especially when these automated governance mechanisms are bundled as a virtual company, the interaction between shareholders, management and other stakeholders becomes very minimal in these processes concerned while the transparency of company’s operations become extremely high. However, the research in the field of corporate governance focuses on resolution of the agency problem, thus, there has not been a complete framework that could respond to the perpetuating agency problems in some governance processes alongside the reduced human interaction and lack of corporate privacy in others.



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