IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Impact Of Technology On Corporate Governance: A Conceptual Framework

Dr. Devanjali Nandi Das
Associate Professor
Nopany Institute of Management Studies,Kolkata

Abstract

This paper is a conceptual attempt to overview the use of technology in the corporate governance system. According to some researchers, corporate governance practices will not be disrupted by new technologies while others suggest a considerable impact on the governance mechanisms due to use of technology.However, it is noted that existing regulatory structure of corporate governance will face challenges and require improvisations due to the disruptions caused by new technologies.In this paper we discuss the various aspects of artificial intelligence as technology ,the role of blockchain in corporate governance, the concept of decentralised autonomous organisations and influence of artificial intelligence in decision making of the board of directors.

Keywords : Corporate governance, Artificial intelligence, Decentralised autonomous organisation (DAO)

Introduction

Corporate governance is defined as the way in which corporations are governed.It is termed as the "the system by which companies are directed and controlled" (Cadbury 1992, p. 15). The regulations on corporate governance came into effect worldwide after the formulation of the Cadbury committee report in 1992 while in India it came into effect as regulation with the formation of Clause 49 of the listing agreement . The present study tries to identify the integrated theoretical framework illustrating the influence of technological advances in Artificial intelligence on corporate governance of institutions.It has been suggested in various studies that digitisation reduces information asymmetries and hence consumers prefer these technologies as they are more reliable.The governance of AI is a subset of corporate governance which oversees data governance and IT governance.The use of ethical and responsible AI can ensure the check on regulatory mechanisms of corporate governance.

The corporate governance system consists of both internal and external mechanisms.The external mechanisms consist of capital markets,law and regulations,accounting and legal services etc. , while internal mechanisms consist of board of directors and committees,compensation,internal controls,etc.(Gillian,2006).Artificial intelligence tools can be used in internal mechanisms especially in board of directors and an example of this

is appointment of an Artificial Intelligence named Alicia T to the leadership team of the Finnish software company Tieto in October 2016, which received a mixed response during that time(Hilb,2020) and VITAL(Validating Investment Tool for Lifesciences) has been given a status of director in observer status by Deep Knowledge Ventures(DKV) in 2014.However these kind of inclusion of AI in decision making at board is yet get acceptance at larger level.

The agency problem has been a crux of the corporate governance system and ways to reduce them are one of the main issues of the corporate governance. Pertin (2019) presents a comparable vision where a fused board integrates both management and operational capacities within an AI system. The concept supports automation of high level decision making at the executive level, thereby addressing the agency problem with shareholders.According to some researchers, corporate governance practices will not be disrupted by new technologies while others suggest a considerable impact on the governance mechanisms due to use of technology.However, it is opined that existing regulatory structure of corporate governance will face challenges and require improvisations due to the disruptions caused by new technologies. The last few months have been very important regarding the AI regulations.The US white house issued an executive order to regulate AI , the European parliament and European council agreed on a legislation concerning AI and the UK has hosted an AI summit that resulted in the formulation of the Bletchley declaration. In India , the GPAI summit was held in Delhi in 2023 and participating countries agreed to create an AI framework based on trust and safety.

This paper is a conceptual attempt to overview the use of technology in the corporate governance system. The paper is divided into four sections where in the first section we discuss the role of blockchain technology in corporate governance, the second section focuses on Decentralised Autonomous Organisations(DAOs) while the third section discusses the role of Artificial Intelligence in decision making of the board.We conclude the paper and discuss the limitations of use of artificial intelligence as a decision making tool in the last section.It has been opined by some researchers that use of AI technologies do not need to be put on regulatory requirements.According to this view, corporate governance practices will not be disrupted by new technologies.There is less consensus on the specific mechanisms and directions of this transformation, the studies suggest that existing regulatory structure of corporate governance will face challenges and require improvisations due to the disruptions caused by new technologies.

Block chain technologies and Corporate Governance

It has been opined by some researchers that use of AI technologies do not need to be put on regulatory requirements.According to this view, corporate governance practices will not be disrupted by new technologies.There is less consensus on the specific mechanisms and directions of this transformation, the studies suggest that existing regulatory structure of corporate governance will face challenges and require improvisations due to the disruptions caused by new technologies.Fenwick and Vermeulen(2018) identified four interconnected issues that hold relevance to the impact of new technologies on corporate governance.The authors classify them as firstly amplification effect meaning multiple technologies mutually accelerate each other, secondly disintermediation effects meaning placing digital trust that is an increased trust towards digital systems and algorithms.Thirdly retrofitting means integrating technical solutions to the existing system with the aim of future proofing the organisations. Finally , the technologies are fostering a phenomena called community driven corporate organisations and governance.

The blockchain technology holds the potential to address transparency and “principal-agent’ issue which is the crux of corporate governance mechanism.This technology can offer high transparency to safeguard the investors. It can also prevent corruption by addressing issues like related party transactions or retroactive dating of stock options.Additionally, blockchain technology can simplify trade executions and settlements,

by eliminating financial intermediaries in global markets. The stock exchanges across the world are using this technology, for instance NASDAQ conducted a successful blockchain technology test in proxy voting experiment on its Estonian exchange,the Shanghai stock Exchange(SSE) and Australian stock exchange.

While these technological advancements are promising, research suggest that machine learning algorithms can be more effective in selecting board members due to their capacity to analyse large volumes of data (Erel et al., 2018).According to Chiu and Lim (2018) , Artificial intelligence and Distributed ledger technology are commonly referred to as new corporate technology or CorpTech and carry huge transformation potential in every area. The authors propose an analytical framework categorised as incremental or facilitative, radical or disruptive and fundamental or structural to provide an understanding of the evolution of AI and DLT in the realm of corporate governance.The authors also formulate a theory explaining the influence of CorpTech on corporate governance and law.By examining factors propelling institutional changes, it is suggested that corptech is not likely to bring any changes in the power structure and incentive mechanisms governing shareholders , directors and managers.

In the digital system , the information is stored in wallets of the shareholders securely and the voting rights associated with shares can be directly transferred to the corresponding shareholders through Know your customers process. In the traditional model, intermediaries at each level must upload a list of beneficiaries for the beneficial shareholders to be identified. After this, the beneficial shareholders gain access to the Annual General Meeting (AGM) documentation and corresponding voting rights tokens which can be either used personally by shareholders or appoint a proxy to vote on their behalf.Moreover, blockchain technology can enhance the relationship between institutional investors and ultimate beneficiaries. For instance, research has resulted in the beneficiaries of the Dutch pension fund Pensioenfonds Detailhandel being able to actively participate in the decision-making process regarding the addition of a Sustainable Development Goal (SDG) to the sustainability policy of this institutional investor.

Decentralised Autonomous Organisations (DAOs)

The traditional model of corporate is built upon centralised organisations with relationships among shareholders,board of directors, corporate management and employees. In this type of hierarchical model , authority flows from principles(shareholders ,through corporate boards) to the agents (corporate management), while accountability flows in the opposite direction. This structure leads to agency problems which arise due to information asymmetry and shareholder coordination problems.Fenwick, McCahery, and Vermeulen(2018) propose the concept of 'platform governance' and explore the concept of community driven corporate governance mechanisms ,eliminating principal agent duality. In their model, platforms utilise underlying technologies like blockchain to provide peer to peer solutions, directly connecting creators to users.

One groundbreaking example of this alternative approach to firm governance is the Decentralized Autonomous Organization (DAO), initiated in Germany in 2016 by Christoph Jentzsch. Fenwick and Vermeulen (2018) talk about community driven corporate governance and DAO (Decentralised Autonomous Organisation).The argument given for DAO is that organisation governance can be automated as people don't always follow the rule.The argument given for DAO is that organisation governance can be automated as people don't always follow the rule. This type of governance structure does not have any managers,directors or employees and are built with smart contracts that run on blockchain platform Ethereum.It is suggested by authors that the DAO structure can provide various decision making controls like how funds would be distributed to a startup project.The Initial Coin Offering (ICO) has emerged as a creative and often unregulated avenue for startups to raise funds while bypassing traditional routes like venture capital or financial institutions. In the context of a database regulatory environment, there is a recognized need for more flexible

and inclusive processes involving startups, established companies, regulators, experts, and the public. This polycentric regulatory approach is already gaining traction in the financial industry, demonstrating an evolving regulatory landscape.

The Wyoming based LLC, CityDao, is involved in creating a blockchain native network city.The governance structure of this company include three platforms for communication and voting, two decision making levels , various quorum requirements and objection mechanisms outlined in its starters.Fenwick, McCahery, and Vermeulen (2019), opine that firstly in many instances , the founding team plays an important role in establishing DAOs and establishing the initial governance structure. Secondly despite the claims of operating without agents there is often centralisation of ownership in DAOs , creating an agency structure. Thirdly the decision making process within DAOs may exhibit a level of centralisation that appears inconsistent with their decentralised nature. As indicated in research the participation rate in voting is 10% in case of DeFi token holders and some DAOs it is as low as 1%.The utilization of blockchain technology can streamline shareholder decision-making by facilitating the direct and straightforward exercise of voting rights.Panisi, Buckley, and Arner (2019) describe how blockchain's enhanced transparency in shareholder voting provides substantial benefits, including (i) reducing errors and costs in shareholder voting; (ii) elevating the legitimacy and quality of the shareholder voting process, thereby enhancing 'shareholder democracy'; and (iii) promoting 'fairness' among different stakeholders.

AI in corporate governance

The management literature suggests that the routine work of the board can be given to AI but human intervention is necessary where we need judgement in decision making.Also it has been argued whether AI will be capable of making ethically correct decisions(Davenport et al.,2018, Pertin,2019).Secondly the corporate law in most of the countries suggest appointment of a natural person on the board and hence AI cannot be given the status of a director. According to Armour et al.(2019),the vast majority of AI models are supervised Machine Learning models that focus on applications that support human decision making(Assisted AI) or enable humans to do new things (Augmented AI). The question on determination of composition of board has been addressed in many corporate governance studies (Hermalin and Weishbach,1997).Cossin and Metayer (2014) give a similar approach regarding the roles of board of directors namely co-direction that is board of directors is responsible for strategic leadership and developing corporate strategy with top management , secondly controlling the top management and ensuring compliance with codes and thirdly coaching the top management team.This section covers how artificial intelligence can help the board in making these decisions.

According to Eroglu and Kaya(2022) AI is not legally recognised as a director of a company but instances of VITAL being a part of the board of director in observer status have been there. The authors find the role of AI in corporate board diversity and policy making.The authors conclude that the decision making authority cannot be passed solely on AI and human discretion is needed to reach the final verdict.The use of AI has been there since 1940s but have recently gained traction and today it is used widely in businesses in the areas of healthcare, finance,manufacturing,sales and marketing,production (Chiu and Lim,2018).The authors suggest development of AI as narrow,general and super.Narrow AI refers to make the machine learn the rules like the rules of playing chess and fitting the data regarding this into it so that it can take decisions based on it.General AI assembles more complex decision and resemble humans more for instance self driving cars.In this case data on errors caused by such cars is taken to develop a more robust model.Super AI is not distinguishable from human and is still in a developing stage.According to Chiu and Lim(2018) The companies are attracted towards ML models due to their capacity to analyse huge amount of data however it comes with risks of errors ,secondly ability of AI to recognise pattern efficiently and an example in this regard can be use of ML in Global Supply Chain Management especially in regard to IoT. Thirdly the companies are attracted to ML due its predictive analytics capabilities where they can get a competitive advantage over

forecasting data on sales and marketing. The board of directors has been the most important committee in corporate governance.If AI is used in board along with humans it can be hybrid board,single algorithm replacing all human directors(fused board) or the board will be composed of robo directors known as artificial boards.

Chiu and Lim(2018) observe disruptive innovation meaning creation of new markets and value networks leading to the disruption of the old ones.For instance if a robot is appointed as a director, the question arises on the validity of its vote as compared to its human counterpart. This specifically refers to the role of shareholders and directors/managers with different economic systems and ownership structures. According to Tegmark(2017), machine learning enables the machine to learn and derive conclusions based on a set of data and learning algorithms. The author also states that the concept of deep learning based on neural networks is most popular Here the role of Generative AI can be considered as the system which can adapt and learn continuously.It mainly refers to integration of machine learning models to generate new concepts based on large datasets.

The specialised AI also known as Narrow AI focuses on mainly the ability of computers to perform specific tasks such as huge calculations,learning the rules of a game etc(Fenwick, McCahery, and Vermeulen ,2019). Machine learning takes the capabilities of narrow AI further by enabling the machines to learn and formulate rules independently.AI can help in making decisions when numerous factors and large volume data has to be considered by the experts.Robots like IBM's Watson play a supportive role in intricate decision making processes.AI is also expected to be relevant to board functions ,particularly strategy and risk management.In corporate governance practices, the capability of AI in comprehending extensive data can provide useful insights into correlations between good governance practices and firm performance.

One of the key advantages of generative AI in predictive analytics is its ability to adapt and learn continuously. As it processes more data and gains experience, the AI model becomes increasingly accurate in its predictions.However, it is essential to note that while generative AI has shown remarkable promise in predictive analytics, it can give erroneous results. Predictions made by AI models are based on historical data and patterns, and they may not account for unforeseen events or changes in market dynamics. Human judgement and expertise remain crucial in interpreting and validating AI-generated predictions.While generative AI is a powerful tool, it should complement rather than replace human expertise, as human judgement remains essential in interpreting and contextualising the insights generated by AI models.

The AI usage in corporate governance has its limitations which need to be tackled carefully.One of the main challenges faced by the AI system can be data quality and bias.The use of inaccurate, irrelevant and incorrect data can lead to incorrect predictions by AI. Data collected and curated for AI training can carry inherent biases, which can lead to prejudices and discrimination. These types of errors can be reduced by carrying out bias audits, cleaning the data,using updated data sources or rectification of the errors.Another problem with usage of AI in decision making can be overreliance on technology which may interfere with ethical and social issues. Hence human interference is needed for balancing the technology with human judgement. The decisions made by AI can sometimes seem to be non-transparent due to the complexity involved in the AI models that make the decisions. This problem can be resolved with the use of explainable AI(XAI) to make the underlying factors more understandable . The regulatory and ethical issues regarding data privacy and transparency still remain a challenge that needs to be resolved.The organisations must ensure a strict compliance of these technologies with legal and regulatory requirements.

The risks associated with use of AI can be many, like disseminating misinformation,prejudice,bias and discrimination (Gonzalez et al.,2020,Zhang and Lu,2024). A study by IBM on Global AI adoption index,2023 report, states that around 59% of enterprise scale organisations are using AI for their business.This report

suggests that the primary areas of investment in this regard include R&D ,reskilling of workforce and building proprietory AI solutions.

Conclusion

The use of technology in corporate governance can result in a more efficient decision making by the board of directors as tools like AI can handle and analyse large amount of data.The European union's guidelines for trustworthy artificial intelligence promotes many positive corporate governance principles including a stakeholder oriented corporate purpose, diversity, non-discrimination and fairness.The blockchain based voting can lead to streamlining of processes and cost reduction. This is beneficial for both stakeholders and the corporate governance system of an organisation. However the regulatory requirements need to be fulfilled in order to make the technology work efficiently.Thus while technologies like blockchain and AI show substantial promise , the task of regulatory bodies remains to implement these technologies effectively.For instance, the risks associated with proxy voting can be mitigated by using right level of security and privacy.Research suggest that technologies like AI and DLT including blockchain are viewed to be offering more long term alternative. These technologies have the potential to create transparency without any third party interference.The time to shift towards a flatter and decentralised world has arrived . The decentralised system has the potential to offer greater convenience,accountability and trust.It can thus be concluded that technology can be used in corporate governance but it comes with its limitations. The corporations need to come up with solutions to tackle this problem for a more robust structure enabling an ethical and trustworthy artificial intelligence in governance.

Bibliography

Armour, J., & Eidenmueller, H. (2019). *Self-driving corporations?* ECGI Working Paper Series in Law.

Buła, P., & Niedzielski, B. (2021). *Management, Organisations and Artificial Intelligence: Where Theory Meets Practice*. Routledge.

Bullock, J. B. (2019). Artificial intelligence, discretion, and bureaucracy. *The American Review of Public Administration*, *49*(7), 751-761.

Cadbury, A. (1992). *Report of the committee on the financial aspects of corporate governance* (Vol. 1). Gee.

Callier, M., & Callier, H. (2018). Blame It on the Machine: A Socio-Legal Analysis of Liability in an AI World. *Wash. JL Tech. & Arts*, *14*, 49.

Chiu, I. H. Y., & Lim, E. W. (2021). Technology vs ideology: how far will artificial intelligence and distributed ledger technology transform corporate governance and business?. *Berkeley Bus. LJ*, *18*, 1.

Cossin, D., & Metayer, E. (2014). How strategic is your board?. *MIT Sloan Management Review*.

Davenport, T. H., & Ronanki, R. (2018). Artificial intelligence for the real world. *Harvard business review*, *96*(1), 108-116.

Erel, I., Stern, L. H., Tan, C., & Weisbach, M. S. (2021). Selecting directors using machine learning. *The Review of Financial Studies*, *34*(7), 3226-3264.

Eroğlu, M., & Karatepe Kaya, M. (2022). Impact of artificial intelligence on corporate board diversity policies and regulations. *European Business Organization Law Review*, *23*(3), 541-572.

Fenwick, M., & Vermeulen, E. P. (2018). Evaluating the Board of Directors: International Practice. *Lex Research Topics in Corporate Law & Economics Working Paper*, (2018-6).

Fenwick, M., & Vermeulen, E. P. (2019). Technology and corporate governance: Blockchain, crypto, and artificial intelligence. *Tex. J. Bus. L.*, *48*, 1.

Fenwick, M., McCahery, J. A., & Vermeulen, E. P. (2019). The end of 'corporate'governance: Hello 'platform'governance. *European Business Organization Law Review*, *20*, 171-199.

Gonzales-Bustos, J. P., Hernández-Lara, A. B., & Li, X. (2020). Board effects on innovation in family and non-family business. *Heliyon*, *6*(9).

Ballester, L., González-Urteaga, A., & Martínez, B. (2020). The role of internal corporate governance mechanisms on default risk: A systematic review for different institutional settings. *Research in International Business and Finance*, *54*, 101293.

Gramitto Ricci, S. A. (2019). Artificial agents in corporate boardrooms. *Cornell L. Rev.*, *105*, 869.

Hermalin, B. E., & Weisbach, M. S. (1988). The determinants of board composition. *The Rand journal of economics*, 589-606.

Hilb, M. (2017). The co-evolution of digital ecosystems. In M. Hilb (Ed.), *Governance of digitalization* (pp. 108–114). Bern: Haupt.

Hilb, M. (2019). *Unlocking the board's data value challenge.* Directorship (pp. 60–61).

Hilb, M. (2020). Toward artificial governance? The role of artificial intelligence in shaping the future of corporate governance. *Journal of Management and Governance*, *24*(4), 851-870.

Hickman, E., & Petrin, M. (2021). Trustworthy AI and corporate governance: the EU's ethics guidelines for trustworthy artificial intelligence from a company law perspective. *European Business Organization Law Review*, *22*, 593-625.

Panisi, F., Buckley, R. P., & Arner, D. (2019). Blockchain and public companies: A revolution in share ownership transparency, proxy voting and corporate governance?. *Stan. J. Blockchain L. & Pol'y*, *2*, 189.

Petrin, M. (2019). Corporate Management in the Age of AI. *Colum. Bus. L. Rev.*, 965.

Tegmark, M. (2018). *Life 3.0: Being human in the age of artificial intelligence*. Vintage.

Zhang, S., & Lu, C. (2024). Non-executive directors and corporate risk-taking: Evidence from China. *Accounting & Finance*.