

APPLICATION OF BLOCKCHAIN IN CORPORATE GOVERNANCE: ADAPTABILITY, CHALLENGES AND REGULATION IN BRICS

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The digital revolution has changed many facets of daily life over the past few decades. Think about how personal computers and smartphones are becoming more powerful and smaller, how the Internet has spread throughout the world and led to the emergence of new forms of social interaction, and how there is always access to massive volumes of automated algorithms processing cloud-based data that is utilised in a number of settings. Similarly, it has been observed that blockchain technology has the potential to provide clever fixes for traditional inefficiencies of corporate governance, particularly in the dynamically evolving paradigm in the emerging economics like BRICS nations i.e., Brazil, Russia, India, China, and South Africa. This paper aims to explore the possibilities of adopting blockchain technology within the arrays of internal governance mechanisms while emphasizing on the redressal to legal and regulatory challenges. The paper also critically analyzes the implication and utility of this evolved technology in the corporate governance systems of BRICS nations.

Keywords: BRICS; blockchain; digital technology; corporate governance; regulations.

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Introduction

Blockchain is a cutting-edge technology that can, among other things, provide clever solutions for long-standing inefficiencies in the corporate governance area. However, the euphoria about the phrase “blockchain” is mostly centred on speculation with digital tender like bitcoin. Whereas, corporate governance is typically governed by a combination of hard law – binding provisions in company legislation that govern the fundamental structure of a company’s governance, the responsibilities of directors, and the rights and safeguards for minority shareholders – and soft law – best practises standards outlined in corporate governance codes. The theories of Corporate Governance also formulate contractual and regulatory solutions and concentrates on the issue of how to influence company board members to behave considering the best interests of all the stakeholders. While, Corporate law seeks to mitigate agency concerns by requiring a range of required disclosures, such as yearly financial statements and ad hoc securities law disclosure, as well as special reports, such as on CEO remuneration and, more recently, on sustainability and diversity issues, as well as measures that might align incentives, such as well-structured executive pay.¹ Further, according to Jensen, these solutions are typically expensive and will cost shareholders and delegated directors money for monitoring and bonding. The Annual General Meeting (AGM) is when a significant portion of this direct (collective) shareholder monitoring occurs. On behalf of the shareholders, the supervisory board or the non-executive directors also keep an eye on the management board or the executive directors. The external auditor also contributes to the system of checks and balances. Jensen also said that, despite thorough monitoring and bonding, there will be some disparities between the agent’s decisions and those that would maximise the welfare of the principle. This expense to the main is known as a “residual loss.” Accordingly, numerous research, including those conducted outside the corporate sphere, have been produced as a result of agency theory, which seeks to improve the legal framework governing the relationship between directors and shareholders in corporations. However, despite these attempts, agency cost can never be completely eradicated, according to the idea of Jensen, unless the basic corporate feature of a delegated management structure can be removed.²

¹ Michel Callon et al., *Acting in an Uncertain World: An Essay on Technical Democracy* (2009).

² Mark Fenwick & Erik PM Vermeulen, *Technology and Corporate Governance: Blockchain, Crypto, and Artificial Intelligence*, 48(1) *Tex. J. Bus. L.* 1 (2019).

1. Overview of Blockchain Technology

Blockchain can be considered as a distributed ledger that may record transactions between participants in a verifiable and immutable fashion. In a blockchain system, which operates on a decentralised peer-to-peer network, a public ledger or a private ledger tracking all executed transactions is employed. This system sets itself apart from traditional ledgers by being transparent; as opposed to a traditional ledger, which overwrites previous records, every advanced transaction is categorized with other transactions in a block and is added in the blockchain system in a linear, systematic and sequential manner.³ Traditional ledgers are stored centrally in the infrastructure of a single organisation, such as all bank clients' accounts or the accounts of any other trusted central party. As a result, the ledger contains all of the previous blockchain transactions. Miners are responsible for adding new blocks to the blockchain and validating transactions by competing to solve challenging coding issues. When a modification is made to one of the decentralised databases that the ledger is mirrored in, all of them are simultaneously updated.

In the absence of a trusted middleman, transaction validation is consequently dependent on a mechanism for obtaining consensus among all interested parties or nodes. To further assure the immutability of each transaction, each block includes a copy of the block header from the preceding block. Because the blocks are linked in this way, changing a transaction requires changing not just the relevant block but also all subsequent blocks. As a result, once a block is finished, it is regarded as immutable and is added to the ledger forever. This implies that blockchain technology may foster both trust and transparency between parties. Smart contracting is only one of the many uses for which blockchain technology may be applied. Smart contracts keep track of agreed-upon terms and automate payments when they are met. A smart contract is a syntax that may be used in conjunction with blockchain technology to negotiate, execute, and enforce agreement stipulations. Because the terms and conditions are kept on the blockchain, they can no longer be amended, avoiding the danger that one of the parties may want to renegotiate the agreement. Smart contracts may be implemented on a variety of platforms. The most well-known is Ethereum, a decentralised platform that allows for smart contracts. Ethereum users may create their own processes and apps by utilising smart contract programming. The Ethereum Wallet allows users to develop and execute smart contracts, generate their own digital currencies, and access decentralised apps on the Ethereum network. As a result, smart contracts are used for a range of purposes, including awarding shares or membership in an organisation.

For parties looking to enter into any kind of transaction or agreement, blockchain technology often offers two crucial components: Transparency is achieved by

³ Tien T.A. Dinh, et al., *Untangling Blockchain: A Data Processing View of Blockchain Systems*, in *IEEE Transactions on Knowledge and Data Engineering* 1366 (2018).

a verifiable way of documenting transactions, and trust is achieved through the immutability of these transactions. These two components have an impact on corporate governance. It can be observed under the existing governance of major firms. Minority shareholders usually rely on their appointed board members, who may act against their and these owners' best interests, leading in agency costs. It can be contended that this technology could provide a fix for the agency issue and its associated expenses. Actually, if smart contracts allow the agency link between shareholders and board members in a blockchain system, established transparency and trust may decrease practically all agency expenditures that parties must endure.

The founders of Slock introduced the first decentralised autonomous organisation, often known as "The DAO," in mid of 2016. It uses the Ethereum blockchain platform and is also known as the "employee-less corporation." Based on their ownership position, the shareholders of this decentralised venture capital fund, who used Ether to purchase virtual DAO tokens, had complete power over it. Through the sale of its virtual tokens to its shareholders, the DAO raised more than \$150 million USD to put into initiatives that would bring in profits for its investors. Additionally, stockholders might engage in secondary trading by selling their virtual currency on a variety of websites. The White Paper states that shareholders might exchange these DAO tokens for Ether tokens through "a difficult, multi-week process known as a DAO Entity 'split'" and that they could also transfer these DAO tokens on the Ethereum network. The DAO was "hacked" in mid of 2016, by an unidentified "hacker," who took advantage of the rules and conditions of the smart contracts to allow for the theft of between approximately 50 million USD from the fund. One of the cornerstones of blockchain technology, trust between parties, was undermined when the majority of blockchain shareholders opted to reclaim the cash, modifying the purportedly immutable code.⁴ This situation is strikingly similar to the theory on corporate law that we presented at the beginning of this contribution, according to which corporations typically have centralised management that is capable of making decisions quickly and effectively because the allocation of power to anatomic shareholders is inappropriate in practise. Actually, it appears that in the case of the DAO, the lack of centralised authority also results in a less than ideal scenario. It follows that by eliminating the requirement for a central delegated authority, blockchain technology has the potential to reduce agency costs in the business setting. However, the DAO has demonstrated to us that organisations that are decentralised can still experience governance issues. The agency connection between corporate actors may still be facilitated by smart contracts, opening up new opportunities for building trust and transparency. The following part focuses on how the AGM may be improved and

⁴ Marc Andreessen, *Why software is eating the world*, Wall Street Journal, 20 August 2011 (Aug. 10, 2023), available at <https://www.wsj.com/articles/SB10001424053111903480904576512250915629460>.

modernised to leverage blockchain technology and smart contracts to reduce the agency costs for both company and its stakeholders.

On these lines, few corporations are utilizing some of the popular blockchain systems for improving their governance. Few of these such systems are:

Stellar is one of the most used systems wherein a distribution ledger is built on the blockchain that starts asset value transactions. When it comes to trading fiat money and cryptocurrencies, it is like a wave. The Star Network will benefit all mobile wallets, smart devices, and financial applications. Users may comprehend financial transactions without depending on a closed system thanks to the Star Compatibility Protocol (SCP).⁵

Tezos is the independent decentralised blockchain network that establishes the actual commonwealth of digital assets. It is built on a platform for decentralised applications and smart contracts akin to Ethereum.⁶

Corda is a cutting-edge blockchain network that enables businesses to engage with smart contracts directly. Only registered users can access data throughout the whole network using the authorised blockchain application Corda. It lacks any built-in tokens or cryptocurrencies. It functions in an authoritative manner, which enhances anonymity and offers exact control over access to digital information.⁷

Hedera is a quick, reliable, and comparable platform called Hedera Hashgraph Network, it presents a new kind of distribution consensus that does not require the computation of a difficult proof-of-work technique. It gives developers the tools they need to create a new breed of modular, decentralised apps. The Hedera Hashgraph Board is the platform's governing body, and the Hedera Governance Rules ensure that no one person or small group has undue influence over the platform as a whole.⁸

Ripple intends to reduce chargebacks between banks, enterprises, payment providers, and exchanges of digital assets. It permits international transactions using the virtual currency known as "Ripple" which, together with ether and bitcoin, is currently one of the most well-liked cryptocurrencies.⁹

Quorum is created by JP Morgan, created i.e., referred as a replica of Ethereum. It alters Ethereum's fundamental design, making it possible for alerts to be added

⁵ Leo M. Bach et al., *Comparative Analysis of Blockchain Consensus Algorithms*, in 41st International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO) (2018).

⁶ Lennart Ante, *Smart Contracts on the Blockchain – A Bibliometric Analysis and Review*, 57 *Telemat. Inform.* (Article 101519) (2021).

⁷ Shafi Mohamad et al., *Blockchain Technology: Implications for Accountants*, *Int'l J. Innov. Creativity Chang.* 101 (2020).

⁸ Leemon Baird et al., *Hedera: A Public Hashgraph Network & Governing Council: The Trust Layer of the Internet*, White Paper, Hedera (2019), at 9–10 (Aug. 10, 2023), available at https://hedera.com/hh_whitepaper_v2.1-20200815.pdf.

⁹ George C. Dumitrescu, *Bitcoin – A Brief Analysis of the Advantages and Disadvantages*, 5(2) *Glob. Econ. Obs.* 63 (2017).

more rapidly and effectively. It uses a variety of voting-based algorithms to process hundreds of transactions per second, unlike other blockchain networks.¹⁰

Ethereum is renowned for its capacity to carry out smart contracts on personal blockchains. To obtain the best discounts, use the Ethereum Virtual Machine (EVM), which offers an Ethereum runtime environment. Without permission, it is a decentralised blockchain network created for private usage rather than public use.¹¹

Table 1: **Utility and Comparison of Blockchain Systems**

Usage	Industry-Fit	Smart Contracts	Consensus Algorithm
Blockchain Systems			
Codra	Financial Sector	Yes	Pluggable Framework
Ripple	Financial Sector	No	Probabilistic Voting
Quorum	Cross Sectors	No	Majority Voting (e-Voting)
Ethereum	Cross Sectors	Yes	Proof of Work

2. Application of Blockchain in Corporate Governance Mechanisms

Annual General Meeting or AGM is crucial to shareholder monitoring theoretically. In further detail, the traditional AGM serves three purposes for the shareholders: it informs them, provides a forum for discussion and question-and-answer sessions, and allows them to make choices. One of the main purposes of AGMs is frequently thought to be decision-making. As a result of corporate owners' inadequate decision-making, the board of directors is in charge of business strategy and day-to-day decision-making. However, shareholder approval is still necessary for some corporate acts deemed critical to the owners, such as a merger or the nomination of directors. Despite playing a significant role in corporate governance, the AGM's traditional format remained the same. Despite the modernisation of company law and decades of changing corporate governance, many rules that regulate shareholder rights and AGM processes come from the 19th century.¹²

¹⁰ Melanie Swan, *Blockchain for Business: Next-Generation Enterprise Artificial Intelligence Systems*, 111 Adv. Comput. 121 (2018).

¹¹ Mayukh Mukhopadhyay, *Ethereum Smart Contract Development: Build Blockchain-Based Decentralized Applications Using Solidity* (2018).

¹² Mark Fenwick et al., *The End of "Corporate" Governance: Hello "Platform" Governance*, 20 Eur. Bus. Organ. L. Rev. 171 (2019).

To date, the information, forum, and decision-making roles of the AGM have all been at least substantially hollowed out. First, all material must be published and is frequently done so well in advance of the AGM due to market securities law and other disclosure duties. Second, experience suggests that the existing forum role of the AGM is mostly unnecessary for shareholders. According to research, whereas listed businesses may have thousands of shareholders, on average eight owners in a wide sample of Dutch corporations reported concerns. Additionally, during the AGM, there is typically less time available, and shareholders' speaking time may be limited. A normal general meeting must be completed within six hours., for instance, the Bundesgerichtshof determined that a provision in the articles of association limiting speaking and questioning time complies with the German Stock Corporation Act. It is deemed fair to set a speaking time cap of ten minutes per shareholder individually and forty-five minutes overall for all shareholders. Further, in actuality, the decision-making process has flaws as well. Economic theory predicts that, because voting costs are often higher than the benefits, small shareholders in particular will have minimal incentives to participate in decision-making. For instance, a tiny shareholder's voting stake has about negligible marginal impact, yet these shareholders must pay voting expenses. Furthermore, minority shareholders have the option to dispose their shares if they are unsatisfied with the management, free-riding on the monitoring efforts of other, bigger shareholders.¹³

Especially in the case of international voting, shares are typically held through intricate networks of middlemen. The vast majority of shareholders do not buy their shares directly from the listed businesses; instead, they open accounts with their national banks or other financial intermediaries, which either have direct accounts with the Central Securities Depository (CSDs). Scholars have been debating the cost of cross-border shareholder involvement and the chain of intermediaries for more than ten years. Although there are additional barriers, all of these middlemen raise the transaction costs for shareholder engagement. As specified in the Shareholder Rights Directive (EU Directive), the identification of shareholders is essential to allow distant shareholder participation in the AGM, for example, via the nomination of a proxy. Further, the other aspects of transparency, verification, and identity are the key challenges with the present systems of intermediaries and distant voting, and these issues are pertinent to the advantages of blockchain technology. It is evident that no existing transactions are overwritten when a new transaction is added to the distributed ledger. The shareholders, who may inspect their transactions in this system of blockchain, administer similar decentralised databases in which the ledger is copied and automatically updated. Because the blocks that contain transactions are chained together, making it impossible to change just one block without also changing every other preceding block in the ledger, security is established. Additionally, in a blockchain-based system, a shareholder's

¹³ Geoff Colvin, *The 21st Century Corporation: Every Aspect of Your Business Is about to Change*, 172(6) *Fortune* 39 (2015).

digital wallet identification or an external authentication evidence can be maintained in the blockchain to identify them. The firm and shareholders with a sufficient number of shares may submit proposals in a private blockchain operated by the company and accessible exclusively to shareholders. With the use of smart contracts, the private ledger may be set up so that the blockchain contains all pertinent data, including the access rights and majority rules outlined in the AoA and the contemporary legislation. When a specific proposal is placed into the blockchain, shareholders who possess company shares are immediately notified and have a limited amount of time to exercise their voting rights. Following a cut-off point, the results of the vote may be made public immediately, and a majority is required to make the decision binding and verifiable within a certain time limit. Although shareholders can monitor their transactions, no shareholder should be able to see the outcomes of other shareholders' votes. Due to their existing enterprise resource planning (ERP) systems, such as SAP, and the fact that implementing blockchain technology is an expensive activity, the main firms in the world have only partially done so. As a result, even the huge companies are investing slowly. According to the enterprise blockchain survey conducted by SAP (shown in Figure 1), businesses recognise the efficiency and benefits of blockchain technology, but the costs are higher and the returns are lower than anticipated in the short term. However, in the long run, it will be advantageous and give businesses a competitive edge similar to what ERP did two decades ago.

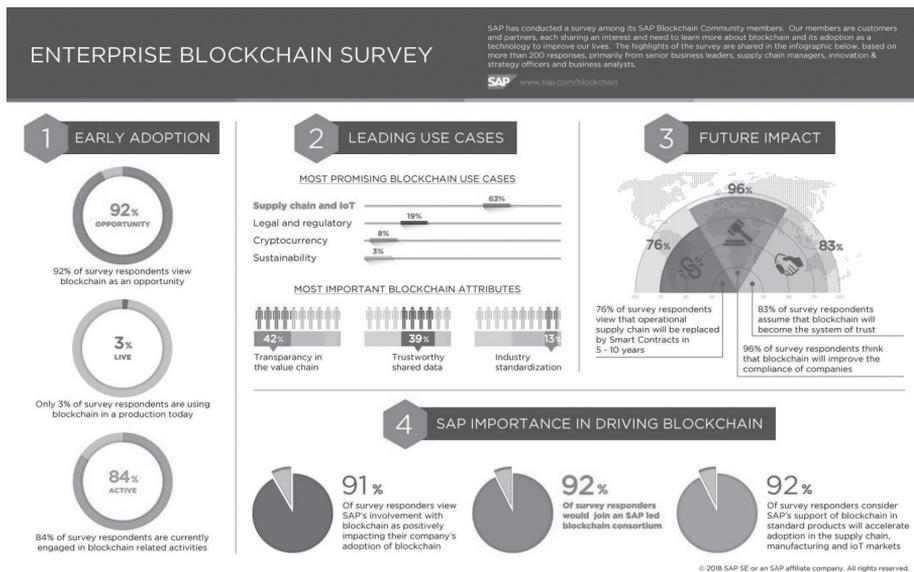


Fig. 1: Enterprise Blockchain Survey by SAP¹⁴

¹⁴ Naveen Rajora, *Blockchain Technology – A Basic Need of the Pharmaceutical Industry*, 10(4) Int'l J. Adv. Res. Comput. Sci. Eng. 26 (2022).

3. Adoption of Blockchain in BRICS Nations

The BRICS¹⁵ countries i.e., Brazil, Russia, India, China, and South Africa are well known for having a variety of economies, yet they also have particular difficulties fostering accountability, transparency, and trust in their business sectors. Accordingly, there are few corporate governance challenges that BRICS nations commonly face i.e., widespread corruption, an absence of transparency, poor shareholder engagement, and ineffective regulatory frameworks. These concerns have often discouraged the foreign investment, resulted in impeding economic expansion, and eroding public confidence in corporations. Thereby, the newly introduced technology of blockchain provides innovative redressal to these problems. As a matter of fact, the effective management of supply chains are common problems in nations like Brazil and South Africa. Hence, the inclusion of transparency in the supply chains may be greatly aided by blockchain technology's capacity to produce an immutable record. Whereas, by producing a transparent and traceable record of financial transactions, blockchain's transparency can operate as a disincentive against corrupt practises. This may aid in regaining public confidence in businesses and regulatory agencies. For instance, 'Camara-e.net' which is a Brazilian association of electronic commerce has adopted this technology to ensure the security and transparency of shareholder's voting and participation. This initiative has lately aimed to enhance corporate governance by ensuring the integrity of shareholder decisions.¹⁶ While, the central securities depository of Russia i.e., National Settlement Depository (NSD), has been exploring the implications of blockchain technology for a number of use cases in the financial sector. They have further evaluated the possibilities of transiting shareholder voting and proxy mechanisms on blockchain through their pilot projects.¹⁷ Similarly, adoption of blockchain technology for interbank settlement and clearance was successfully executed by the South African Reserve Bank. Likewise, in China, Ant Financial which is a subsidiary of renowned Alibaba Group has unveiled a blockchain-based platform for monitoring charitable donations. Similarly, Indian political organisations are migrating

¹⁵ BRICS is an acronym derived from the initials of Brazil, Russia, India, China, and South Africa, which are its members. It was established originally as BRIC in Yekaterinburg (Russia) in 2009, with Brazil, Russia, India, and China as its members; see the relevant documents of the summit at Events, President of Russia, 16 June 2009 (Aug. 10, 2023), available at <http://en.kremlin.ru/events/president/news/4478>. South Africa later joined the platform in 2010 (BRICS (Brazil, Russia, India, China and South Africa), South African Government (Aug. 10, 2023), available at <https://www.gov.za/about-government/brics-brazil-russia-india-china-south-africa-1>).

¹⁶ Federico Panisi et al., *Blockchain and Public Companies: A Revolution in Share Ownership Transparency, Proxy Voting and Corporate Governance?*, 2(2) Stan. J. Blockchain L. & Pol'y 189 (2019)

¹⁷ Vedat Akgiray, *The Potential for Blockchain Technology in Corporate Governance*, OECD Corporate Governance Working Papers No. 21 (2019) (Aug. 10, 2023), available at <https://www.oecd-ilibrary.org/docserver/ef4eba4c-en.pdf?expires=1700190077&id=id&accname=guest&checksum=23C9152E1959E0C3EDCB411A4F1AF342>.

to nations with more benevolent legislation in the current regulatory climate. As a result, India has extremely limited access to jobs, money, local creativity, and positions in the absence of a thriving talent ecosystem. From global perspective, the countries like Estonia, UAE, Sweden, USA, Georgia and the United Kingdom have already embraced blockchain technology.¹⁸ The development of blockchain technology is being led by the public sector and the government. Moreover, Dubai projects that switching all government transactions to the blockchain by 2020 will result in savings of up to 1 trillion pages of paperwork, almost 30 million hours of work, and close to 400 million kilometres of travel. India is painstakingly moving towards accepting the blockchain. It is still up for debate in several Indian states whether to use Blockchain. For instance, a Swedish business has established a cooperation with Chromaway-11 in Andhra Pradesh to safeguard citizen data on the blockchain and investigate blockchain uses in other fields including smart cities and transportation. Document No. 12 from the Reserve Bank of India's Institute for Development and Research in Banking Technologies covers the use of blockchain technology in India's banking and financial sectors (IRDBT). Despite considerable progress, India is only just beginning to adopt blockchain technology.¹⁹

This initiative has exemplified the potential of blockchain in enhancing transparency and accountability in various sectors.

There are other potential areas where this technology can be implemented such as Shareholder's voting process. Considering the dispersed nature of shareholding, the minority shareholders in BRICS nations can cast their respective vote using blockchain based system. This will ensure the transparency and accuracy in the entire process, thus, ensuring the increased participation. On the similar lines, the application of smart contracts can be adopted to automate various internal governance processes such as distribution of dividend, contract enforcement, and regulatory compliance. Thereby, the concerned regulatory authorities fetch an access to real-time data of corporate decisions while confirming the appropriate adherence to legal requirements. From other perspective, China, who is duly acknowledged for its extensive global supply chain network can make an effective utilization of the transparent and traceable ledger feature of blockchain, to track the flow of commodities and ensuring ethical sourcing.

¹⁸ Maciel M. Queiroz & Samuel F. Wamba, *Blockchain Adoption Challenges in Supply Chain: An Empirical Investigation of the Main Drivers in India and the USA*, 46 Int'l J. Inf. Mgmt. 70 (2019).

¹⁹ Aarti Patki & Vinod Sople, *Indian Banking Sector: Blockchain Implementation, Challenges and Way Forward*, 4(1) J. Bank. Fin. Tech. 65 (2020).

4. Practical Efficacies and Regulatory Challenges

According to the aforementioned conjectures, it is apparent that Blockchain technology offers various methods to catalyse the governance in corporate organizations. However, the technology also has few below-mentioned challenges which are yet to be addressed. With continuously growing ledger volumes, scalability in blockchains appears to be a well acknowledged concern. The issue appears to be more evident for public blockchains, since each network user must store a complete, immutable copy of the ledger, which is the fundamental building block of blockchain integrity. This goes against the fundamental tenet of decentralisation since it necessitates constantly expanding storage space for all users and can become a significant barrier to entry. Expanding ledgers ultimately lead to issues with storage capacity and processing power. In addition to this, identity and behaviour are both parts of privacy.²⁰ The issue of privacy has always been out of control, both legally and technologically. Big financial institutions and technological corporations already hold a virtual monopoly on data regarding identities and transactions. Private data is now by far the most valuable asset, entirely and centrally housed on these corporations' servers. Artificial intelligence and big data analytics are two of the most researched new technologies for creating business models that use private data. The end outcome is a scenario where people freely and voluntarily divulge their personal information before losing control over it. This is a centralised network-specific issue that is inherently difficult to address through rules and regulations alone. As was previously indicated, a distributed ledger constructed on the blockchain can result in a workable solution to the data monopoly issue. Further, as blockchain technology becomes more widely used across many businesses, governance of the system is frequently mentioned as a crucial concern.²¹ The Ethereum DAO event, in which a token holder utilised a technical flaw to transfer nearly one-third of the network's entire value to their own account, brought the matter to more people's notice. Blockchains for cryptocurrencies frequently experience governance breakdowns. A recent theft of digital currency valued at more than \$500 million from the Coincheck exchange in Japan was primarily the result of a poor governance framework, which in turn was brought on by a lack of standards to allow prompt regulatory action.

Although blockchain technology is still in its infancy, there is a rapidly expanding genuine interest in its possibilities. In contrast to other disruptive technologies like TCP/IP and the internet, the number of use cases is constantly growing, and there appears to be a greater international interaction between important stakeholders

²⁰ Raj Jain, *Extending Blockchains for Risk Management and Decision Making*, Invited talk at Innovation and Breakthrough Forum (2018).

²¹ Stylianos Kampakis, *Auditing Tokenomics: A Case Study and Lessons from Auditing a Stablecoin Project*, 5(2) J. of The British Blockchain Assoc. 1 (2022).

from various nations. Regulators have also begun assessing the growth of blockchains and taking appropriate action. However, practically all of the concrete regulatory responses made to yet focus on blockchain-related elements like cryptocurrencies and initial coin offerings (ICOs), as well as on certain legal matters like Know Your Client (KYC) and Anti-Money Laundering (AML) compliance programs.²² There isn't yet a thorough regulatory response to blockchain as a whole. Most authorities have this view of blockchain as a comprehensive new business model. In regard to this, regulators are working to conceive and comprehend the potential fundamental and transformative consequences of blockchains for economies and society, much like the majority of individuals and institutions. Blockchain terminology and standards are not widely adopted since the technology is still in its early phases of development. Although this is the case, certain jurisdictions have begun to pass new rules and regulations. There is a chance that new laws will have unintended consequences and require modifications in the future since technology is still developing. Additionally, it is frequently feasible to regulate a firm through extensive and hence expensive regulation, which creates a barrier to entry for creative start-ups. Independent local or national regulation may also lead to legal ambiguity in the absence of a standard worldwide understanding of a new technology.²³ Some jurisdictions have come to the conclusion that it is unsafe to wait and see as well as premature to introduce new regulation in light of the limitations of the aforementioned views. They have opted to offer sandboxing chances for new models as well as regulatory guidance on how new technology fit within current legal frameworks.

In reference to the BRICS nations, the Blockchain technology is still existing in a regulatory grey area as the respective governments are still deliberating how to position themselves on this technology. Consequently, leading to lack of thorough legal frameworks for effectuating the proper regulation. This uncertainty may deter the corporations from adopting blockchain for corporate governance. Furthermore, in rural regions of the nations like India, China and Brazil, there is an inadequacy in accessing to the internet and improper technological infrastructure.²⁴ Hence, the blockchain, which requires robust digital infrastructure, may not be adopted in these regions. Another challenging issue is the conflict between data privacy regulations of respective nations and blockchain's transparency. It has been evidenced that the immutability and transparency in governance model offered by blockchain technology contradict with privacy laws stringent privacy regulations like EU's General Data Protection Regulations (GDPR). Furthermore, protecting intellectual

²² Stuart Cunningham, *Joseph A. Schumpeter, Capitalism, Socialism, and Democracy*, 16(1) *Int'l J. Cult. Pol'y* 20 (2010).

²³ Julia Black, *Proceduralisation and Polycentric Regulation*, *Especial 1 Direito GV L. Rev.* 99 (2005).

²⁴ Rustam Lalkaka, *Business Incubators in Developing Countries: Characteristics and Performance*, 3(1-2) *Int'l J. Entrep. Innov. Mgmt.* 31 (2003).

property presents a variety of challenges. Whereas, the decentralised nature of blockchain technology can make it more complex, hence, the BRICS nations ought to cooperate together to develop standardized Intellectual Property frameworks which are specifically designed for blockchain technology, as this would bring clarity and promote innovation.

Conclusion

In this article, the possibilities presented by blockchain and smart contracting technologies were discussed thoroughly. As per the above-mentioned discussions, the adoption of blockchain technology has a number of intriguing advantages for corporate governance. Yet, it is not a universally applicable solution. The regulatory, technological, and organisational aspects must be carefully taken into account for the successful integration of blockchain into corporate governance. Accordingly, the effective cooperation between regulators, corporations and technology specialists is an essential element to create an ecosystem that can fully utilise blockchain's potential while minimising hazards. The technology may become more important in influencing corporate governance practises within the BRICS group due to the dynamic technological and legal landscapes in each nation. In reference to few corporate scandals in India and Brazil, implementation of blockchain-based solutions for recording financial transactions and board decisions can provide a transparent and auditable trail, making it difficult for unscrupulous executives to manipulate data for their personal gains. Additionally, the BRICS countries play a significant role in global trade and commerce. Thus, adoption of blockchain technology can streamline international trade and increase trade productivity. Hence, these nations can improve the element of transparency, efficiency, and accountability in their corporate sectors by embracing this technological advancement. However, each nation is expected to cooperate to develop enabling regulatory frameworks, methods of spreading awareness among stakeholders, and legislate stringent legal structures to address technology issues such as data privacy, securing intellectual property, preventing cyber related crimes and others. Finally, it is imperative to acknowledge that blockchain technology is not a panacea rather it's a tool which can offer transparent, efficient, and accountable corporate governance practices.

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