

The Challenge of Emerging Technologies for Effective Corporate Governance in the Digital Age

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Corporate governance is a central and dynamic aspect of business. The term 'governance' is derived from the Latin word 'gubernare', which means to steer, often in the context of navigating a ship. The term suggests that corporate governance encompasses the function of direction rather than mere control. One of the most widely accepted definitions is provided by the Organisation for Economic Co-operation and Development (OECD), which describes corporate governance as the process of directing company operations and managing relationships between shareholders and stakeholders (OECD, 2004). Effective corporate governance fosters trust, transparency, and accountability. This, in turn, encourages long-term investment, promotes sustainable economic growth, and ensures financial stability. It ensures that companies are managed responsibly, aligning their actions with the interests of stakeholders.

Before the year 2000, corporate governance received limited attention, mostly during periods of economic difficulty. However, major corporate failures such as One.Tel and HIH Insurance in Australia (2001), Parmalat in Italy (2002), and Enron and WorldCom in the United States (2003), intensified global scrutiny on governance practices (Barney, 2009). These corporate failures, many of which revealed significant weaknesses in financial oversight, internal controls, and board accountability, emphasised the urgent need for robust governance frameworks. In response, the United States enacted the Sarbanes-Oxley Act in July 2002, aimed at enhancing financial reporting integrity and corporate accountability. Subsequently, in January 2003, the Higgs Report and the Smith Report were published in the United Kingdom (UK), both of which sought to strengthen the role of independent directors and audit committees within corporate governance structures (Dibra, 2016).

The governance framework globally influences corporate governance practice in Malaysia. The Malaysian Code of Corporate Governance (MCCG) was introduced in 2000 as a significant tool for corporate governance reform. The MCCG was reviewed and updated in 2007, 2012, 2017, and 2021 to ensure that it remained relevant and is aligned with globally recognised best practices and standards (Securities Commission Malaysia, 2021). The MCCG is structured around three core principles. The first core principle is board leadership and effectiveness, the second is effective audit and risk management, and the third is integrity in corporate reporting and meaningful relationships with stakeholders. These publications were part of efforts to address shortcomings in corporate governance.

It is now recognised as a crucial management tool essential for all organisations. Corporate governance provides a structured framework for boards of directors to make informed decisions while balancing the interests of both internal and external stakeholders. This framework aims to ensure accountability, transparency, and responsible management to prevent corporate misconduct and safeguard stakeholder interests (Hassan, 2023).

Prior studies have recognised many factors, such as regulatory frameworks, board composition, internal control systems, reporting practices, and shareholders' engagement that strengthen corporate governance effectiveness (Barney, 2009; Hassan, 2023; Securities Commission Malaysia, 2021). More recently, emerging technologies also play a pivotal role in enhancing the effectiveness of corporate governance by improving transparency, accountability, and decision-making processes. Technologies such as blockchain, artificial intelligence (AI), and big data analytics enable real-time monitoring, reduce information asymmetry, and strengthen internal controls (Wu, 2024). These innovations empower boards and stakeholders with accurate, timely information, supporting ethical governance and strategic oversight. Thus, this article aims to explore the challenge of emerging technologies for effective corporate governance in the digital age. Consequently, these technologies are becoming essential components of modern corporate governance frameworks.

For instance, blockchain serves as a distributed ledger of all transactions or digital events; it functions as a database, with data being processed and shared among participants (Wu, 2024). A study conducted by Fahlevi et al. (2023) demonstrated that blockchain guarantees immutable record-keeping, diminishes fraud, enhances transparency, and reduces information asymmetry. Therefore, blockchain technology has fundamentally transformed accounting and auditing practices.

Meanwhile, Artificial intelligence (AI), by definition, encompasses more than just machine learning. While machine learning serves as the foundational technology of artificial intelligence, a comprehensive AI system also requires automated data analysis, screening, and additional analytical capabilities. AI contributes to predictive analysis and compliance monitoring (Wu, 2024). Moreover, AI enhances auditing efficiency by supporting decision-making processes. However, it also raises ethical concerns and presents complexities in implementation (Fahlevi et al., 2023).

Furthermore, big data refers to extensive volumes of data generated from diverse sources, including both traditional and digital platforms, which are too substantial or intricate for conventional data processing software to manage effectively (Wu, 2024). Big data facilitates sustainable innovation and supports informed decision-making; however, it also presents challenges concerning data privacy and security (Fahlevi et al., 2023).

The integration of these technologies requires careful management of risks and ethical considerations, including data security and potential biases in algorithmic decision-making. Companies should adopt proactive strategies such as continuous market surveillance, innovation, diversity, improved data security, and ethical supervision to mitigate risks associated with emerging technologies (Wu, 2024). Moreover, regulatory models need to adapt to technological developments to remain effective and relevant. The current focus on people, transparency, and accountability in corporate governance may need to evolve with technological advancements (Fenwick & Vermeulen, 2018). A study conducted by Picciau (2020) further suggests that emerging technologies can shift the balance of power and decision-making responsibilities within corporate governance. New technologies can reduce transaction costs, potentially shifting decision-making responsibilities from boards to shareholders. The role of corporate directors may become stronger due to technological empowerment, but AI is likely to complement rather than replace them.

A study conducted by Wu (2024) suggested several possible solutions to enhance the effectiveness of corporate governance in the digital age:

1. **Adhere to market monitoring and adaptation**, making necessary adjustments in advance to align with changes in social mainstream trends, thereby ensuring that firms can effectively respond to these significant shifts on time.
2. **Strengthen innovation and diversification** by investing in emerging technologies and new business models, while also expanding the range of products and services offered to minimise reliance on any single technology or market.
3. **Enhance talent training and education** by improving employees' knowledge of emerging technologies, ensuring that employees possess the necessary skills and capabilities to adapt to changes.
4. **Foster collaboration among different departments**, facilitate the flow of information and resource sharing, and enhance the company's flexibility and responsiveness.
5. **Strengthen measures for data security and privacy protection** within the technology sector. Establish robust security protocols and data processing policies to prevent data breaches and hacking incidents.
6. **Adopt a transparent and proactive communication strategy**. Disclose information to the public and stakeholders promptly, and articulate solutions to uphold corporate credibility.
7. **Develop comprehensive guidelines on technology ethics** and establish a technology ethics steering committee responsible for conducting ethical reviews and overseeing the use of emerging technologies, including artificial intelligence.
8. **Algorithms are subject to regular audits** to identify and rectify potential biases, ensuring that their design and implementation remain fair and impartial.

Corporate governance has evolved into a critical framework for ensuring accountability, transparency, and ethical management, especially in response to historical corporate failures. The introduction of regulatory reforms such as the MCCG has significantly strengthened governance practices in Malaysia. In the current era, emerging technologies, including blockchain, artificial intelligence, and big data, are reshaping governance by enhancing transparency, improving decision-making, and reducing information asymmetry. However,

these advancements also introduce complex ethical, security, and regulatory challenges. To fully realise the benefits of integration, companies must adopt proactive, ethical, and adaptive governance strategies that align with evolving global standards and technological advancements. In addition, corporate law may need to adapt as technology increasingly shapes governance models. This evolution could require large corporations to establish technology governance committees and develop new fiduciary duty guidelines specifically for human directors working with AI (Li, 2023). This evolving landscape requires a careful balance between utilising technological advancements and managing the associated risks to ensure effective corporate governance in the digital age.

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