Boardroom in AI Age, Scope for "Robo-Directors": An Analysis of the Indian Companies Act, 2013 and International Trends

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This study examines the adoption and impact of Robo-Directors in corporate governance worldwide, with a specific focus on the Companies Act 2013 of India. Therefore, it will also discuss the positions of the governing authorities on the use of Artificial Intelligence (hereinafter AI) and robots in the board of directors. Using qualitative comparative analysis, this paper reviews international governance standards for Robo-Directors and examines specific provisions of the Indian Companies Act 2013[1]. In this regard, this paper seeks to analyse the adequacy of the existing regulatory frameworks, focusing primarily on the Indian Companies Act of 2013, within the context of the introduction and operation of artificial intelligence-powered board members of the company's management while ensuring reasonableness and ethicality in the process. In India, Directors are defined under the Companies Act, which complies with the definitions provided in the prevailing principles and standards but does not use the word artificial Intelligence or AI. This paper contributes a unique perspective by analysing the legal requirements for AI in governance, emphasising India's regulatory context and offering insights for policy adaptation[2]. It examines the potential legal and operational challenges of introducing Robo-Directors to existing regulatory regimes, particularly in the context of India.

Keywords: *Robo-Directors, Corporate Governance, Artificial Intelligence, Board of Directors, Indian Companies Act 2013, Corporate Ethics, Corporate Crime, Automation, Governance Standards, India, Regulatory Compliance, Corporate Structure.*

Introduction

The evolution of AI has filled many areas in the world today very fast, including business management where it transforms approaches to making decisions. These AI-powered board members are referred to as Robo-Directors, and they can introduce fairness, effectiveness, and better analytical skills into the boardrooms. Although the use of AI is mainly associated with performing tasks, their potential in the case of Robo-Directors is endless with applications such as analysing data in real-time, assessing risks, or making objective decisions[3]. The concerns are relevant especially in the context of the Companies Act 2013 in India, 2013, since

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[1]Salah, Ziout, Alkahtani, Alatefi, Abdelgawal, Badwelam & Syarif (2021).
[2]Brennant, Subramanian & Van Staden (2019).
[3]Mertens (2023).

the Act provides the board members with clear guidelines on various fiduciary and ethical responsibilities and there are no provisions that would facilitate such AI-driven roles. The improvement in AI technology is putting its use in the corporate governance practices with the Robo-Directors. Owing to its uniqueness in the way it presents its arguments, the present paper is going to highlight these issues while looking at the regulatory stance of the Indian regulator. Corporate governance in India is the Companies Act 2013 and is one of the most important laws for companies and corporate governance.

Literature Review

AI has become a challenging element inside companies governance, destroying the usual order of things, and providing space for new, more productive and evaluative data management. This allows completeness through the AI, with additional leverage of "Robo-Directors" in Board rooms, as a means of enhancing corporate governance, by removing the propensity associated with human beings in decision making in governance. Looking at what Wilson and Daugherty[4] have to say, the leveraging of AI in the board context is equally able to contribute significantly towards the functions of the board in such areas as financial forecasting, risk assessment and compliance monitoring. Robo-Directors unlike traditional Directors, are built to perform as independent or semi-independent actors who come after humans, complementing them by presenting unvaried and objective facts, and applying them especially exceedingly beneficial in situations of high corporate venturing as there is a need for objectivity. As pointed out by Shah and Murthi that, as the robot technology continues to advance and improve, regulatory compliance could possibly serve as a role of Robo-Directors, including scrutinising contracts, identifying deviations and thereafter ensuring that the regulation of the corporate governance of the board is correct Bound by the moral and legal obligations of the role of the board[5].

The mere presence of sanctions in the pursuit of AI driven functioning of systems at the governance level is only one of the main sources of considerable challenges, namely from the ethical and operational perspective of AI being employed in roles meant for humans up to now. It is good however that scholars like Godwin, Lee & Langford[6] show that while the use of Robo-Directors may be beneficial in terms of uniformity and speed, the reliance on such technology is not helpful when more nuanced corporate values and long-term goals are required for governance. Hence, the existing research stresses the importance of a correct match between governance requirements and AI capabilities to avoid any contradictions that may impair ethical decision-making and accountability of the board.

Adoption of Robo-Directors is a phenomenon that occurs in different amounts in different countries, depending on the regulatory environment, corporate

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[4]Wilson & Daugherty (2018).
[5]Shah & Murthi (2021).
[6]Godwin, Lee & Langford (2021).

structures, and level of advancement of technology. In America's companies, AI centrically engaged in executive responsibilities is being tested in many leading large corporations. These companies generally include artificial decision-making systems offering strategic planning and financial forecasting guidance. Chui and Francisco claims, these cases are less common and even the less radical approaches are just a try for prospective integration of AI in the management boards[7]. Nonetheless, Governmental restrictions on the implementation of AI into governance or directors' spheres of the United States situation are very conservative fears on the issues of the responsibility, protection of information and qualifications of the real directors which would own it greatly contribute objectively to the said conservatism.

On the other hand, Japan has always been known as a trend setter from as far back as 1950s, systematically allowing use of AI tools in corporate governance set up for decision-making among business leaders. In Japan, for example, AI tools have been established for the purpose of improving board reports, including helping in the provision of financial information in real-time[8]. Indeed, this all argues positively for the integration of AI in the recruitment by the territory Robo-Directors are permitted to play a supporting role to the board in terms of corporate enforcement and strategy planning. Even so, these models of including AI in corporate governance have been accepted by few countries in the European continent, particularly the Scandinavian countries, but with conditions that provide human directors with oversight.

In contrast, countries such as Germany and even India tend to adopt a less favorable position towards robotic directors in their business operations. German enterprises, influenced by the principles of humanism and consensual-decision-making strive not to entrust complete control over decisions to AIs and hence block the formation of fully automated governance structures, where AI becomes only a tool for analysis and recommendations[9]. And so it is also, that India's fiscal structures, which are majorly based on concepts of humanity and the obligation to shareholders in the Companies Act of India, 2013 make it difficult to accommodate robotic directors. The need for understanding people and changes causes immense anxiety to the extent that a number of stakeholders are resistant to the Robo-Directors, despite the widespread enthusiasm towards the operation alienation of AI in corporate governance[10].

Corporate governance protocols essentially aim at defining board roles and responsibilities known objectively, in addition to creating transparency needed for corporate honesty and accountability. In particular, the OECD principles, which are generally adopted in governance standards, entail certain principles supporting the protection of the interests of shareholders, fairness and realism in corporate life thus raising the issue of corporate citizenship. Yet, these principles are assumed naked, without social values and ethics-the essence of Robo-Directors. The Indian Companies Act 2013 is clear on the ethical aspects and the duties of directors,

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[7]Chui & Francisco (2017).
[8]Papagiannidis (2024).
[9]Verma, Rao, Eluri & Sharma (2020).
[10]Mandal & Sunil (2021) at 113.

duties like the duty to act in good faith in the best interests of the company[11]. This Act imposes the requirement on the board members to be independent, and to be responsible, which independent Robo-Directors poses challenges.

While the OECD and other international governance principles understand that compliance can be enhanced through automation, the use of full Robo-Directors is inconsistent with key principles of governance which depend on ethical judgment of humans. Zhao and Gómez Fariñas. are of the opinion that AI can perform fiduciary duties only to an extent and in the absence of built-in accountability[12]. Moreover, in classical corporate governance systems, responsibility is an individual responsibility of corporate officers and therefore, it is not suitable for AI apparatus. All of which are contributing factors to the necessity of highly innovative governance systems recognising the peculiar characteristics that AI possesses while also maintaining the important governance aspects.

One of the pivotal issues that has generated moral debates over AI's place in the board room is the infiltration of Robo-Directors. Most importantly the question of accountability. Given that AI is not conscious, the incorporation of Robo-Directors leads to a challenging question of who is responsible for the decisions that are made? The indication of Lui's article on this problem[13] is that there should be some processes of human concern because there is no any point in seeking justice where there is a robot. Most of the fundamental governance principles are based on the consideration of human culpability. Therefore, it is a grey area as to who will face the legal consequences in cases where a Robo-Director's proposal causes loss or results in a legal violation such as breach of the code of ethics; AI developers, the company or the human officers who adopted such a resolution.

Moreover, bias also poses a difficult issue as AI models can easily propagate social biases that are inherent in the datasets it was trained on. AI can work with a pre-existing disparity, or even enhance the imbalance, in the case that the defeat probabilities were extracted from an assimilated society with the in-built gender and racial discriminatory prejudices[14]. This is more problematic with respect to governance whereby the decision-making authority is concentrated on a few stakeholders and their actions have to conform to ethical principles. Besides accountability, this has also been identified as a problem in the literature as the AI or AI-driven tools do not support any accountability in the sense it is either not possible for their operations to be bulk curtailed or no one can stop them. The literature has therefore identified very little in the way of addressing the problem among other questions such as lack of social awareness amongst vendors and users. Everyone is getting so excited with the idea of social robots.

Practical concerns regarding the same also emerge with regard to making AI work within the current board and procedures. The more heads of laptop processing units increase in scope the more it can be defined that more human aspect in the same equation is reduced: this convinces Floridi to believe that companies may stretch out too much towards AI hence underplaying human discretion among

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[11]Singh (2021) at 140.
[12]Zhao & Gómez Fariñas (2023).
[13]Liu (2018); Zhao & Gómez Fariñas (2023).
[14]Machill (2020).

other analytical skills[15]. There is also the factor of the amount of money that will be needed to use Robo Directors which can be a dicey issue especially when it comes to non-profited human rights organisations. These ethical and practical concerns show that even though the development of Robo-Directors looks promising as regard improving governance, their incorporation into the system needs to be carefully managed so as to ensure that transparency, accountability, and ethics are not compromised.

Research Questions

The improvement in AI technology is putting its use in the corporate governance practices with the Robo-Directors by many countries. Owing to its uniqueness in the way it presents its arguments, the present paper is going to highlight these issues while looking at the regulatory stance of the Indian regulator. Corporate governance in India is the Companies Act 2013 and is one of the most important laws for companies and corporate governance. This law also emphasises ethical consideration, which is the basis of human-related conduct in business, instead of retaliation or leaving. The paper seeks to analyse these below research questions:

1. How does the regulatory stance (Companies Act 2013) of India handle Robo-Directors?
2. Weather the improvement of AI technology in corporate sector forced board to adopt Robo-Directors for better corporate governance?
3. What are the current trends of inclusion of Robo-directors across globe in their corporate firms?

Methodology

This study employs secondary data analysis employing qualitative research study in order to study the extent of integration of Robo-Directors in governance frameworks and to check whether the regulatory provisions, particularly the Indian Companies Act 2013 are in keeping with the present developments[16]. Using qualitative comparative analysis, this paper reviews international governance standards for Robo-Directors and examines specific provisions of the Indian Companies Act 2013[17]. In this regard, this paper seeks to analyse the adequacy of the existing regulatory frameworks, focusing primarily on the Indian Companies Act of 2013, within the context of the introduction and operation of artificial intelligence-powered board members of the company's management while ensuring reasonableness and ethicality in the process. The methodology which is chosen in this study sheds light on the softer issues associated with AI-aided governance and helps us to understand the challenges of rescoping the traditional board

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[15]Floridi (2023).
[16]Annunziata (2023).
[17]Salah, Ziout, Alkahtani, Alatefi, Abdelgawad, Badwelan & Syarif (2021).

responsibilities to include AI. By making a thorough examination of secondary sources, this design enables the researcher to understand the legal and ethical jurisdictions and issues of the implementation of Robo-Directors.

Data Collection

Data regarding this research were obtained from several secondary sources, such as legislation such as the India Companies Act 2013, governance principles of the OECD, and other global governance guidelines[18]. Furthermore, academic pieces on AI in corporate governance and industrial studies were also examined to underline developments accounting for global regulatory diversity. Finally, successful illustrations from different parts of the world especially Japan and the United States will help shed more light on the question of AI governance. Moreover, based on the CSR report of Tata Group, the essay introduces the concept of Robo-directors as envisaged by the new India National Corporate Law. This diversity highlights this study as the role of cross-regional material is practically unavoidable within the discourse of the governance of such a country as India[19].

Overview of AI in Corporate Governance

AI nowadays has become a challenging element inside companies' governance, destroying the usual order of things, and providing space for new, more productive, and evaluative data management. This allows completeness through the AI, with additional leverage of "Robo-Directors" in Board rooms, as a means of enhancing corporate governance, by removing the propensity associated with human beings in decision-making in governance. Looking at what Wilson and Daugherty have to say[20], the leveraging of AI in the board context is equally able to contribute significantly towards the functions of the board in such areas as financial forecasting, risk assessment, and compliance monitoring. Robo-Directors unlike traditional Directors, are built to perform as independent or semi-independent actors who come after humans, complementing them by presenting unvaried and objective facts, and applying them especially exceedingly beneficial in situations of high corporate venturing as there is a need for objectivity. As pointed out by Shah and Murthi[21], as robot technology continues to advance and improve, regulatory compliance could serve as a role of Robo-Directors, including scrutinisng contracts, identifying deviations, and thereafter ensuring that the regulation of the corporate governance of the board is correct Bound by the moral and legal obligations of the role of the board. Di Vaio, Palladino, Hassan & Ferias[22] suggest that AI applications should meet the objectives of an organisation and that

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[18]Godwin, Lee & Langford (2021).
[19]Möslein (2018) in Barfield & Pagallo.
[20]Wilson & Daugherty (2018).
[21]Shah & Murthi (2021).
[22]Di Vaio, Palladino, Hassan & Escobar (2020).

integration of AI with other business functions involves careful management of AI capabilities and compliance requirements.

The mere presence of sanctions in the pursuit of AI-driven functioning of systems at the governance level is only one of the main sources of considerable challenges, namely from the ethical and operational perspective of AI being employed in roles meant for humans up to now. In contrast, Germany and the United States have demonstrated caution, with AI often restricted to advisory roles due to ethical concerns and regulatory hesitancy. It is good however that scholars like Godwin, Lee & Langfoed show that while the use of Robo-Directors may be beneficial in terms of uniformity and speed, the reliance on such technology is not helpful when more nuanced corporate values and long-term goals are required for governance[23]. Hence, the existing research stresses the importance of a correct match between governance requirements and AI capabilities to avoid any contradictions that may impair ethical decision-making and accountability of the board. In India, robo-directors do not have many takers yet owing to the high standards of ethics and fiduciary responsibilities provided for in the Indian Companies Act. This is a deliberate gesture of distrust of technology in AI and other related technology by Indian corporate administrative leaders[24].

Global Patterns in Robo-Directors

Adoption of Robo-Directors is a phenomenon that occurs in different amounts in different countries, depending on the regulatory environment, corporate structures, and level of advancement of technology. In America's companies, AI centrically engaged in executive responsibilities is being tested in many leading large corporations. These companies generally include artificial decision-making systems offering strategic planning and financial forecasting guidance. Chui[25] claims, that these cases are less common and even the less radical approaches are just a try for prospective integration of AI in the management boards. Nonetheless. Governmental restrictions on the implementation of AI into governance or directors' spheres of the United States situation are very conservative fears on the issues of the responsibility, protection of information, and qualifications of the real directors which would own it greatly contribute objectively to the said conservatism.

On the other hand, Japan has always been known as a trendsetter from as far back as 1950s, systematically allowing the use of AI tools in corporate governance set up for decision-making among business leaders. In Japan, for example, AI tools have been established to improve board reports, including helping in the provision of financial information in real-time[26]. Indeed, this all argues positively for the integration of AI in the recruitment by the territory Robo-directors are permitted to play a supporting role to the board in terms of corporate enforcement and strategy planning. Even so, these models of including AI in corporate

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[23]Godwin, Lee & Langford (2021).
[24]Verma, Rao, Eluri & Sharma (2020).
[25]Chui & Francisco (2017).
[26]Papagiannidis (2024).

governance have been accepted by few countries in the European continent, particularly the Scandinavian countries, but with conditions that provide human directors with oversight.

In contrast, countries such as Germany and even India tend to adopt a less favourable position toward robotic directors in their business operations. German enterprises, influenced by the principles of humanism and consensual decision making strive not to entrust complete control over decisions to AIs and hence block the formation of fully automated governance structures, where AI becomes only a tool for analysis and recommendations[27]. And so it is also, that India's fiscal structures, which are majorly based on concepts of humanity and the obligation to shareholders in the Companies Act of India, 2013 make it difficult to accommodate robotic directors. The need for understanding people and changes causes immense anxiety to the extent that a number of stakeholders are resistant to the Robo-Directors, despite the widespread enthusiasm towards the operationalisation of AI in corporate governance[28].

Corporate Governance Standards

Corporate governance protocols essentially aim at defining board roles and responsibilities known objectively, in addition to creating transparency needed for corporate honesty and accountability. In particular, the OECD principles, which are generally adopted in governance standards, entail certain principles supporting the protection of the interests of shareholders, fairness, and realism in corporate life thus raising the issue of corporate citizenship. Yet, these principles are assumed naked, without the social values and ethical essence of Robo-Directors. The Indian Companies Act 2013 is clear on the ethical aspects and the duties of directors, duties like the duty to act in good faith in the best interests of the company[29]. This Act requires the board members to be independent, and to be responsible, which independent Robo-Directors pose challenges.

The Indian Companies Act 2013 fails to prescribe legal or other mechanisms pursuant to which board members must act in good faith in pursuit of the best interest of the company effectively elevating the human duty of loyalty and judgment to a statutory requirement[30]. Zhao & Gómez Fariñas[31] believed that the usage of artificial intelligence technology is especially problematic in fulfilling fiduciary obligations due to the absence of ethical decision-making among robots. This void underlines the fact that if Robo-Directors are to an extent of their existence in the governing bodies governance frameworks need to adjust, and this is more so in countries like India with strong corporate governance and ethical obligations.

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[27]Verma, Rao, Eluri & Sharma (2020).
[28]Mandal & Sunil (2021) at 113.
[29]Singh (2021) at 140.
[30]Vuppuluri, & Pandey (2024).
[31]Zhao & Gómez Fariñas (2023).

Legal Concerns and Robo-Directors

The Indian Companies Act 2013 talks about the modern corporates and stressed upon the good governance practices, risk management, fraud detection, and investor relations etc. However, this act is silent on the explicitly uses of AI technology because of its legal and ethical implications. Under the Indian companies Act 2013, companies are having certain distinguishing features such as; a separate legal personality, the identity of the company is separate from its members, artificial person with no physical existence etc. Therefore, it can do functions with the help of its members and especially with the Board of Directors elected by the shareholders. The 'Board of Directors' is considered as the brain of the company, to oversees the day-to-day affairs of the company and maintain the regular governance. Now, looking at the adoption of AI technology by corporates is no doubt a better idea for the companies. However, inclusion of AI technology in 'Board of Directors' is a complex decisions for the corporates, especially in India as the regulatory environment does not recognise the 'Robo-Directors' in Companies Act 2013. The legal status of robot is still is in immature stage as compared to the human intelligence and on the status of a legal person.

The definitions given in Section 2 (10) and Section 2 (34) of the Companies Act 2013 clearly defined about 'Board of Directors' and 'Director'. These above provisions while explained who a director is, they do not precisely define who a director is. Further, Section 149 of the Act, define that only an natural person is eligible to be appointed as a director in a company and also he must possess Director Identification Number ("DIN") issued by the Central Government of India to be appointed as director. Other regulatory conditions to be a director, one must not be disqualified as unsound mind, insolvency, conviction etc. Moreover, although the disqualifications under the Act are clearly designed for humans, the inability of an AI director to obtain a DIN would further hinder its eligibility.

Discussing about the accountability and liability, the Act categorically impose responsibility on individual directors and not AI driven Robo-directors. Even the modern corporate assigns responsibility to robo-directors, who is liable - the directors, the programmers, or the AI itself - becomes a complex issue? The Section 166 of the Act outlines the duties of directors, emphasising their fiduciary obligation to act in the best interests of the company and its stakeholders. This includes duties of care and skill, requiring directors to exercise reasonable diligence and independent judgment. Further, Section 166(2) of the Act, the director must act in the best interests of the company and all the stakeholders. Similarly, under Section 166(4) of the Act, "directors are not permitted to make decisions or involve themselves in matters in which they have a direct or indirect interest which conflicts or may conflict with the interest of the company" or under Section 166(5) "acquire or attempt to acquire any undue gain or advantage to himself or his relatives". However, the "black boxes" issues in AI would surely make errors that can hinder directors in fulfilling their oversight responsibilities under this act.

Ethical and Practical Concerns

One of the pivotal issues that have generated moral debates over AI's place in the board room is the infiltration of Robo-Directors. Most importantly the question of accountability. Given that AI is not conscious, the incorporation of Robo-Directors leads to a challenging question of who is responsible for the decisions that are made. The indication of the article of Liu[32] n this problem is that there should be some processes of human concern because there is no point in seeking justice where there is a robot. Most of the fundamental governance principles are based on the consideration of human culpability. Therefore, it is a grey area as to who will face the legal consequences in cases where a Robo-Director's proposal causes loss or results in a legal violation such as a breach of the code of ethics; AI developers, the company, or the human officers who adopted such a resolution.

Moreover, bias also poses a difficult issue as AI models can easily propagate social biases that are inherent in the datasets it was trained on. AI can work with a pre-existing disparity, or even enhance the imbalance, in the case that the defeat probabilities were extracted from an assimilated society with the in-built gender and racial discriminatory prejudices[33]. This is more problematic with respect to governance whereby the decision-making authority is concentrated on a few stakeholders and their actions have to conform to ethical principles. Besides accountability, this has also been identified as a problem in the literature as the AI or AI-driven tools do not support any accountability in the sense it is either not possible for their operations to be bulk curtailed or no one can stop them. The literature has therefore identified very little in the way of addressing the problem among other questions such as lack of social awareness amongst vendors and users. Everyone is getting so excited with the idea of social robots.

Practical concerns regarding the same also emerge with regard to making AI work within the current board and procedures. The more heads of laptop processing units increase in scope the more it can be defined that more human aspect in the same equation is reduced: this convinces Floridi to believe that companies may stretch out too much towards AI hence underplaying human discretion among other analytical skills[34]. There is also the factor of the amount of money that will be needed to use Robo Directors which can be a dicey issue especially when it comes to non-profited human rights organisations. These ethical and practical concerns show that even though the development of Robo-Directors looks promising as regards improving governance, their incorporation into the system needs to be carefully managed to ensure that transparency, accountability, and ethics are not compromised. There is an enhancement of the importance of mixing AI's comparative superiority and human dexterous approach for effective leadership in organisation structures by ensuring AI-guided governance aligns with normative values.

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[32]Kiu (2018).
[33]Machill (2020).
[34]Floridi (2023).

Data Analysis

Subsequent methodologies for content analysis focused on the systematic classification of the text on aspects of the following: accountability, regulation, ethical concerns, and regulatory adaptive aspects[35]. This study used this method to extract themes and patterns that characterise the policies and processes of AI governance within the scope of regulatory frameworks specifically in the global and Indian setting. This type of data analysis is particularly relevant in the current study to facilitate the cross-sectional analysis and to find out whether Robo-Directors are compliant with the norms set in the governance framework [36]. Further, since this served as a post-analysis, the figures generated by the study that indicated such performance are corrected against the specific provisions under the Indian Companies Act which relate to possibilities of regulatory changes.

Findings and Analysis

Global Trends in Robo-Directors

Robo-directors are slowly being embraced in countries possessing advanced artificial intelligence regulatory frameworks, such as Japan and some Scandinavian countries, that allow room for the testing of AI in the governance structures[37]. Such countries, see AI as a race-winning technology for governance and deploy Robo-Directors for rational decision-making and monitoring compliance.

Opposed to the above regions, countries such as the U.S. and Germany take a more balanced approach by allowing AI to be used as an assistant but refusing to place decision-making authority in its hands[38]. This is because there are ethical considerations involved and there is also a strong inclination towards governance that is human-centred. For instance, in the fast-growing sectors of finance and technology where decisions are highly data-driven, there is more enthusiasm about the adoption of Robo-Directors. On the other hand, such technologies are not likely to be embraced for use in the health sector, which is prone to ethical dilemmas, for instance, decision-making throughout the care given.

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[35]Zekos (2021).
[36]de Almeida, dos Santos & Farias (2021) at p. 514
[37]Daly, Hagendorff, Hui, Mann, Marda, Wagner & Wei Wang (2022).
[38]Renda (2019).

Table 1. *Global Adoption of Robo-Directors in Corporate Governance by Country and Industry*

Country	Industry	Level of Adoption	Key Observations
Japan	Technology	High	Progressive stance, AI advisory tools widely adopted in board functions, with Robo-Directors used to assist decision-making in compliance and strategy formulation.
	Finance	Moderate	Growing adoption, primarily in risk assessment and compliance monitoring, to support human board members.
United States	Technology	Moderate	Experimental use of AI in corporate governance, primarily for data analysis and strategic planning support, but limited by regulatory hesitance.
	Healthcare	Low	Limited adoption due to ethical concerns over AI in high-stakes, human-centred industries.
Germany	Manufacturing	Low	Conservative approach; AI is used only for advisory roles, with decisions retained by human directors to maintain ethical standards and accountability.
India	Financial Services and Other sectors	Very Low	Minimal adoption due to regulatory constraints under the Indian Companies Act, which emphasises ethical responsibilities and human accountability in governance roles.

Table I illustrates the varied adoption levels of Robo-Directors across these countries, emphasising both regulatory openness and industry-specific trends. This global comparison underscores the influence of regulatory frameworks and cultural perspectives on AI adoption in governance roles.

Case Study: Indian Companies Act 2013

- Governance Obligations: As per the Indian Companies Act 2013, every board member has their own ethical and fiduciary responsibilities that promote independence and responsibility, while working for the betterment of the company. These provisions are aimed humanely and especially in moral decision-making[39].
- Compatibility with Robo-Directors: The Act sets forth ethical and fiduciary standards to be observed but this has not been adapted for AI since it does not have a human face. Robo-directors, who are bound by prescriptions in the form of computer algorithms and not by ethical prescriptions, are difficult to consider in this siuation [40].
- Regulatory Constraints and Potential Adjustments: The Act would, however, need to be amended bearing in mind Robo-directors, for instance, new

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[39]Lepeley, Morales, Essens, Beutell & Majluf (2021).
[40]Zekos (2021).

provisions that will state who is accountable for AI decisions. Present governance norms in India are still on the notion that human reasoning cannot be substituted hence presenting serious challenges to the embedding of AI in governance practices. Section 149 and other provisions of the Act, which prescribes independent director requirements and other eligibility criteria of other directors (Individual only), is particularly restrictive as it assumes directors possess moral agency an attribute AI cannot fulfil.

Impact on Corporate Governance Standards

- Transparency and Accountability: Conventional governance norms place emphasis on concepts such that 'one' must include within the ideals the factors of openness and responsibility which are hard to come by in AI. Robo Directors are controlled by algorithms that are described as black boxes and stakeholders may find them useless and difficult to engage in challenging their workings[41].
- Stakeholder Engagement: Effective governance standards place utmost importance on the trust of the stakeholders and on moral accountability. Robo-directors, much as they are credited for efficiency, may not render this completely because there is limited scope for resolution and addressing stakeholder issues which may hamper the stakeholder's confidence in AI decision-making[42].
- Adaptations in Standards: In order for Robo-Directors to be incorporated within the existing standard governance, there is a need for the inclusion of specific clauses on the governance of AI techniques such as advanced technologies like explainable robotics. This will make it possible for AI roles to maintain the level of transparency that is required by stakeholders[43].

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[41]Williams, Cloete, Cobbe, Cottrill, Edwards, Markovic, Naja, Ryan, Singh & Pang (2022).
[42]Mason & Simmons (2014) at 83.
[43]Seal (2021).

Table 2. *Alignment of Robo-Directors with Corporate Governance Principles*

| Governance Principle	Alignment with Robo-Directors	Challenges	Potential Adjustments Needed
Accountability	Limited	AI lacks personal accountability and moral agency.	Legislative provisions to clarify liability for AI-driven decisions
Transparency	Moderate	AI algorithms can be opaque, making decision processes challenging to interpret and explain to stakeholders.	Implement explainable AI (XAI) protocols to ensure transparency in AI decision-making.
Stakeholder Engagement	Low	AI lacks the ability to engage empathetically or communicate with stakeholders, potentially weakening trust	Use Robo-Directors as advisory support, with human directors leading stakeholder interactions.
Ethical Responsibility	Low	AI cannot independently uphold or apply ethical considerations inherent to human governance.	Establish guidelines for human oversight on ethical decisions AI systems influence

Challenges and Benefits

Key Challenges:

- Ethical Concerns: Robo-directors are being criticised for their inability to make morally sound decisions and for their minimal accountability. This creates problems in ensuring that decisions made through AI governance would respect fundamental morals[44].
- Technical Limitations: The sophistication of AI systems and the propensity to bias algorithms represent technical limitations that may hinder the achievement of governance goals especially in 'hard' accountability contexts.
- Regulatory and Compliance Issues: The board's position and functions, if made AI-centric, may lead to compliance issues in the implementation of the existing frameworks without incorporating any form of human directors, particularly in traditional jurisdictions[45].

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[44]Möslein (2018).
[45]Möslein (2018).

Figure 1. *Application of a Framework for AI Accountability (following Tóth et al., 2022)*
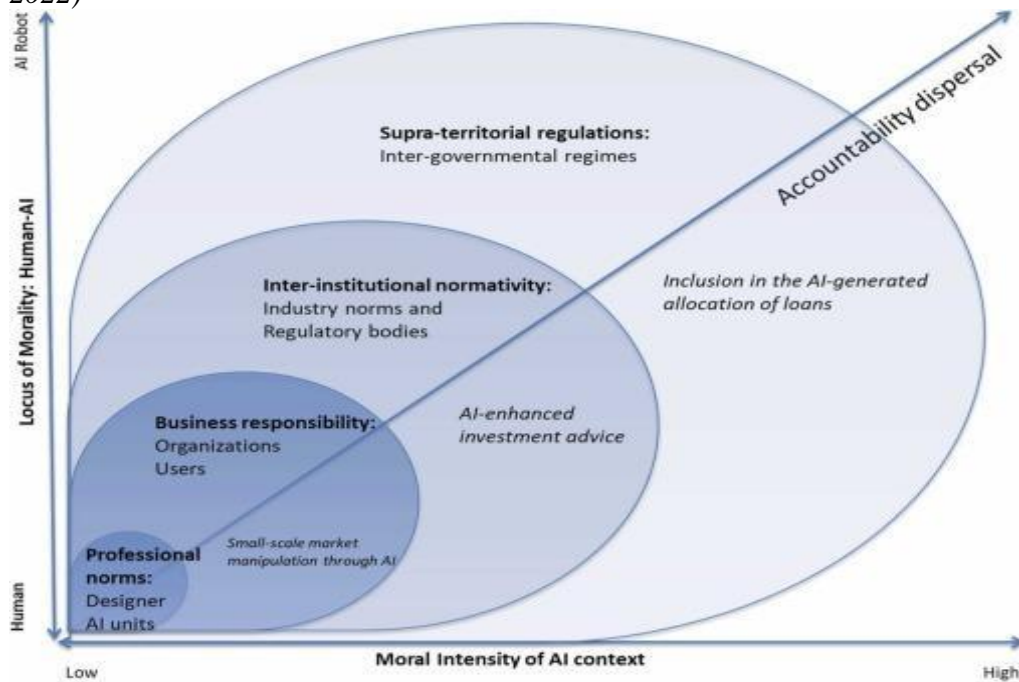
Key Benefits

- Objectivity: Robo-directors are able to make decisions that are free from any biases, which minimises human biases during these high-stakes decisions hence promoting the credibility of the board.
- Evidence-Based Decision Making: Since Robo-Directors can analyse information instantly, their use will enhance the precision of predicting future revenues and expenses, evaluating potential threats, and assessing and ensuring adherence, which is an upper hand in complex decision-making processes[46].

Results and Discussion

Comparison with Existing Literature

The results of this research are consistent with previous studies regarding the transformative impact of AI on corporate governance through objectivity, data, and efficiency. Wilson and Daugherty emphatically argued that artificial intelligence can assist in improving how consistent decision-making processes can be by minimising human interference[47]. This is particularly true as evidenced by this study's findings on Robo-Directors. Studies such as those by Shah and Murthi

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[46]Mertens (2023).
[47]Wilson & Daugherty (2018).

advanced the discussion regarding the applicability of AI and its deployment in predictive analysis by demonstrating the value of Robo-Directors being able to help in assessing compliance and financial health instead of retrospective reviews[48]. Nonetheless, our findings suggest some drawbacks also in line with some of the critiques in the literature for instance de Almeida, dos Santos & Farias argue that AI is ethically questionable and inherently unintelligible[49]. The 'black box' phenomenon of AI, in which the reasoning behind a particular decision is not revealed, is a major barrier to complying with the transparency aspect of the governance principles. As such, despite the benefits of Robo-Directors' capabilities, current bureaucratic systems still struggle to accommodate all precepts of them.

In addition, the aspects of ethical issues and accountability discussed in this study align with the arguments of Williams, Cloete, Cobbe, Cottrill, Edwards, Markovic, Naja, Ryan , Singh & Pang, who believe that governance has no equivalent in AI systems.[50] The results presented here show that Robo-Directors may perform well-established functions that require data processing, but they cannot assume the duties that involve values and ethical principles that governance entails, and this is echoed by Floridi[51] who cautions that as much as AI systems are helpful, their applications should not be extended to making ethical decisions. This paper adds another dimension to the existing debate, demonstrating that although Robo-Directors are ideal, their use will require proper regulatory changes and structures of accountability that support governance.

Implications for the Indian Corporate Sector

For Indian entities, more particularly those operating under the Indian Companies Act 2013, the incorporation of Robo-Directors presents its own challenges. The Act stresses the moral and fiduciary obligations of the directors and creates a risk for non-human equipment such as Robo-directors which have no accountability at alls[52]. Unlike their human counterparts, Robo-Directors cannot be liable for their decisions; neither do they, for they are machines, can morally justify actions taken that may be contrary to the interests of the organisational updates could clarify AI's operational boundaries, providing guidelines on AI-driven decision-making in boardrooms. The results of this research indicate that some changes in the legislation of the Indian corporate structure must be made first before Robo-Directors can be used. The changes can be introduced that will specify the level of responsibility where AI shall be allowed, the extent of control over the AIs' workings and decisions, and the earmarking of ethical and all legislated boundaries on such activities.

Moreover, Robo-Directors' possible incorporation may also affect the organisational principles of management of Indian businesses. Indian governance systems are traditionally based on agreement and humanism, concepts that Robo-

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[48]Shah & Murthi (2021).
[49]de Almeida, dos Santos & Farias (2021).
[50]Williams, Cloete, Cobbe, Cottrill, Edwards, Markovic, Naja, Ryan, Singh & Pang (2022).
[51]Floridi (2023).
[52]Zekos (2022) at 213.

Directors may undermine (Ricci 2018). Consequently, firms in India may have to consider the cultural value of human responsibility and ethical leadership in decision-making against the advantages posed by Robo-Directors for innovation. In addition, the implementation of Robo-Directors may foment a change in the present governance structures of Indian corporations in the direction of more use of better transparency and information management technology to meet acceptable standards locally and globally.[53] Nonetheless, such a transition will necessitate active engagement with the regulators and the policy-makers to ensure that the relevant laws are amended in a balanced way where the governance objectives will be achieved without compromising the possible benefits of AI in business organisations.

Broader Governance Implications

Robotic directors, if appropriately integrated, offer the potential to change the face of corporate boards by incorporating human and AI intelligence together. This paradigm shift would need corporations to value technical expertise during board member appointments more specifically professionals who have acquaintance with AI to oversee such Robotic directors. From a much broader perspective, Robo-Directors could revolutionise the practices of corporate governance by infusing a level of objectivity, consistency, and insight that has never been previously experienced. The introduction of Robo-Directors may change the structure of the board and reduce the requirement of some of the traditional roles while focusing on the need for technical knowledge[54]. For instance, it may be necessary for boards to hire professionals who are proficient with AI and data management for the explanation and understanding of the output generated by the Robo-Director. Therefore, there can be a shift in governance structures where there is a mix of human decision-making and the use of AI in analytics for effective decision-making and adherence to compliance.

Nevertheless, certain recognised authorities have also noted that employing Robo Directors within a business organisation calls for changes to the existing structures of regulatory compliance as the current regulations fall short of integrating the new age of artificial intelligence actors making decisions[55]. The governance codes that have been developed by the OECD for example may as well need to be revised in ways that will address the capabilities and limitations when it comes to artificial intelligence technology therefore maintaining its functioning and ethical obligations. Results of this study suggest that governance bodies may also need to issue guidance on explainable AI recommending Robo-Directors disclose the rationale for their decisions consistent with the tenets of transparency and stakeholder engagement[56]. Moreover, the incorporation of Robo-Directors in an organisation may also alter the organisational culture from one focused on human instincts to tackling problems through analytics which may be problematic to parties with a background in traditional structures.

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[53]Ricci (2018).

[54]Annunziata (2023).

[55]Birkstedt, Minkkinen, Tandon & Mäntymäki (2023).

[56]Aralova (2020).

Limitations and Recommendations

To ensure the effective incorporation of Robo-Directors without compromising on the principles of governance, the following suggestions are made:

- *Legislative Repurposing:* Indian policymakers need to begin amending the Companies Act 2013 to include rules addressing the roles of the AI board members, particularly those who bear the responsibility for actions taken by the AI. The above changes should be very clear on what a Robo-Director is allowed to do and more so how such actions require the interference of a human being.
- *Understandable AI Integration:* In order to mitigate the transparency issue in the use of Robo-Directorship, companies using Robo-Directors should adopt AI models that provide sound and clear reasoning for every decision taken. This will promote confidence and accountability when it comes to the governance processes of AI.
- *Hybrid Governance Models:* Firms may also employ a blended style of governance which aims at reaping the benefits of AI while using human governance. In this case, Robo-Directors will do data crunching but directors will reserve the right to make decisions such that the outcomes of AI do not supplant moral decisions[57].
- *Regular Audits and Monitoring:* Where a corporation aims to employ Robo-Directors, there should be routine checks and monitoring of the working of the Robo-Director to conform with the acceptable standards of governance and to check for any biases or deviations in functioning. If necessary, third-party supervision will help to reduce the level of risk involved in the use of Robo-Directors by ensuring that they follow the statutory and ethical standards so as to protect a wider range of individuals, including the shareholders and other stakeholders.
- *Enhanced Training for Human Directors:* There is a need for training the human directors on AI ethics and data management in order to be able to correctly manage the Robo-Managers and appreciate the effect of AI-derived knowledge.

Conclusion

Summary of Findings

Robo-directors have not been accepted at the same rate in all parts of the world. Despite the development of legal and practical mechanisms in Japan, India is reluctant to promote such a way of governance, and their companies though in the stock market, are still largely family-oriented. In India, Directors are defined under the Companies Act, which complies with the definitions provided in the

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[57]Berryhill, Heang, Clogher & McBride (2019).

prevailing principles and standards but does not use the word artificial Intelligence or AI. The application of Robo-Directors on a global scale and their suitability within existing corporate governance expert systems, in particular, the Indian Companies Act of 2013, forms the basis of this research. The results show that there are differing trends of adoption across the globe with countries such as Japan and some European countries experimenting more than others and in places, like the USA and Germany, which have adopted a more wait-and-see approach due to regulations and ethical considerations. In India, however, the provisions in the Companies Act 2013 present difficulties with respect to Robo Directors because this act is centred around the concepts of legal status, fiduciary duties and ethics, key roles played by human directors. It has been found that while Robo-Directors can offer the level of utilities that consists of rationality and facts thinking, there are also principles and ethical conundrums within the existing system of governance that limit the scope of application of such entities. Therefore, there are implications that current legislations have to be amended in order to replace the non-human directors with AI in full capacity within the Indian corporate governance system.

Future Research

Considering it is still the early stages of Robo-Directors in the market and other organisations, there exist many more avenues to be explored. Future investigations could engage in primary research, such as talking to business executives and policymakers, to grasp the issues in practice and their advantages or disadvantages in using Robo-Directors in a particular environment. In addition, it would be useful to conduct similar investigations, but with a focus on the legal provisions of other countries, for example, China and the UK, in order to understand different ways of regulating the use of AI. In addition, the applicability of mixed or hybrid governance approaches could also be put to the test, where the effectiveness of utilising decision-making processes that integrate human engagers and AI engagement will be assessed. Finally, since research in AI is very dynamic, the impact of Robo-Directors may be examined in terms of a few decades reaching to conclusions about their influence on the overall corporate management, its ethical aspect, and internal and external stakeholders' relations.

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