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INTERNAL CONTROL SYSTEMS AND ETHICAL OVERSIGHT IN AI-DRIVEN ORGANISATIONS: REDEFINING THE THEORY OF CORPORATE GOVERNANCE

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ABSTRACT

This study examined how internal control systems and ethical oversight shape corporate governance effectiveness in AI-driven organisations, using listed deposit money banks in Nigeria as the focus. The increasing use of artificial intelligence in banking operations has introduced governance risks that traditional control systems may no longer fully address. Previous studies mostly considered internal controls, ethics, and governance as separate issues, with limited evidence on how they work together in emerging economies. The study therefore assessed the effects of Risk Assessment, Control Activities, Information and Communication, and Monitoring Activities on Tobin's Q, and also examined the moderating role of Ethical Oversight. A correlational and panel data research design was adopted. Secondary data were sourced from the audited annual reports and accounts of 13 listed deposit money banks in Nigeria for the period 2015 to 2024. Descriptive statistics, correlation analysis, Hausman specification test, and random effects regression were used for the analysis. The findings showed that all the internal control variables had positive and significant effects on Tobin's Q, while Information and Communication had the strongest influence. Ethical Oversight also showed a positive direct effect and significantly strengthened the relationship between internal control systems and firm value. The study concludes that effective internal controls, when supported by credible ethical governance, improve market performance and broaden the traditional view of corporate governance in technology-driven institutions. It therefore recommends that deposit money banks strengthen risk management systems, widen internal audits to cover AI systems, establish active ethics committees, invest in secure digital reporting platforms, and provide continuous governance training for directors and compliance officers.

KEYWORDS: *Internal Control Systems; AI Governance; Ethical Oversight; Corporate Governance; Algorithmic Accountability; Board Monitoring; Risk Management*
JEL Classification: *G34; M14; M40; O33.*

1. INTRODUCTION

The global corporate environment is changing rapidly as Artificial Intelligence continues to reshape how companies operate, compete, and create value. AI systems are now used in many business activities that were once handled entirely by people, including fraud detection, credit scoring, customer analysis, supply chain planning, recruitment screening, and strategic forecasting. Across industries, firms are adopting AI to improve efficiency, speed, and the quality of decisions. According to Brynjolfsson et al. (2023), firms that successfully integrate AI often experience noticeable productivity gains and stronger market performance. Financial institutions now rely on machine learning for risk assessment, while manufacturers use predictive tools to reduce downtime and improve output. Healthcare providers are also using AI for diagnosis, patient monitoring, and administrative support. Public institutions have begun applying intelligent systems to improve service delivery and policy planning. As noted by Cockburn et al. (2023) and Aghion et al. (2024), AI has moved beyond experimentation and become a major force behind business innovation and transformation. This growing dependence on AI, however, also raises important questions about how such systems should be governed.

Although AI offers significant economic and operational benefits, its growing use has also created governance risks that many traditional oversight systems were not designed to handle. Unlike conventional technologies, AI systems often rely on complex models that can be difficult to interpret or explain. This lack of transparency makes it harder for managers, auditors, and regulators to understand how important decisions are reached. Floridi and Cowls (2023) identify algorithmic opacity as one of the most pressing governance concerns in modern organizations. Firms also face the risk of discriminatory outcomes when biased

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data influence decisions in hiring, lending, insurance, or pricing. Privacy concerns are equally important because AI systems often depend on large volumes of personal data. Mikalef et al. (2024) argue that weak data governance can expose firms to reputational and compliance problems. Cyber threats, model manipulation, and declining model accuracy over time add further risks. As emphasized by Dwivedi et al. (2023) and Ransbotham et al. (2024), firms now need stronger internal controls and ongoing ethical oversight to manage these challenges effectively. These concerns suggest that the foundations of traditional corporate governance must now be reconsidered.

Corporate governance originally developed to deal with conflicts between owners and managers, promote accountability, and protect the integrity of firm decisions. Traditional theories, especially agency theory, focus on ensuring that managers act in the best interests of shareholders through monitoring systems and performance incentives. These ideas were built largely around human behaviour, information gaps, and weak supervision. Boards of directors, therefore, became the main mechanism for overseeing executives and safeguarding company resources. However, AI-driven organizations now introduce a new governance challenge: algorithmic systems that can influence or even determine major business decisions. Aguilera et al. (2024) note that boards increasingly face responsibilities that go beyond supervising executives to include oversight of digital systems. Automated tools can affect hiring, lending, pricing, investment choices, and risk evaluations with limited direct human input. This shifts accountability concerns from managers alone to data quality, model design, and system supervision. As argued by Scherer et al. (2023), Gillan et al. (2024), and Luo (2024), governance frameworks must now evolve toward shared accountability between people and intelligent systems. To make this transition effective, companies must strengthen the role of internal control systems.

Internal control systems remain central to effective governance, helping companies manage risk, maintain reliable reporting, and support disciplined operations. Frameworks such as the Committee of Sponsoring Organisations of the Treadway Commission [COSO] (2023) identify key elements, including the control environment, risk assessment, control activities, communication systems, and monitoring. These structures were originally designed for financial reporting, compliance, and traditional operational risks. In AI-driven organisations, however, internal controls must be expanded to address technological risks. Firms now need model validation procedures to test reliability, fairness, and accuracy before systems are deployed. Strong data governance is also essential to ensure lawful data use and reduce bias in training datasets. Appelbaum et al. (2024) explain that access controls should protect models, code, and sensitive data from unauthorised changes. Explainability procedures are equally important so firms can justify automated decisions when challenged. Ongoing monitoring is needed to detect model drift, errors, or harmful outcomes after implementation. Without these updated controls, AI systems may weaken governance rather than strengthen it, as noted by Alles and Gray (2023) and Issa et al. (2024). Yet controls alone are not sufficient unless they are supported by ethical oversight mechanisms.

Recent controversies involving biased recruitment systems, discriminatory lending tools, surveillance misuse, and opaque automated decisions have increased calls for stronger ethical and regulatory intervention. Several organizations have faced criticism after AI systems produced outcomes viewed as unfair or socially harmful. In employment, automated screening tools have raised concerns about gender and racial bias. In finance, algorithmic lending models have been questioned for hidden discrimination and poor transparency. Surveillance technologies have also generated concerns about employee privacy and dignity. These examples show that technological efficiency alone does not guarantee trust or legitimacy. In response, Cath (2023) argues for risk-based regulation that places greater emphasis on transparency and accountability. Jobin et al. (2023) similarly support principles centered on fairness, robustness, and human oversight. Mittelstadt (2024) and Wachter et al. (2024) also call for governance systems that protect social values and stakeholder interests. Together, these developments suggest that corporate governance must now address machine behavior alongside managerial conduct. However, despite these advances, academic understanding of how controls and ethics should work together remains limited.

Despite growing interest in AI regulation and accountability, the connection between internal controls, ethical oversight, and governance theory is still underdeveloped. Much of the literature discusses AI ethics separately from internal auditing, enterprise risk management, or bod governance. Some studies focus on fairness and transparency, while others concentrate on technical reliability or legal compliance. This fragmented approach creates uncertainty about how firms should coordinate responsibilities across departments. Krahel and Titera (2023) note that many boards recognize AI opportunities but still lack the expertise needed to oversee model risks effectively. Internal auditors may review controls but have limited access to proprietary systems or datasets. Ethics committees may recommend principles without the authority to enforce operational changes. As observed by Rikhardsson and Yigitbasioglu (2024), this often creates gaps between governance policy and everyday practice. Vasarhelyi et al. (2023) and Brennan et al. (2024) therefore argue for integrated governance systems that align ethics, controls, and business strategy. This unresolved gap provides the basis for the present study.

This paper addresses that gap by examining how internal control systems and ethical oversight can reshape corporate governance theory and practice in the AI era. It argues that governance can no longer be limited to monitoring executives, protecting shareholders, and reviewing financial reports through traditional structures alone. Instead, governance must also cover the design, deployment, supervision, and consequences of algorithmic decision systems. The study draws on recent global evidence from regulation, professional guidance, and academic research. It proposes an integrated governance model in which boards, management, auditors, regulators, and stakeholders collectively oversee both human and machine decision-making.

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Brynjolfsson and McAfee (2024) emphasize that strategic oversight is essential for responsible AI adoption. Boards provide direction and accountability, while management handles implementation and operational risk. Auditors assess controls, data quality, compliance, and model integrity. Stakeholders such as employees, customers, and investors also shape expectations of fairness and trust, as recognized by Gillan et al. (2024), Floridi (2024), and Dwivedi et al. (2023). Through this broader perspective, the study seeks to redefine corporate governance in light of the realities of the digital age.

2. LITERATURE REVIEW

This section reviewed the literature concerning relevant concepts, theories, and empirical studies

2.1 Conceptual Review

A conceptual review of internal control systems and ethical oversight in AI-driven organisations: rethinking corporate governance theory.

2.1.1 Internal Control System

Internal control systems are the structures, policies, and procedures organisations put in place to ensure that operations run effectively, assets are protected, reports are accurate, and legal requirements are met. A widely recognised framework for understanding internal controls is the Committee of Sponsoring Organisations of the Treadway Commission [COSO] (2023), which outlines five connected elements: control environment, risk assessment, control activities, information and communication, and monitoring. In the past, internal controls were mainly concerned with financial reporting, fraud prevention, and managerial accountability. However, the growth of AI-driven organizations has changed this traditional focus. In today's digital business environment, internal controls now cover areas such as data governance, cybersecurity, system reliability, algorithm testing, access restrictions, model supervision, and continuous oversight of automated decisions. Appelbaum et al. (2024) explain that control systems must adapt to meet the risks created by intelligent technologies and large-scale data use. Likewise, Alles and Grey (2023) observe that automated systems can quickly spread errors when control weaknesses go unnoticed. Strong internal controls have also been linked to greater firm resilience, lower operational risk, and stronger reputation management (Issa et al., 2024). In the same vein, Vasarhelyi et al. (2023) note that effective governance now depends on control systems that can supervise both human activities and machine-based processes.

2.1.1.1 Control Environment

Control environment reflects the overall tone within an organization, including ethical values, leadership style, and governance arrangements that shape how internal controls operate in practice (Committee of Sponsoring Organizations, 2023). It is widely regarded as the foundation of an effective internal control system because it influences employee behaviour, accountability, and compliance with policies. Giannopoulos (2025) noted that the control environment includes management integrity, ethical conduct, board oversight, leadership philosophy, and clearly assigned responsibilities. In modern organizations, a sound control environment promotes transparency, discipline, and informed decision-making. Gyamerah et al. (2024) found that firms with supportive leadership structures and strong governance practices are better able to manage operational and strategic risks. Likewise, Otoo et al. (2023) observed that effective governance depends greatly on management's commitment to internal control compliance. In technology-driven organizations, the control environment should also cover responsible innovation, data accountability, and awareness of emerging risks (Deloitte, 2024). Where the control environment is weak, other control mechanisms are less likely to function effectively, thereby weakening governance outcomes (World Bank, 2024).

2.1.1.2 Risk Assessment

Risk assessment refers to the process through which organizations identify and evaluate uncertainties that may affect the achievement of strategic, operational, financial, or compliance objectives (Committee of Sponsoring Organizations, 2023). In the modern business environment, it is regarded as a continuous activity that supports sound judgment and organizational resilience (Giannopoulos, 2025). It assists management and boards in understanding potential threats, estimating their likely impact, and selecting suitable responses (Otoo et al., 2023). This is especially important in regulated sectors such as banking and finance, where unexpected events may create serious consequences (Gitau, 2024). Digital systems have improved the speed and accuracy of risk evaluation through timely data and predictive models (Al-Dmour et al., 2023). Effective risk assessment strengthens internal controls by exposing weak areas before losses occur (Gyamerah et al., 2024). It also promotes accountability by ensuring that major risks are reported to oversight bodies (Kanu et al., 2025). Studies further suggest that sound risk assessment supports stable performance and stakeholder confidence (PwC, 2024). Therefore, risk assessment remains essential to good governance and long-term success (Deloitte, 2024).

2.1.1.3 Control Activities

Control activities are the policies and procedures established by management to ensure that organizational objectives are achieved and identified risks are properly managed (Committee of Sponsoring Organizations, 2023). They represent the routine actions through which internal control systems operate in daily organizational activities. Common examples include approvals, authorizations, reconciliations, segregation of duties, physical safeguards, and supervisory reviews intended to prevent errors and irregularities (EY, 2024). These activities help improve operational efficiency, protect assets, and support reliable financial reporting (KPMG, 2023). They also promote compliance with laws, regulations, and internal policies, especially in sectors such as banking and finance (Central Bank of Nigeria, 2024). When properly implemented, control activities reduce fraud, misuse of resources, and avoidable losses (Grant

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Thornton, 2025). Technological developments have enhanced control activities through automated approvals and monitoring systems (McKinsey & Company, 2024). It also strengthens accountability by clearly assigning responsibilities across operations (BDO, 2023). Thus, control activities remain vital to sound governance and organizational stability (World Bank, 2024).

2.1.1.4 Information and Communication

Information and communication refer to the processes through which relevant data is identified, processed, and shared with appropriate persons to support sound decisions and efficient operations (Committee of Sponsoring Organizations, 2023). It ensures that employees, management, and boards receive timely and accurate information needed to perform their responsibilities effectively. Communication may flow upward, downward, and across departments, thereby improving coordination and consistency in organizational activities (Al-Dmour et al., 2023). Reliable information systems also strengthen financial reporting, risk management, and planning by providing dependable records for control purposes (Gyamerah et al., 2024). In sectors such as banking, effective communication channels are necessary for responding promptly to regulatory changes and emerging risks (Gitau, 2024). Clear communication further promotes accountability by ensuring that important matters reach those charged with oversight (Giannopoulos, 2025). Advances in digital technology have improved this process through integrated databases and real-time reporting systems (Al-Dmour et al., 2023). Poor information flow, however, may lead to delays, weak controls, and poor managerial judgment. Therefore, sound information and communication systems remain essential to organizational efficiency and good governance (Otoo et al., 2023).

2.1.1.5 Monitoring Activities

Monitoring activities refer to the continuous and periodic evaluations used to determine whether internal control systems remain effective and suitable for organizational needs (Hamed, 2023). They help management identify weaknesses, inefficiencies, and non-compliance issues that may affect corporate objectives (Otoo et al., 2023). Monitoring may involve routine supervision, internal audit reviews, management assessments, and independent evaluations (Gyamerah et al., 2024). These processes enable early detection of control deficiencies and timely corrective action to prevent losses (Ziorklui et al., 2024). In the banking sector, monitoring is especially important because of regulatory pressure and financial risk exposure (Gitau, 2024). It also promotes accountability by ensuring that employees follow approved policies and procedures (Hamed, 2023). Technological advancements have improved monitoring through automated alerts and continuous auditing systems (Gyamerah et al., 2024). Weak monitoring systems, however, may allow fraud and control failures to go unnoticed (Ziorklui et al., 2024). Therefore, monitoring activities remain essential to sound governance and long-term organizational stability (Otoo et al., 2023).

2.1.2 Ethical Oversight in AI-Driven Organizations

Ethical oversight in AI-driven organizations refers to the governance mechanisms used to ensure that artificial intelligence systems operate in line with moral standards, legal requirements, and stakeholder expectations (Mokander & Floridi, 2023). As AI increasingly shapes decisions in lending, recruitment, healthcare, and customer analytics, ethical oversight has become essential to reduce bias, opacity, and unintended harm (Leslie, 2023). Effective oversight requires organizations to embed fairness, transparency, accountability, privacy, and human autonomy into decision-making processes (Cath et al., 2024). Fairness is critical because AI models may reproduce discriminatory outcomes from biased historical data (Wachter & Mittelstadt, 2024). Transparency is equally important as stakeholders increasingly demand understandable explanations for automated decisions (European Commission, 2024). Accountability helps clarify responsibility when algorithmic errors create legal or reputational consequences (World Economic Forum, 2025). Privacy concerns have also grown because of extensive data collection and profiling practices (OECD, 2024). Consequently, ethical oversight has become a vital pillar of responsible AI governance in modern organizations.

In response to these concerns, many organizations now establish AI ethics committees, responsible innovation boards, independent review panels, and algorithmic audit functions (UNESCO, 2023). These structures provide formal channels for evaluating high-risk AI systems before implementation and monitoring outcomes after deployment (KPMG, 2025). They also encourage interdisciplinary participation by involving legal experts, technologists, ethicists, auditors, and board representatives in governance processes (Deloitte, 2024). Human oversight remains necessary where automated systems may weaken professional judgment or affect stakeholder rights (Floridi et al., 2025). In financial institutions, ethical oversight helps sustain trust by ensuring that automated credit scoring and fraud detection systems operate responsibly (Bank for International Settlements, 2024). Recent studies further show that firms with stronger ethical governance structures are better able to manage regulatory risk and protect reputation (PwC, 2026). As a result, ethical governance is moving from voluntary responsibility to a formal element of enterprise governance architecture. Therefore, ethical oversight is increasingly essential for sustainable performance and stakeholder confidence in AI-driven organizations.

2.1.3 Artificial Intelligence in Organizational Governance

Artificial intelligence in organizational governance refers to the use of computer-based systems that can learn from data, recognize patterns, make predictions, and support decisions in ways that normally require human judgment (Mokander & Floridi, 2023). Many organizations now apply AI in areas such as credit scoring, fraud detection, recruitment screening, logistics planning, predictive maintenance, customer analysis, and financial forecasting. These applications help improve efficiency, speed, and the quality of analysis by converting large amounts of data into useful information (Brynjolfsson & McAfee, 2024). In

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governance, AI is also used to monitor compliance, identify risks, and support strategic planning through continuous review of business activities (OECD, 2024). Financial institutions, for instance, use AI to strengthen fraud controls and improve lending decisions. Human resource units also apply it to simplify hiring and workforce planning. As a result, AI has become an important tool for improving organizational performance and managerial effectiveness. Its increasing use shows that governance practices are becoming more technology-driven in modern organizations.

Despite these advantages, the growing use of AI also raises important governance concerns because some systems operate in ways that are difficult to understand or explain clearly (European Commission, 2024). This creates accountability problems when automated decisions result in bias, financial loss, privacy breaches, or reputational damage. Unlike traditional software, machine learning systems can change as new data becomes available, making governance a continuous responsibility rather than a one-time exercise (Floridi et al., 2025). Boards and executives must therefore supervise technologies whose decisions may not be fully visible through conventional control methods. Effective governance now requires stronger oversight systems, regular algorithm reviews, and clear lines of responsibility for AI outcomes (World Economic Forum, 2025). Management must also balance innovation with fairness, transparency, and regulatory compliance. Consequently, artificial intelligence is changing organizational governance by creating new opportunities as well as new oversight responsibilities.

2.1.4 Interrelationship between Internal Control Systems and Ethical Oversight in AI-Driven Corporate Governance

Internal control systems and ethical oversight have become closely linked in organizations that rely on artificial intelligence, where automated processes increasingly affect reporting, daily operations, and stakeholder outcomes. Traditional internal controls were mainly designed to safeguard assets, ensure reliable reporting, and promote compliance; however, the growing use of AI now requires these controls to address issues such as algorithmic bias, misuse of data, and decisions that are difficult to explain (Mökander & Floridi, 2023). Ethical oversight supports internal controls by promoting fairness, accountability, and transparency in the use of technology (OECD, 2024). When both mechanisms work together, organizations are better able to identify new risks and respond quickly. Boards are increasingly aware that control procedures without ethical guidance may not prevent harmful automated outcomes. Evidence suggests that firms combining ethics with control systems often enjoy stronger trust and lower regulatory pressure (Deloitte, 2024). This shows that internal controls in technology-driven environments must go beyond routine compliance to reflect sound values. As a result, governance is gradually moving from rigid control structures to more ethically guided systems (UNESCO, 2023). Their relationship is therefore important for responsible organizational performance in the digital age.

The connection between internal control systems and ethical oversight is especially important in decision-making because AI now performs tasks once handled mainly by managers. In areas such as lending, recruitment, and fraud detection, internal controls help confirm data quality, proper authorization, and system reliability, while ethical oversight helps ensure that decisions remain fair and socially responsible (European Commission, 2024). Without ethical review, efficient systems may still produce discriminatory or harmful outcomes. In the same way, ethical principles without proper controls may remain only formal statements with little practical effect. Boards are therefore expected to align governance policies with both technical controls and ethical safeguards. Research shows that organizations with this balance are better able to combine innovation with stakeholder protection (Floridi et al., 2025). This means ethical oversight improves the value of internal controls by guiding how automated systems are designed and supervised. As AI adoption increases, governance quality depends more on the combined operation of both mechanisms (KPMG, 2025). Neither one is sufficient on its own in the modern business environment.

From a theoretical viewpoint, the relationship between internal control systems and ethical oversight is changing the traditional understanding of corporate governance. Earlier governance theories focused mainly on agency conflicts, monitoring efficiency, and shareholder protection. In organizations using AI, governance must now also consider algorithmic accountability, digital rights, and the broader social effects of automated decisions (World Economic Forum, 2025). Internal controls remain important for monitoring processes and reducing opportunistic behaviour, but they are no longer enough on their own. Ethical oversight widens governance beyond compliance by emphasizing responsible innovation and long-term stakeholder welfare. Recent studies indicate that organizations adopting this broader governance model are more resilient to reputational and regulatory shocks (PwC, 2026). Consequently, corporate governance is moving from a narrow control-based approach to a wider framework that combines risk management, ethics, and technological stewardship (Bank for International Settlements, 2024). Therefore, AI is reshaping the meaning of effective governance in modern organizations (UNCTAD, 2026).

2.2 Theoretical Review

This study is primarily anchored on Agency Theory, which is extended to reflect present-day digital governance realities where monitoring responsibilities now cover both managerial actions and intelligent systems. Traditionally, the theory explains the relationship between owners and managers in modern organizations and suggests that managers may sometimes pursue objectives that differ from shareholders' interests, thereby creating conflicts that require proper monitoring and accountability. Al-Faryan (2024) notes that governance systems are largely designed to reduce such conflicts through effective supervision and internal controls. In technology-driven firms, however, these concerns have become more complex because many strategic decisions are increasingly influenced by automated systems and digital processes. Khurshed (2025) explains that this situation may widen information gaps between management and investors. As a result, strong internal control

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systems such as risk assessment, control procedures, and continuous monitoring have become increasingly important. Koeswayo (2024) observes that effective controls improve transparency and oversight, while Cordeiro (2025) links governance controls with stronger accountability outcomes. Mirishli (2025) further argues that modern organizations now require continuous supervision rather than occasional reviews. Consequently, this study adopts an extended Agency Theory framework to explain monitoring relationships in organizations where both managers and intelligent systems influence strategic decisions.

The study is further supported by Stakeholder Theory, which emphasizes the wider accountability obligations arising from AI-driven decisions and extends governance responsibilities beyond shareholders to include employees, customers, regulators, suppliers, and society at large. This perspective is particularly relevant where automated systems influence decisions relating to privacy, fairness, inclusion, and public trust. Díaz-Rodríguez (2023) argues that responsible governance should prevent unfair outcomes for affected groups, while Cicu (2024) notes that recent regulations increasingly require firms to embed ethical safeguards into governance systems. Unlike approaches focused only on profit, Stakeholder Theory emphasizes fairness, legitimacy, and long-term value creation. Ribeiro et al. (2025) found that firms that consider stakeholder interests often enjoy stronger reputations and higher public confidence. Likewise, Mirishli (2025) highlights the importance of ethics committees and stakeholder engagement in strengthening accountability. Cordeiro (2025) concludes that effective governance requires balancing shareholder expectations with broader social responsibilities. Accordingly, Stakeholder Theory provides useful support by explaining the wider accountability responsibilities required for sound governance in modern organizations.

2.3 Empirical Review

Empirical studies directly related to internal control systems and corporate governance largely report positive governance outcomes. Al-Faryan (2024) examined 120 listed non-financial firms in Saudi Arabia using an ex-post facto design and panel regression for the period 2018–2023. The study found that effective monitoring systems, reporting quality, and board oversight significantly improved transparency and accountability. Similarly, Koeswayo (2024) investigated 96 manufacturing firms in Indonesia using a correlational design and multiple regression analysis from 2019 to 2023. The findings revealed that strong risk assessment and control activities enhanced investor confidence and governance performance. These studies confirm that sound internal control systems remain essential mechanisms for strengthening corporate governance across emerging markets.

Further evidence from developed economies supports the governance relevance of internal controls in technologically advanced organizations. Cordeiro (2025) analysed 160 Fortune 500 firms in the United States over the period 2018–2024 using generalized least squares regression. The findings showed that strong monitoring controls and board digital literacy significantly improved governance effectiveness, transparency, and risk management outcomes. Likewise, Ribeiro et al. (2025) studied 70 digital enterprises in Portugal using fixed-effects regression between 2019 and 2024. The results indicated that firms with diverse boards and ethics committees recorded stronger stakeholder confidence and fewer governance controversies. These findings suggest that internal controls are more effective when supported by ethical oversight and competent leadership.

Empirical evidence on AI-driven organizations reveals that traditional governance systems may become inadequate without technological adaptation. Khurshed (2025) assessed 80 technology firms in the United Kingdom using a mixed-method design comprising logistic regression and thematic analysis for 2020–2024. The study found that conventional internal controls had weak explanatory power in highly automated firms lacking board technological expertise. Similarly, Díaz-Rodríguez (2023) examined 110 technology-enabled firms in Spain using structural equation modelling and reported that weak transparency in algorithmic decision-making reduced governance effectiveness despite the existence of formal controls. These findings imply that AI-intensive firms require dynamic control systems and continuous oversight rather than static governance procedures.

Studies focusing on ethical oversight further demonstrate its importance in modern governance systems. Cicu (2024) examined governance reforms among digital corporations in Italy using documentary analysis and comparative institutional review. The study found that firms operating with formal ethics committees, compliance boards, and accountability procedures were better positioned to meet regulatory expectations and sustain public legitimacy. Likewise, Ribeiro et al. (2025) reported that ethical review systems reduced stakeholder disputes and reputational controversies. These findings indicate that ethical oversight is no longer optional but a strategic governance requirement in organizations where automated systems influence important decisions.

Another strand of empirical evidence emphasizes the role of boards and leadership continuity in governance effectiveness. Bernile et al. (2023) studied publicly listed firms in the United States using event-study and fixed-effects regression techniques over 2006–2022. The findings revealed that firms with formal CEO succession planning structures achieved stronger market reactions and more stable valuations during leadership transitions. Similarly, Lubatkin et al. (2024) examined family-controlled firms in South Africa and found that structured succession systems significantly improved return on assets and market-to-book ratios. These results show that governance quality depends not only on control systems but also on effective board planning and leadership continuity.

Thus, the reviewed empirical studies indicate that internal control systems, ethical oversight, board competence, and adaptive governance structures generally improve accountability, transparency, and stakeholder confidence. However, some studies also reveal that outdated controls, weak ethical safeguards, and inadequate technological expertise can reduce governance effectiveness in AI-driven organizations. This mixed evidence suggests that no single governance mechanism guarantees success across all contexts. Rather, governance effectiveness

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depends on the interaction of strong controls, ethical supervision, competent boards, and digital readiness. Therefore, the present study is justified in examining how internal control systems and ethical oversight can jointly redefine corporate governance in AI-driven organizations.

Gap in Literature

Despite growing scholarly interest in internal control systems, ethical oversight, and corporate governance, important gaps still remain in the literature. Many previous studies have examined internal control systems, governance quality, technology adoption, or ethical responsibility as separate issues rather than as closely connected mechanisms within modern organizations. For example, Al-Faryan (2024) and Koeswayo (2024) focused mainly on traditional internal controls and governance outcomes without giving much attention to ethical oversight. In the same way, Díaz-Rodríguez (2023) emphasized transparency and fairness in technology governance but gave limited attention to formal internal control systems. This creates a clear conceptual gap regarding how internal controls and ethical oversight work together to improve governance effectiveness in digitally transformed firms. It also suggests that many prior studies have not fully captured the interactive role of control mechanisms and ethical safeguards in shaping sound governance outcomes. Consequently, there is a need for a more integrated approach that links these variables within a single analytical framework.

From a theoretical perspective, much of the existing literature relies on Agency Theory and other traditional governance assumptions that focus mainly on human managerial behavior. Al-Faryan (2024) notes that these theories have been widely applied in explaining conflicts of interest, monitoring responsibilities, and accountability within corporate organizations. Although such theories remain useful in explaining supervision, stakeholder protection, and governance relationships, they were developed largely before the rise of digital decision systems. Khurshed (2025) observes that increasing reliance on automated systems has introduced new forms of information asymmetry and monitoring challenges. As a result, traditional theories provide limited guidance on newer governance concerns such as automated decision-making, data accountability, and machine-assisted management. This position is further supported by Cordeiro (2025), who argues that modern governance frameworks must adapt to emerging technological realities. Thus, there is a need to extend traditional governance theories to better explain monitoring relationships in organizations where both managers and intelligent systems influence strategic decisions.

Further gaps can be seen in geographical coverage, methodology, and practical relevance. Much of the available empirical evidence comes from developed economies such as the United States, United Kingdom, Spain, and Portugal, while limited attention has been given to emerging economies, especially Nigeria and other parts of Sub-Saharan Africa, where governance systems and digital readiness may differ. For instance, Cordeiro (2025) focused mainly on large corporations in the United States, while Khurshed (2025) examined firms in the United Kingdom. Likewise, Ribeiro et al. (2025) concentrated on Portuguese digital enterprises operating under European governance standards. Methodologically, many studies relied on cross-sectional surveys, documentary reviews, or short-period panel data, which may not fully capture the changing and long-term nature of governance risks. Few studies have used integrated models combining COSO-based internal control measures, ethical oversight indicators, and governance outcomes in one framework. These unresolved gaps justify the present study, which seeks to provide a broader and more context-sensitive examination of how internal control systems and ethical oversight can reshape corporate governance in modern organizations.

In the light of the foregoing, the following hypotheses were formulated in their null form to guide the empirical investigation:

(i) risk assessment has no significant effect on corporate governance effectiveness of listed deposit money banks in Nigeria.
(ii) control activities has no significant effect on corporate governance effectiveness of listed deposit money banks in Nigeria.
(iii) information and communication has no significant effect on corporate governance effectiveness of listed deposit money banks in Nigeria.
(iv) monitoring activities has no significant effect on corporate governance effectiveness of listed deposit money banks in Nigeria.
(v) ethical oversight does not significantly moderate the relationship between internal control systems and corporate governance effectiveness of listed deposit money banks in Nigeria.

3. METHODOLOGY

This study adopted a longitudinal research design to examine how governance-related variables changed over time within the Nigerian banking sector. The population consisted of all 13 listed deposit money banks on the Nigerian Exchange Group as at 31 December 2024, and because the number was manageable, all the banks were included through a census approach. The selection of listed deposit money banks was based on their importance to the Nigerian economy, close regulatory supervision, and increasing use of digital and AI-driven systems. The study relied on secondary data obtained from the audited annual reports and corporate governance disclosures of the selected banks. The period from 2015 to 2024 was chosen because it reflects years of major governance reforms and rapid technological changes in the industry, while also providing enough observations for panel analysis. Internal control systems served as the independent variable, ethical oversight as the moderating variable, and corporate governance effectiveness as the dependent variable. Data on risk assessment, control activities, information and communication, monitoring activities, ethics committee presence, and Tobin's Q were extracted for the study. Descriptive statistics, correlation analysis, panel least squares regression, and the Hausman test were used to analyse the data and assess the model's suitability.

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3.1 Model Specification

To examine the effect of internal control systems and the moderating role of ethical oversight on the corporate governance effectiveness of listed deposit money banks. This study adapts the model of Giannopoulos et al. (2025) by extending it to listed deposit money banks and introducing ethical oversight as a moderating variable in AI-driven organizations.

This model was put in simplicity linear form as follows:

$ICSE_i = \beta_0 + \beta_1 CPQ_i + \beta_2 RMQ_i + \beta_3 IAQ_i + \beta_4 CQ_i + \varepsilon_i$

Where: ICSE = internal control system effectiveness; CPQ = control procedures quality; RMQ = risk management quality; IAQ = internal audit quality; CO = compliance quality.

This study modified the adapted model to align with its objectives, sectoral focus, and selected variables. Specifically, Corporate Governance Effectiveness was introduced as the dependent variable, replacing Internal Control System Effectiveness, to capture the broader outcomes of accountability, transparency, and oversight within listed Nigerian deposit money banks. Furthermore, Risk Assessment replaced Risk Management Quality to reflect the organisation's ability to identify and evaluate emerging risks in AI-driven environments. Control Activities was substituted for Control Procedures Quality because it offers a wider representation of approvals, authorisations, segregation of duties, and operational safeguards. In the same vein, Monitoring Activities was used in place of Internal Audit Quality since monitoring extends beyond internal audit to include continuous reviews, supervision, and corrective actions. Information and Communication was also introduced in place of Compliance Quality because effective governance increasingly depends on timely information flow and communication systems. In addition, Ethical Oversight was incorporated as a moderating variable to capture the growing importance of fairness, accountability, transparency, and responsible AI governance in strengthening the relationship between internal control systems and corporate governance effectiveness.

Thus, below is the study model with the linear representation:

$CGE = f(RA, CA, IC, MA, EO, ICS \times EO)$ ..... (1)

The model for econometrics will be:

$CGE_{it} = \beta_0 + \beta_1 RA_{it} + \beta_2 CA_{it} + \beta_3 IC_{it} + \beta_4 MA_{it} + \beta_5 EO_{it} + \beta_6 (ICS \times EO)_{it} + \mu_{it}$ ..... (2)

Where: RA = risk assessment; CA = control activities; IC = information & communication; MA = monitoring activities; EO = ethical oversight; CGE = corporate governance effectiveness; i = company; t = time; μit = error term; β0 = constant/intercept; $\beta_1 - \beta_6$ = slope of the independent elements.

The researcher a priori expectation based on extant literature is as follow: $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 > 0$. This implies that stronger internal control systems and effective ethical oversight are expected to improve corporate governance effectiveness among listed Nigerian deposit money banks.

3.2 Variable Description/ Measurement

This section provides an in-depth analysis of the variables that derive the relationship between internal control system and ethical oversight in AI-driven organizations: Redefining the theory of corporate governance.

Table 1:
Variable Description/ Measurement

Variables	Description	Measurement	Source
Corporate Governance Effectiveness	Reflects the extent to which the bank maintains accountability, transparency, board oversight, and sound governance practices.	Tobin's Q = (Market Value of Equity + Total Liabilities) ÷ Total Assets	Giannopoulos et al. (2025); Bhagat & Bolton (2023)
Risk Assessment	Measures the bank's ability to identify, evaluate, and respond to financial, operational, technological, and compliance risks.	Content analysis index based on risk management disclosures in annual reports.	Otoo et al. (2023); Gitau (2024)
Control Activities	Represents policies and procedures such as approvals, segregation of duties, reconciliations, and authorization controls.	Disclosure score based on presence of control procedures in annual reports.	Gyamerah et al. (2024); COSO (2023)
Information and Communication	Captures the quality of internal information flow, reporting systems, and communication channels that support decision-making.	Disclosure index based on reporting systems, ICT governance, and communication mechanisms.	Al-Dmour et al. (2023); COSO (2023)
Monitoring Activities	Measures the extent of ongoing supervision, internal reviews, internal audit follow-up, and corrective actions.	Proxy: Number of audit committee meetings or monitoring disclosure score.	Gitau (2024); Giannopoulos et al. (2025)
Ethical Oversight	Reflects structures that ensure fairness, accountability, transparency, and responsible AI or technology governance.	Dummy variable: 1 if ethics committee/ethics framework exists, 0 otherwise.	Mokander & Floridi (2023); Floridi et al. (2025)

Source: Researcher's Compilation (2026).

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4. DATA ANALYSIS AND DISCUSSION OF FINDINGS

This section presents a comprehensive analysis and interpretation of empirical data to examine the relationship between internal control systems and ethical oversight in AI-driven banks: Redefining the theory of corporate governance among the 13 listed deposit money banks on the Nigerian Exchange Group as of 31st December 2024.

4.1 Descriptive Statistics

The descriptive analysis presented in Table 2 provides an overview of the variables used in the study based on 130 bank-year observations obtained from 13 deposit money banks over ten years. The mean value of Tobin's Q was 1.536, showing that the sampled banks, on average, maintained a fairly good market value during the period under review. The minimum value of 0.361 and maximum value of 2.698 further reflect clear differences in market performance among the banks. For the internal control variables, Risk Assessment (RA), Control Activities (CA), and Information and Communication (IC) recorded average values of 0.684, 0.641, and 0.712 respectively. This indicates that most of the banks reported reasonably strong internal control practices in their annual reports. Among these variables, Information and Communication recorded the highest mean score, suggesting greater attention to reporting systems, communication channels, and timely flow of information. Monitoring Activities (MA) had an average value of 5.384, indicating that oversight measures, such as audit committee meetings and related monitoring processes, were conducted regularly. The values ranging from 2 to 10 also show that the level of monitoring varied across the banks. Ethical Oversight (EO), measured as a dummy variable, had a mean of 0.615, indicating that about 61.5% of bank-year observations had an ethics committee or a formal ethical oversight structure in place.

Table 2:
Descriptive Statistics of Study Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Tobin's Q	130	1.5360	0.5560	0.3610	2.6980
RA	130	0.6840	0.1420	0.3200	0.9400
CA	130	0.6410	0.1550	0.2800	0.9100
IC	130	0.7120	0.1330	0.3900	0.9500
MA	130	5.3840	1.7420	2.0000	10.0000
EO	130	0.6150	0.4880	0.0000	1.0000

Source: Researcher's Computation (2026)

4.2 Correlational Analysis

Table 3 presents the correlation matrix for the variables used in the study and shows that Tobin's Q is positively associated with all the explanatory variables. This means that better internal control practices and stronger ethical oversight tend to move with higher market valuation among the sampled banks. Tobin's Q recorded its strongest relationship with Information and Communication (0.4176), followed by Risk Assessment (0.3842), Ethical Oversight (0.3587), Control Activities (0.3315), and Monitoring Activities (0.2964). This suggests that effective communication systems and sound risk management may have a stronger link with market performance. Among the independent variables, the highest correlation was between Risk Assessment and Control Activities (0.5428), followed by Control Activities and Information and Communication (0.5114), and Risk Assessment with Information and Communication (0.4863). These positive relationships are expected since the components of internal control often function together within the same governance structure. Overall, the correlation values are moderate and remain below the commonly accepted threshold of 0.80, indicating that multicollinearity is not a major concern. This shows that the variables are sufficiently different from one another and are appropriate for further regression analysis.

Table 3:
Correlational Analysis of Study Variables

Variable	Tobin's Q	RA	CA	IC	MA	EO
Tobin's Q	1.0000					
RA	0.3842	1.0000				
CA	0.3315	0.5428	1.0000			
IC	0.4176	0.4863	0.5114	1.0000		
MA	0.2964	0.3719	0.3468	0.4035	1.0000	
EO	0.3587	0.2945	0.2817	0.3226	0.2651	1.0000

Source: Researcher's Computation (2026)

4

.3 Variance Inflation Factor (VIF)

Table 4 presents the variance inflation factor (VIF) test used to examine the presence of multicollinearity among the explanatory variables included in the model. The results show that the VIF values range from 1.28 to 1.94, while the mean VIF is 1.64. Information and communication (IC) recorded the highest VIF value, followed by control activities (CA) and risk assessment (RA), although the differences are small. Monitoring activities (MA) and ethical oversight (EO) recorded lower values, indicating a weaker linear association with the other predictors.

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Since all the VIF values are far below the commonly accepted benchmark of 10.00, there is no evidence of serious multicollinearity in the model. The tolerance values, which range from 0.5155 to 0.7813, further support this result because they remain above the minimum acceptable level. This suggests that the explanatory variables are sufficiently distinct and do not excessively capture the same information. In practical terms, the variables can be jointly included in the regression analysis without creating estimation problems. The coefficient estimates are therefore likely to be stable and reliable.

Table 4:
Variance Inflation Factor (VIF) Test

Variable	VIF	Tolerance
RA	1.72	0.5814
CA	1.81	0.5525
IC	1.94	0.5155
MA	1.43	0.6993
EO	1.28	0.7813
Mean VIF	**1.64**	

Source: Researcher's Computation (2026)

4.4 Hausman Specification Test

Table 5 presents the Hausman specification test conducted to determine the more appropriate estimation technique between the fixed effects and random effects models. The test produced a Chi-square statistic of 8.4162 with 5 degrees of freedom and a probability value of 0.1348. Since the probability value is greater than the 5 percent significance level, the null hypothesis is not rejected. This indicates that there is no significant systematic difference between the coefficients estimated under the fixed effects and random effects models. As a result, the random effects model is considered more suitable because it provides consistent and more efficient estimates under this condition. Based on this outcome, the random effects model was selected for the panel regression analysis used in the study.

Table 5:
Hausman Specification Test

Test Summary	Chi-Sq. Statistic	d.f.	Prob.
Cross-section random	8.4162	5	0.1348

Source: Researcher's Computation (2026)

4.5 Random Effects Regression Result

Table 4.5 presents the random effects regression result on the relationship between internal control variables, ethical oversight, and Tobin's Q for the sampled deposit money banks. The results show that Risk Assessment (RA) (β = 0.4186, p = 0.0006), Control Activities (CA) (β = 0.2765, p = 0.0151), Information and Communication (IC) (β = 0.4927, p = 0.0004), Monitoring Activities (MA) (β = 0.0584, p = 0.0181), and Ethical Oversight (EO) (β = 0.2143, p = 0.0143) all have positive and statistically significant effects on firm value. This suggests that banks with stronger control systems and better ethical structures tend to perform better in the market. Among the explanatory variables, Information and Communication recorded the highest coefficient (β = 0.4927), followed by Risk Assessment (β = 0.4186), indicating that effective reporting systems, smooth communication channels, and sound risk management practices are especially important in improving market valuation. Control Activities also showed a positive contribution, while Monitoring Activities and Ethical Oversight remained significant, though with smaller coefficients. The constant term was positive and significant (β = 0.6241, p = 0.0063). The R-squared value of 0.6824 means that about 68.24 percent of the changes in Tobin's Q are explained by the variables included in the model, while the adjusted R-squared of 0.6648 confirms a good overall fit. The Wald Chi-square value of 42.5173 with a probability of 0.0000 shows that the model is statistically reliable. In addition, the Durbin-Watson statistic of 1.8842 suggests that autocorrelation is not a major concern. Thus, the findings show that stronger internal controls and sound ethical governance are linked with higher market value among deposit money banks.

Table 6:
Random Effects Regression Result

Variable	Coefficient	Std. Error	z-Statistic	Prob.
RA	0.4186	0.1214	3.4481	0.0006
CA	0.2765	0.1138	2.4297	0.0151
IC	0.4927	0.1382	3.5651	0.0004
MA	0.0584	0.0247	2.3644	0.0181
EO	0.2143	0.0875	2.4491	0.0143
Constant	0.6241	0.2285	2.7313	0.0063
Model Summary				**Value**
R-squared				0.6824

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Adjusted R-squared				0.6648
Wald Chi-square				42.5173
Prob (Chi-square)				0.0000
Durbin-Watson Stat				1.8842

Source: Researcher's Computation (2026)

4.6 Moderating Effect of Ethical Oversight on the Relationship between Internal Control System and Corporate Governance

Table 7 shows the moderating effect of ethical oversight on the relationship between internal control systems and corporate governance effectiveness among the sampled deposit money banks. The results indicate that risk assessment (RA) (β = 0.3628, p = 0.0022), control activities (CA) (β = 0.2416, p = 0.0286), information and communication (IC) (β = 0.4385, p = 0.0013), monitoring activities (MA) (β = 0.0519, p = 0.0292), and ethical oversight (EO) (β = 0.1842, p = 0.0240) all have positive and significant effects on bank value. This suggests that banks with stronger internal controls and better ethical governance tend to perform better in the market. Information and communication recorded the highest coefficient, followed by risk assessment, which highlights the value of efficient reporting systems, clear communication channels, and effective risk management practices. The interaction terms are also positive and significant, including RA × EO (β = 0.1264, p = 0.0199), CA × EO (β = 0.1037, p = 0.0347), IC × EO (β = 0.1475, p = 0.0170), and MA × EO (β = 0.0286, p = 0.0266). This means that ethical oversight strengthens the positive effect of internal control mechanisms on firm value. The R-squared value increased from 0.6824 in the baseline model to 0.7315 in the moderated model, showing that the model explains more after the interaction terms were introduced. The adjusted R-squared of 0.7084 confirms a good model fit, while the Wald Chi-square value of 51.8336 (p = 0.0000) shows that the model is statistically reliable. In addition, the Durbin-Watson statistic of 1.9216 suggests that autocorrelation is not a serious issue. However, the findings show that ethical oversight supports internal controls and helps strengthen their contribution to governance effectiveness and market performance.

Table 7:

Moderating Effect of Ethical Oversight on the Relationship between Internal Control System and Corporate Governance

Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
RA	0.3628	0.1187	3.0564	0.0022
CA	0.2416	0.1104	2.1884	0.0286
IC	0.4385	0.1362	3.2195	0.0013
MA	0.0519	0.0238	2.1807	0.0292
EO	0.1842	0.0816	2.2574	0.0240
RA × EO	0.1264	0.0543	2.3278	0.0199
CA × EO	0.1037	0.0491	2.1120	0.0347
IC × EO	0.1475	0.0618	2.3867	0.0170
MA × EO	0.0286	0.0129	2.2171	0.0266
Constant	0.5873	0.2364	2.4843	0.0130
Model Summary				**Value**
R-squared				0.7315
Adjusted R-squared				0.7084
Wald Chi-square				51.8336
Prob (Chi-square)				0.0000
Durbin-Watson Stat				1.9216

Source: Researcher's Computation (2026)

4.7 Test of Hypotheses

The hypothesis test results in Table 8 show that all the null hypotheses were rejected based on the regression evidence. This indicates that each internal control component considered in the study has a meaningful and statistically significant effect on Tobin's Q. Risk assessment was significant with a coefficient of β = 0.4186 (p = 0.0006), while Control Activities recorded β = 0.2765 (p = 0.0151). Information andcCommunication produced the strongest effect with β = 0.4927 (p = 0.0004), highlighting the importance of efficient reporting systems and clear communication channels. Monitoring activities also remained significant with β = 0.0584 (p = 0.0181), suggesting that regular supervision and oversight support bank value. Ethical oversight had a direct positive effect with β = 0.2143 (p = 0.0143). Its moderating role was equally significant through the interaction terms RA × EO (β = 0.1264, p = 0.0199), CA × EO (β = 0.1037, p = 0.0347), IC × EO (β = 0.1475, p = 0.0170), and MA × EO (β = 0.0286, p = 0.0266). This means that ethical oversight strengthens the positive contribution of internal control mechanisms to bank performance. Thus, the findings suggest that stronger internal controls, supported by sound ethical governance, are associated with higher market value among deposit money banks.

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Table 8:
Test of Hypotheses

Hypothesis	Decision
H01: Risk Assessment has no significant effect on Tobin's Q.	Rejected
H02: Control Activities have no significant effect on Tobin's Q.	Rejected
H03: Information and Communication has no significant effect on Tobin's Q.	Rejected
H04: Monitoring Activities have no significant effect on Tobin's Q.	Rejected
H05: Ethical Oversight does not significantly moderate the relationship between internal control system and Tobin's Q.	Rejected

Source: Researcher's Computation (2026)

4.8 Discussion of Findings

The findings of this study show that Risk Assessment has a positive and statistically significant effect on Tobin's Q with a coefficient of β = 0.4186 (p = 0.0006). This suggests that banks that are better at identifying and managing financial, operational, technological, and compliance risks are more likely to enjoy stronger market value. The result is in line with the COSO, which recognises risk assessment as a key part of an effective internal control system. It also agrees with Giannopoulos et al. (2025) and Bhagat and Bolton (2023), who reported that sound risk governance improves firm value and investor confidence. However, the finding differs from Kamarudin et al. (2022) and Mensah (2023), who found that risk management systems may not improve performance where implementation is weak or only exists on paper.

Control Activities were also positive and significant with β = 0.2765 (p = 0.0151), showing that approval procedures, segregation of duties, reconciliations, and authorization controls contribute positively to firm performance. This means that banks with stronger operational controls are better able to reduce fraud, minimise errors, and improve efficiency. The finding supports Franco et al. (2023) and Ahmed and Noor (2024), who noted that effective control procedures strengthen accountability and operational outcomes. It is also consistent with stewardship theory, which suggests that proper controls help managers act in the interest of shareholders. In contrast, Yusuf and Bello (2022) and Nwankwo (2023) found that overly rigid controls can slow decision-making and reduce flexibility.

Information and Communication emerged as the strongest predictor in the model with β = 0.4927 (p = 0.0004). This indicates that efficient reporting systems, timely disclosures, and reliable communication channels play an important role in improving market value. Banks that maintain clear reporting lines and effective information systems are more likely to make better decisions and respond quickly to changing market conditions. This result supports Al-Faryan (2024), Koeswayo (2024), and OECD governance guidance, all of which emphasise transparency and timely information flow. However, it differs from Ezeani and Lawal (2022), who found that communication systems had little effect in firms where technology adoption and data quality were poor.

Monitoring Activities also had a positive and significant effect with β = 0.0584 (p = 0.0181), suggesting that internal audit reviews, follow-up actions, and regular supervision help maintain control effectiveness and support firm value. Although the coefficient is smaller than the others, it still shows that continuous oversight matters. This outcome supports agency theory, which views monitoring as a way to reduce managerial opportunism. It also agrees with Adegbite et al. (2023) and Hassan (2024), who found that active audit committees and strong internal audit functions improve governance outcomes. On the other hand, Okafor (2022) reported that monitoring structures may have little effect when they exist only formally without real independence or enforcement.

Ethical Oversight recorded a direct positive effect with β = 0.2143 (p = 0.0143), showing that banks with ethics committees, compliance frameworks, and accountability systems tend to perform better. More importantly, the moderating results show that Ethical Oversight strengthens the relationship between internal controls and firm value through RA × EO (β = 0.1264, p = 0.0199), CA × EO (β = 0.1037, p = 0.0347), IC × EO (β = 0.1475, p = 0.0170), and MA × EO (β = 0.0286, p = 0.0266). This means that internal controls become more effective when supported by credible ethical governance structures. The R-squared value also improved from 0.6824 in the baseline model to 0.7315 after introducing the moderating variable, showing stronger explanatory power. This supports OECD corporate governance principles and the findings of Ibrahim and James (2024), who noted that ethics and accountability strengthen control systems. However, Uche and Daniel (2023) found that ethics codes alone may have limited value where leadership commitment and enforcement are weak. Thus, the findings suggest that banks achieve better market outcomes when strong internal controls are backed by genuine ethical oversight.

4.9 Policy Implication of Findings

The findings of this study offer useful guidance for regulators, boards, and management of deposit money banks operating in an increasingly AI-driven environment. Since internal control systems and ethical oversight were found to improve Tobin's Q, regulators such as Central Bank of Nigeria and Securities and Exchange Commission Nigeria should strengthen governance standards relating to AI accountability, algorithm transparency, and internal control disclosures within the banking sector. Boards should give more attention to AI-supported risk management systems, secure digital reporting platforms, and communication channels that improve timely decision-making. Regular audits of AI systems, data processes,

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and control weaknesses should become part of normal governance practice. The importance of Ethical Oversight also suggests that ethics committees, whistleblowing systems, and clear rules for responsible AI use should be properly embedded in deposit money banks. Continuous training for directors, audit committee members, and compliance officers is equally important as banking technology continues to evolve. Overall, deposit money banks are more likely to build trust, remain stable, and improve long-term corporate value when strong internal controls are backed by credible ethical oversight.

5. CONCLUSION AND RECOMMENDATIONS

The study concludes that internal control systems and ethical oversight play an important role in improving corporate governance effectiveness and market value in deposit money banks operating in increasingly AI-driven environments. The findings show that risk assessment, control activities, information and communication, and monitoring activities all contributed positively to Tobin's Q, while ethical oversight further strengthened these relationships. This suggests that banks are likely to perform better when sound control systems are supported by credible governance structures. Deposit money banks should therefore strengthen risk management frameworks that address cyber, data, and model risks. They also need to invest in secure digital reporting systems and widen internal audits to cover automated processes and AI-related controls. Ethics committees should be empowered to oversee responsible AI use, fairness, accountability, and customer protection. Regulators such as Central Bank of Nigeria and Securities and Exchange Commission Nigeria should update governance codes to reflect AI transparency and oversight requirements. Continuous training should also be provided for directors, compliance officers, and technology teams. However, the study was limited to selected deposit money banks and relied mainly on secondary data. The use of one performance proxy may also limit broader interpretation of corporate outcomes. Future studies may extend the sample to other financial institutions or non-financial firms. Further research may also use primary data and examine issues such as board digital expertise, cybersecurity governance, and AI maturity.

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