https://research.adra.ac.id/index.php/multidisciplinary
P - ISSN: 3048-2461
E - ISSN: 3048-1708

The Role of Internal Control in Fraud Prevention: A Systematic Review of Global Evidence (2021-2025)

Tussi Sulistyowati[1], Pardomuan Pardosi[2], Khairil Anwar[3], Maria Yovita R Pandin[4], Amiartuti Kusmaningtyas[5]
[1]Universitas 17 Agustus 1945 Surabaya, Indonesia
[2]Universitas 17 Agustus 1945 Surabaya, Indonesia
[3]Universitas 17 Agustus 1945 Surabaya, Indonesia
[4]Universitas 17 Agustus 1945 Surabaya, Indonesia
[5]Universitas 17 Agustus 1945 Surabaya, Indonesia

ABSTRACT

Background. This study employs a qualitative descriptive approach through a systematic review of Scopus-indexed journal articles on fraud prevention published between 2021 and 2025. An initial search using targeted keywords yielded 4,283 articles, which were refined through specific filters, resulting in 24 articles for full-text analysis.

Purpose. The findings confirm that well-designed internal controls enhance governance, reduce fraud risks, and improve organizational performance across diverse contexts such as China, France, Jordan, and Egypt.

Method. The effectiveness of internal controls is shaped by institutional ownership, audit quality, digital transformation, and IT integration. Anti-fraud strategies are closely tied to transparency, monitoring, and risk management, while institutional factors like mandatory audits and ownership reforms strengthen control systems.

Results. These insights suggest that managers should invest in robust, technology-supported internal controls tailored to their institutional context.

Conclusion. Future research should examine the evolving impact of digitalization and governance changes on internal control effectiveness, particularly in emerging markets and high-risk sectors.

KEYWORDS

Audit Quality, Digital Transformation, Institutional Ownership

Citation: Sulistyowati, T., Pardosi, P., Anwar, K., Pandin, R, Y, M & Kusmaningtyas, A. (2025). The Role of Internal Control in Fraud Prevention: A Systematic Review of Global Evidence (2021-2025). *Journal of Multidisciplinary Sustainability Asean, 2*(5), 234–247.
https://doi.org/10.70177/ijmsa.v2i5.2269

Correspondence:

Tussi Sulistyowati,
mytussi@gmail.com

Received: March 1, 2025

Accepted: May 10, 2025

Published: Oct 6, 2025

INTRODUCTION

Fraud has been a bane in the public and private sectors across the globe, undermining financial integrity, destabilizing stakeholder confidence, and damaging institutional reputation (Çapkiner Tosun, 2021). In addressing this risk, internal controls have emerged as a bulwark in preventing and detecting fraudulent activities (Siahaan et al., 2023). These controls, when well designed and implemented, are not only employed to facilitate compliance with laws and regulatory obligations but also employed to promote accountability, reduce risk, and protect the assets of an organization (Harasheh & Provasi, 2023; Meilita Rizkynanda et al., 2023). With more advanced and sophisticated fraud schemes, there is a greater need for effective internal control frameworks (Maulidi & Ansell, 2021).

between fraud deterrence and internal controls (Alzoubi, 2025). Various components of internal controls like the control environment, risk assessment, monitoring, and information and communication systems have been examined by research to study their deterrent effects on fraud acts (Taherdoost, 2021). Frameworks such as COSO (Committee of Sponsoring Organizations of the Treadway Commission) have developed widely accepted models for defining and assessing internal control systems across industries and countries (Huang, 2025).

Despite the abundance of literature on the topic, evidence is often dispersed across different regions, industries, and methodologies, making it challenging to draw generalizable conclusions (Kunisch et al., 2023). In a bid to bridge this gap, the current study conducts a systematic review of global evidence regarding the role of internal control in fraud prevention. Based on a combination of existing empirical studies, theoretical literature, and case study analysis, the review aims to identify common patterns, best practices, and key challenges relating to the efficacy of internal control for fraud prevention. The results will provide researchers, practitioners, and policy-makers with further understanding of how internal control systems can be more optimally fine-tuned in order to reduce the likelihood of fraud across various organizational environments.

Research Questions:

RQ1: How effectively do internal control systems discourage fraud across various organizational and country settings, based on international literature?

RQ2: Which specific components of internal control models are most strongly correlated with deterring fraud?

RQ3: What are the reasons why implemented internal controls to prevent fraud are effective?

Literature Review

Internal Control and Fraud Prevention

Internal control refers to the procedures, processes, and mechanisms that an organization implements to give assurance of the achievement of its objectives, including the accuracy of financial reporting, compliance with laws and regulations, and safeguarding assets (Douglas, 2024). In public and private sector organizations, internal controls are a crucial line of defense against fraud, error, and inefficiency (Boufounou et al., 2024). Fraud, being the intentional act of deception for personal or organizational gain, remains a threat globally with devastating consequences in the form of financial losses, damaged reputations, and erosion of stakeholder trust (Mandal & S., 2024). Public sector fraud takes away from good governance and diverts funds from essential public services, while private sector fraud can lead to corporate scandals and financial collapse (Sargiacomo et al., 2024). To handle these challenges, the majority of the organizations turn to formalized internal control frameworks, to which they most relate the COSO (Committee of Sponsoring Organizations of the Treadway Commission) framework (Gupta et al., 2025). The COSO framework outlines five interrelated components—control environment, risk assessment, control activities, information and communication, and monitoring—through which they collectively enable effective internal controls as well as risk management (Chan et al., 2021). Other models offer direction for internal control design and implementation, such as the ISO 31000 risk management standard (Björnsdóttir et al., 2022). These models provide organizations with a foundation for taking proactive measures in detecting, avoiding, and reacting to fraud risk, thereby incorporating accountability, transparency, and integrity into operations (Taherdoost, 2021).

Key Components of Internal Control Systems

An effective internal control system comprises a set of interrelated components operating together to avoid and detect fraud (Taherdoost, 2021). The control environment is the basis for all other components and reflects the culture, values, and leadership integrity of the organization (Altamuro et al., 2022). An effective control environment, supported by ethical standards and top management commitment to integrity, has a significant influence on employee behavior, and it reduces the likelihood of fraudulent behavior (Onesti & Palumbo, 2023). A positive control climate promotes openness and accountability and supports ethical behavior throughout the organization (Bellora-Bienengräber et al., 2022). Risk assessment is another crucial component that involves the detection and analysis of likely fraud threats that are likely to affect organizational goal attainment (Taherdoost, 2021). Firms that are regularly monitoring and reacting to risks have a higher likelihood of detecting irregularities and implementing sufficient prevention mechanisms (Mujalli, 2024). Risk assessments help align internal controls with the corresponding weaknesses and operating conditions of each company (Harasheh & Provasi, 2023).

Control activities are procedures and policies instituted to minimize risks identified and limit fraud opportunities (Taherdoost, 2021). (Umanhonlen, 2024) point to such significant activities as segregation of duties, physical security controls, authorization controls, and independent audits as being deterrents against fraud. For instance, requiring twin authorizations for financial transactions or restricting access to sensitive information are controls commonly used within the public sector and private sectors to minimize fraud risks (Chatterjee et al., 2024). Information and communication are key to the process of ensuring that relevant data is captured, communicated, and acted upon promptly (Yu et al., 2022). Effective communication channels—both formal and informal—help in the communication of internal control policies and facilitate the reporting of suspicious transactions (Maulidi & Ansell, 2021). Moreover, the use of integrated information systems aids fraud prevention by facilitating real-time monitoring and analysis of financial data and transactions (Malik et al., 2024).

Finally, monitoring ensures that internal control systems remain effective in the long term by continuous review and evaluation (Hamed, 2023). Continuous monitoring activities, such as internal audits and frequent checks, are crucial in detecting control weaknesses or fraud indicators at an early stage (Bonrath & Eulerich, 2024). According to (Kaptein, 2023) A good monitoring process not only identifies irregularities but also ensures the focus on accountability and continuous improvement within the organization. Together, these components form an integrated system of fraud prevention and protection of organizational integrity.

Internal Control Frameworks and Theoretical Foundations

The COSO model, developed by the Committee of Sponsoring Organizations of the Treadway Commission, is arguably the most widely used model to design, implement, and evaluate internal control systems (Saci Ferdia & Aida Kammoun, 2024; Sofyani et al., 2023). The model establishes five components that collectively strengthen an organization's ability to prevent and detect fraud: the control environment, risk assessment, control activities, information and communication, and monitoring (Chan et al., 2021). All of these elements play an integral role in sustaining efficient governance and diminishing exposures (Bouheraoua & Djafri, 2022). The control environment determines ethical standards and leadership culture (Alkhadra et al., 2023); risk assessment points out exposure areas where fraud might occur (Taherdoost, 2021); control activities install procedural barriers; information and communication maintain openness (C. Zhang et al., 2022); and monitoring monitors the system regularly to evaluate performance (Nudurupati et al., 2021). The formal methodology of COSO's approach helps organizations coordinate internal control objectives with operating circumstances to build their immunity to fraud (Mesa-Pérez, 2024).

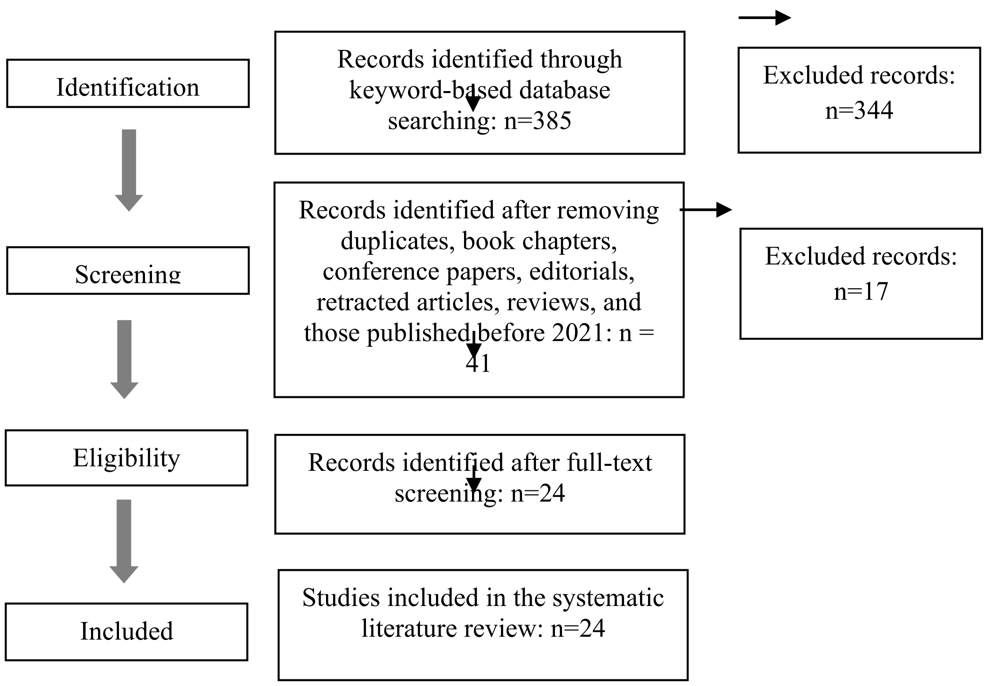
RESEARCH METHODOLOGY

This study utilized a qualitative descriptive design by performing a systematic review of Scopus-indexed journals on fraud prevention from 2021 to 2025. Through the Scopus database, an initial online search was conducted on May 12, 2025, by searching research titles using the following keywords: "Anti-fraud strategies" OR "Control environment" OR "Corporate governance" OR "Financial fraud" OR "Fraud detection" OR "Fraud prevention" OR "Fraud risk management" OR "Internal audit" OR "Internal control" OR "Internal control effectiveness" OR "Internal control systems" OR "Organizational fraud control" OR "Public sector fraud" OR "Risk assessment" OR "Risk management". This search resulted in 4,283 articles. The search was then refined using the following filters: publication years (2021–2025), subject areas ("Business, Management and Accounting" and "Economics, Econometrics and Finance"), document type ("Article"), publication stage ("Final"), source type ("Journal"), language ("English"), and open access availability. The advanced search query used was:

TITLE ("Anti-fraud strategies" OR "Control environment" OR "Corporate governance" OR "Financial fraud" OR "Fraud detection" OR "Fraud prevention" OR "Fraud risk management" OR "Internal audit" OR "Internal control" OR "Internal control effectiveness" OR "Internal control systems" OR "Organizational fraud control" OR "Public sector fraud" OR "Risk assessment" OR "Risk management" OR "Internal Control Quality" OR "Operational Effectiveness Of Control Mechanisms" OR "Robustness Of Internal Control Systems" OR "Soundness Of Internal Controls" OR "Strength Of Internal Controls" OR "Internal Oversight Effectiveness")

The search was then filtered down to 24 pertinent articles that were chosen for full-text review. The flow diagram is below.

Figure 1. Literature Review Method



Source: (Sulistyowati & Husda, 2023a, 2023b; Sulistyowati & Sukati, 2024)

RESULT AND DISCUSSION

The results in Table 1 share a common thread: they examine the role of internal control quality (ICQ) as a key driver of various organizational consequences, including performance, risk management, audit quality, financial conduct, and corporate governance. A clear commonality between most of the studies is the positive association between strong internal controls and favorable corporate consequences. For instance, Zeng et al. (2024), Wagan and Sidra (2024), and Chen and Fang (2025) demonstrate that digital transformation and information transparency raise ICQ, resulting in improved safety, risk-taking capacity, and audit quality. Similarly, Ren et al. (2025) and Zhang et al. (2024) demonstrate how institutional or regulatory interventions, such as CSISC ownership or green finance regulations, enhance internal controls, resulting in higher dividend payments or reduced financing mismatches.

Another salient similarity is using internal control as a mediating or moderating variable. As an example, Kartikasari et al. (2022) establish ICQ to mediate the managerial competence-accounting conservatism relation, while Cheng and Sutunyarak (2023) determine internal control to moderate the economic policy uncertainty-audit fee relation. The findings are in general conformity that ICQ not only leaves direct effects but also interacts with other variables in complex manners.

Despite these shared themes, the articles differ in a variety of ways. Geographical scope is a primary distinction: most studies focus on China, while others examine Indonesia (Kartikasari et al., 2022), Japan (Wagan and Sidra, 2024), and Egypt (Abouelghit and Gan, 2024). Such contextual differences shape the institutional and regulatory environments in which internal control operates. Also varied is the sectoral focus—some research studies manufacturing firms (e.g., Kartikasari et al.), banking institutions (e.g., Liu et al., 2023), or small and medium enterprises (e.g., Abouelghit and Gan, 2024), while others are comprehensive, taking the market level per se.

Moreover, methodology differs, ranging from difference-in-difference specifications and panel regressions to mixed methods and structural equation modeling. This variation impacts generalizability and the robustness of the findings. Lastly, while some papers focus on voluntary drivers of ICQ such as digital innovation or managerial capabilities, others emphasize external or regulatory pressures such as comment letters, mandatory audits, or state ownership. These differences create varying policy implications and highlight the multi-faceted nature of internal control across various settings.

Table 1. Scopus-Indexed Studies on Internal Control (2021-2025)

No	**Author (Year)**	**Country**	**Type of Audit**	**Scope**	**Method**	**Sample**	**Key Findings**
1	(Boulhaga et al., 2023)	France	Internal Control Audit	ICW effect on the ESG-performance link	GMM regression	French listed firms (2012–2018)	ICW and ESG positively influence performance; ICW weakens the ESG-performance link.
2	(Z. Li et al., 2021)	China	Financial Audit	QFII impact on IC quality	Quantitative regression	22,310 firm-years (2005–2017)	QFIIs improve IC quality; better ICs from QFIIs lead to better performance.

No	Author (Year)	Country	Type of Audit	Scope	Method	Sample	Key Findings
3	(Lutfi, 2023)	Jordan	IT Audit	IS quality + IC on AIS success	PLS-SEM	111 respondents	IS success is affected by IC and IS quality; supports D&M IS Success Model.
4	(Zhu et al., 2020)	China	Internal Control Audit	Financialization vs. cost behavior moderated by IC	Multiple linear regression	Chinese listed firms (2009–2017)	Financialization reduces cost asymmetry mainly in firms with good IC.
5	(Boulhaga et al., 2022)	France	Internal Control Audit	ICW and earnings management	OLS and GMM regression	686 firm-years (2012–2018)	Good IC reduces accrual-based EM; it doesn't limit real earnings management.
6	(Y. Chen & Ma, 2021)	China	Internal Control Audit	Financing constraints, cost stickiness, and IC quality	Quantitative	Manufacturing firms (2009–2017)	Internal constraints increase cost stickiness; IC moderates the relationship.
7	(Ding, 2023)	China	Sustainability Audit	Institutional ownership and green innovation	Panel regression	Family businesses (2009–2021)	Institutional ownership boosts green innovation via better IC, fewer financing constraints.
8	(G. Li et al., 2023)	China	Internal Control Audit	PEPU and innovation strategies	Text analysis, regression	Listed firms (2007–2021)	PEPU harms innovation; IC quality weakens this negative impact.

No	Author (Year)	Country	Type of Audit	Scope	Method	Sample	Key Findings
9	(R. Luo et al., 2023)	China	Financial Audit	VC and CSR performance	Empirical analysis	A-share listed firms (2010–2019)	VC lowers CSR; IC quality mediates this effect.
10	(Shi et al., 2024)	China	Financial Audit	ESG scores and debt costs	Regression analysis	Chinese firms	High ESG scores lower debt costs; IC quality reduces this ESG effect.
11	(B. Luo & Tian, 2023)	China	Internal Control Audit	Forbes Rich List's impact on IC	DiD + PSM	17,910 firm-years (2000–2014)	Listed entrepreneurs improve IC by lowering information asymmetry.
12	(Joel et al., 2023)	Cameroon	Cultural Audit	CEO culture & IC quality	Panel probit model	100 firms (2016–2019)	French culture CEOs enhance IC, moderated by board size and duality.
13	(Zeng et al., 2024)	China	IT Audit	Digital transformation and safety production	Empirical, cross-sectional	Chinese listed enterprises	Digital transformation improves internal control and innovation, leading to better safety performance, especially in highly marketized regions with strict safety enforcement and strong supervision.
14	f(L. Zhang et al., 2024)	China	Sustainability Audit	Green finance policies and investment-financing mismatch	DID model	A-share companies (2009–2020)	Green finance policies reduce maturity mismatch by increasing loan availability and improving internal control and transparency, especially in non-SOEs.
15	(Yuan et al., 2024)	China	Internal Control Audit	Mixed-ownership reform and competi	Empirical	State-owned enterprises	Mixed-ownership reform improves shareholder/board power, easing financing constraints and enhancing risk-taking

No	Author (Year)	Country	Type of Audit	Scope	Method	Sample	Key Findings
				tive strategy in SOEs			and internal control, leading to a differentiation strategy.
16	(Liu et al., 2023)	China	Financial Audit	Asset securitization and stock price bubbles	Empirical	40 bank annual reports (2014–2021)	Tangible securitization improves internal control and reduces bubbles; intangible securitization worsens control and increases risk.
17	(Kartikasari et al., 2022)	Indonesia	Internal Control Audit	Managerial ability, convergent interest, and accounting conservatism	Empirical, SEM, Sobel test	Manufacturing firms (2018–2019)	Internal control mediates the relationship between managerial ability/convergent interest and conservatism.
18	(Ren et al., 2025)	China	Internal Control Audit	Minority shareholder protection and dividend policy	Empirical	Firms with CSISC shareholding	CSISC improves internal control and shareholder participation, increasing dividends in firms with initially low payouts.
19	(N. Chen & Fang, 2025)	China	Financial Audit	Online sales data disclosure and audit quality	DID model	Firms' pre- and post-2018 online data release	Online data disclosure improves audit quality via better internal control and efficiency.
20	(Wagan & Sidra, 2025)	Japan	IT Audit	Digital transformation and corpora	Panel regression	225 firms, 14,567 obs. (2010–2023)	Digital transformation boosts risk-taking by improving internal control and financial soundness, especially in

No	Author (Year)	Country	Type of Audit	Scope	Method	Sample	Key Findings
				te risk-taking			non-SOEs.
21	(Abouelghit & Gan, 2024)	Egypt	Audit of SMEs	Mandatory audit effect on SME internal control quality	Mixed methods, ANOVA, Wilcoxon	803 survey responses + 56 SMEs (2010–2023)	Mandatory audits significantly improve ICQ; developed a custom ICQ scale for SMEs.
22	In(Y. Chen et al., 2024)	China	Financial Audit	Comment letters, internal control, and cost of equity capital	Empirical	Firms receiving comment letters (2013–2019)	Comment letters increase the cost of capital unless internal control is strong; more questions and required auditor input raise the cost.
23	(Ma et al., 2024)	China	Internal Control Audit	Performance commitments in M&A and trade credit	Empirical	M&A cases in low-marketization, high-risk regions	Performance commitments increase trade credit; the effect is stronger with low internal control and audit quality, leading to higher bad debts.
24	(Cheng & Sutunyarak, 2023)	China	Financial Audit	Economic policy uncertainty (EPU) and audit fees	Panel regression (FE)	3,469 A-share firms (2007–2020)	EPU raises audit fees, but the effect is reduced with strong internal control; SOEs show less sensitivity to EPU in audit fees.

Source: Scopus, as of May 12, 2025

RQ1: How effectively do internal control systems discourage fraud across various organizational and country settings, based on international literature?

According to international literature from 2021 to 2025, internal control systems (IC) are overall effective in preventing fraud and enhancing governance in various organizational and national contexts. One of the key findings of most studies is that effective internal controls result in greater financial transparency, reduced information asymmetry, and reduced instances of opportunistic or fraudulent actions. For example, studies in China (e.g., Li et al., 2021; Chen & Fang, 2025; Zeng et al., 2024) show that internal control improvements triggered by digital transformation, regulation enforcement, or institutional reforms enhance audit quality, reduce financing risks, and reduce cost manipulation, thereby reducing fraud likelihood. In France, Boulhaga et al. (2022, 2023) reveal that while effective internal control deters accrual-based earnings management, it is not necessarily as effective against real earnings management or in mediating ESG-performance relationships. Conversely, in Jordan and Egypt, internal controls are found to enable information system success and improve SME governance, respectively, especially under mandatory audit regimes (Lutfi, 2023; Abouelghit & Gan, 2024).

Across the literature, internal control often plays a mediating or moderating role. For instance, Kartikasari et al. (2022) show IC mediates managerial ability and accounting conservatism, while Cheng & Sutunyarak (2023) determine that IC quality mitigates the inflationary effect of economic policy uncertainty on audit fees. A few pieces of literature acknowledge context-specific variables such as state ownership, audit enforcement, or industry characteristics that influence the efficacy of internal controls. Despite the diversity of national environments—within China to France, Indonesia, Jordan, Cameroon, and Egypt—the accord is categorical: sound internal control systems are a key building block in fraud prevention and good corporate governance, albeit their success would depend on enforcement mechanisms, ownership policies, and institutional external pressures.

RQ2: Which specific components of internal control models are most strongly correlated with deterring fraud?

The 2021-2025 literature mentions specific elements of internal control models most relevant to the reduction of fraud risk. The most critical is information transparency, which within the literature is often emphasized as an internal root motivating element of sound internal control. For instance, Luo & Tian (2023) and Chen & Fang (2025) analyze drivers of transparency such as data disclosure and ownership transparency, with an indication that these mechanisms increase internal control and reduce audit risk and cost of capital. Another factor that has been strongly emphasized is monitoring of activities, including the regulation of foreign institutional stakeholders (Li et al, 2021), board control (Yuan et al, 2024), and audit control (Abouelghit & Gan, 2024), all of which provide increased control environments and less fraud. Organizational culture and control environment are also of equal importance. While Kartikasari et al. (2022) observe that managerial skill and goal congruence strengthen conservatism through improved internal controls, Joel et al. (2023) point out how the cultural orientation of the CEO, when combined with board characteristics, influences the quality of internal control. IS quality and digital transformation are ever more important variables in technology-focused environments. Technology increases internal control, hence minimizing operation and audit risks (Wagan & Sidra, 2024; Lutfi, 2023; Zeng et al., 2024). Risk assessment and response activities help in minimizing the influence of external pressures like performance expectations, financial limitations, and economic instability. For example, Ding (2023) and Zhang et al. (2024) show that institutional devices like ownership reforms or green finance increase internal controls, while Ma et al. (2024) and Cheng & Sutunyarak (2023) show that internal controls protect companies from the threat of high-uncertainty settings. All of these findings indicate that the incorporation of transparency, technological support, stringent monitoring, cultural alignment, and actively managing risks in internal control systems is the optimal strategy for fraud prevention.

RQ3: What are the reasons why implemented internal controls to prevent fraud are effective?

Internal controls put in place to avert corporate fraud effectiveness are driven by several key factors mentioned above. There exists a significant positive correlation in IC quality that has a massive impact on corporate performance and helps in controlling fraud risk. For example, a Chinese-French study shows that companies with good IC quality perform better than their peers and record low earnings manipulation (Li et al. 2021; Boulhaga et al. 2022). Furthermore, institutional ownership helps improve IC quality positively, hence alleviating financial constraints and overall governance (Ding, 2023; Zeng et al., 2024). The digital transformation is also beneficial since it optimizes internal control systems and other corporate governance elements in this way, hence streamlining better innovation and risk management efficiently (Zeng et al., 2024; Wagan & Sidra, 2024). The presence of the required active shareholder-driven audit means increased internal controls, especially in SMEs (Abouelghit & Gan, 2024; Ren et al., 2025). Finally, observe that efficient systems of internal controls lead to lower costs of audit and cost of equity capital by lowering fraud risk and therefore are found to be positively related (Chen et al., 2024; Cheng & Sutunyarak, 2023). Generally, these they include digital transformation, good audits, and good ownership.

CONCLUSION

Highlights of 2021 to 2025 literature confirm the degree to which soundly designed internal controls enhance governance, limit the risk of fraud, and improve organizational performance. Concealment of malfeasance as well as poor governance is less with robust control mechanisms, as evident with the diverse cultural heritage of China, France, Jordan, and Egypt. While the power of internal controls depends on the level of institutional ownership, audit environment, information technology behavior, and digitalization requirements, it's a widespread perception that internal controls are the strongest restraint against fraud. Anti-fraud controls have a close linkage with monitoring, transparency of information, technological sophistication, and open risk management. Control is also supported by institutional controls such as mandatory audit and ownership changes. These findings cut across organizational and national borders and underscore the importance of ensuring effective internal control systems addressing fraud risks and enabling corporate accountability in different settings when complemented by strong institutional determinants.

AUTHORS' CONTRIBUTION

Look this example below:

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; In-vestigation.

Author 3: Data curation; Investigation.

Author 4: Formal analysis; Methodology; Writing - original draft.

Author 5: Supervision; Validation.

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