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Internal Control Systems and Financial Reporting Quality: The Moderating Role of Firm Leverage in Non-Financial Firms Listed on the Nairobi Securities Exchange

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Abstract
This study examined whether firm leverage moderates the association between internal control systems and financial reporting quality among non-financial firms listed on the Nairobi Securities Exchange (NSE). Financial reporting quality is essential to investor confidence and effective capital-market oversight, yet internal control systems may not deliver uniform outcomes across firms facing different financial pressures. The study used a positivist philosophy, a deductive approach and an explanatory longitudinal panel design. Secondary data were drawn from annual reports, audited financial statements and corporate-governance disclosures for 26 firms selected from a population of 39 non-financial listed firms that met the stated continuous-listing and data-availability criteria, covering 2010–2025 (416 firm-year observations). Internal controls were operationalised through an Internal Control Disclosure Index (ICDI) based on the five COSO components; leverage was measured as total liabilities divided by total assets; and financial reporting quality was proxied by the inverse of discretionary accruals estimated using the modified Jones model. Fixed-effects panel regression with firm-clustered robust standard errors showed a positive association between the ICDI and reporting quality ($\beta = 1.497$, $p < .001$) and a positive direct association between leverage and reporting quality ($\beta = 0.566$, $p < .001$). The interaction term was negative and statistically significant ($\beta = -1.767$, $p < .001$), indicating that the positive association between disclosed internal controls and reporting quality weakened as leverage increased. The study recommends that regulators, boards and lenders should assess internal-control disclosures alongside leverage exposure. This study provides evidence on how internal controls affect financial reporting quality, accountability, and the reliability of financial information.

Key terms: Firm leverage, internal controls, financial reporting quality, moderation, Nairobi Securities Exchange.

INTRODUCTION

This study examined whether firm leverage moderates the association between internal control systems and financial reporting quality among non-financial firms listed on the Nairobi Securities Exchange (NSE). Financial reporting quality underpins investor confidence, accountability, and efficient capital allocation. Weak reporting can obscure firms' financial position and expose investors and creditors to decisions based on incomplete or misleading information. Internal control systems are designed to provide reasonable assurance over operations, reporting and compliance. The COSO framework identifies five interrelated components—control environment, risk assessment, control activities, information and communication, and monitoring—that support reliable reporting (Committee of Sponsoring Organisations of the Treadway Commission [COSO], 2013). However, documented controls do not necessarily mean they are implemented effectively or that their reporting benefits are equal across firms. In this study, internal controls are measured through an Internal Control Disclosure Index (ICDI). Therefore, the empirical measure captures the extent of publicly disclosed internal control systems, not a direct audit of operational effectiveness.

Firm leverage may help explain this variation. Measured here as total liabilities divided by total assets, leverage captures how much a firm's assets are financed by liabilities. Debt can create an external monitoring channel because lenders seek credible information and may impose covenants. At the same time, high debt obligations can heighten pressure to meet targets, maintain access to finance and avoid covenant violations, potentially increasing incentives for opportunistic reporting. Non-financial firms listed on the NSE provide a relevant setting because they operate across varied sectors and financing conditions while reporting within Kenya's capital-market disclosure environment. These features make it useful to examine whether the association between disclosed internal controls and reporting quality changes with leverage.

Prior empirical evidence is mixed. Research on earnings management and capital structure reports that debt pressure can be associated with opportunistic reporting, while other studies suggest creditor monitoring may encourage reporting discipline (Alzoubi, 2016; Muñoz Mendoza et al., 2021; Tulcanaza-Prieto et al., 2020). These results are not necessarily contradictory: studies differ in sector, institutional context, leverage measures, reporting-quality proxies and model specification. Moreover, evidence on the direct association between leverage and reporting quality does not by itself show whether leverage changes the contribution of internal controls. This distinction motivates a moderation model rather than an analysis confined to separate direct effects.

Therefore, the unresolved question is whether leverage changes the strength of the association between internal-control disclosures and financial reporting quality among non-financial firms listed on the NSE. Accordingly, this study aims to determine whether firm leverage moderates the relationship between internal control systems, as represented by the ICDI, and financial reporting quality among non-financial firms listed on the NSE over 2010–2025. The corresponding null hypothesis is that firm leverage does not significantly moderate this relationship. The study tests this proposition using firm-year observations in a longitudinal panel framework; the estimates are interpreted as conditional associations rather than definitive causal effects.

LITERATURE REVIEW

Empirical Review

Relationship between Internal Control System and Financial Reporting Quality

Internal control is crucial for ensuring the quality and reliability of financial statements. A reliable internal control system can increase the reliability of financial reports (COSO,2013). Several studies have highlighted the positive impact of internal control systems on financial reporting quality.

For example, Donelson et al. (2017) examined how weak internal controls increased the risk of financial reporting fraud by top managers. The results suggested a positive association (P value < 0.05) between material weakness and unrevealed fraud. Therefore, it can be concluded that internal controls can significantly reduce the risk of financial reporting fraud by top managers. Moreover, Samuel (2024) recently studied the effects of internal control systems

on the quality of financial reporting of listed oil and gas firms in Nigeria. The results showed that firms with effective internal control systems are more likely to produce dependable and high-quality financial reports.

Monteiro et al. (2021), on the other hand, investigated the factors that affect the usefulness of financial Information, emphasising the effect of quality of internal control system and quality accounting information system on quality of financial reporting, which in turn affects the Usefulness of Financial Information. The study suggests that improving these factors can help organisations enhance information quality. Further, quality of financial reporting is directly impacted by quality of Internal control system and quality of accounting information system.

Moreover, Unueshioste et al. (2024) also evaluated the influence of internal control system on financial reporting quality of Nisa Medical Group, Nigeria. The findings indicated that internal control procedures, top management supervision, and account reconciliation significantly affect financial reporting quality. Consistent with this finding, Lari Dashtbayaz et al. (2019) examined the role of family ownership in the relationship between internal control weaknesses and the quality of financial reporting for companies listed on the Tehran Stock Exchange. The findings indicate that strong internal controls support the accuracy and credibility of financial information by preventing errors, reducing opportunities for managerial manipulation, and strengthening the overall reporting process.

Subsequently, Appah and Joyce (2024) reported a positive relationship between internal audit processes and quality of financial reporting among Nigerian manufacturing enterprises. Multivariate analysis showed that internal controls, audit risk assessment, and internal audit independence significantly affect the quality of financial reporting.

Thabit et al. (2017) further assessed how much internal control systems in Kurdistan enterprises depart from the COSO framework. The findings indicated that the COSO framework standards differ from the internal control systems of Kurdistan enterprises. The researcher recommended that Kurdistan enterprises use the COSO framework to strengthen their internal control systems and align with global internal control requirements. Similarly, Hamed (2023) examined the role of internal control systems in banks listed on the Amman Stock Exchange. Although the study did not focus directly on financial reporting quality but rather on financial sustainability, it supported the notion that good internal controls enhance corporate responsibility and reporting processes.

However, Ngali et al. (2021), in their research on the effect of internal audit and the internal control system on the quality of financial statements in the Ministry of Maritime Affairs and Fisheries of Indonesia, found that the internal control system's effectiveness does not significantly affect financial statement quality. These insignificant findings suggest that other factors may influence this relationship.

Taken together, the reviewed studies generally link stronger internal-control systems to more reliable reporting, but the evidence varies by setting and measurement. For example, Donelson et al. (2017) link material weaknesses in internal controls to a greater likelihood of subsequent financial-reporting fraud, while Monteiro et al. (2021) examine internal-control and accounting-information-system quality in relation to reporting quality and information usefulness. Studies in specific sectors and jurisdictions likewise report positive associations, although the Indonesian public-sector study cited above reports an insignificant effect. These differences caution against assuming that disclosure of internal control systems is equivalent to control effectiveness. They also suggest that the effect may depend on governance, implementation and the financial conditions in which internal control systems operate.

Relationship between Internal Control and Firm Leverage

Evidence on the connection between internal controls and leverage suggests that governance and financing decisions may be interdependent, but it does not establish the moderation relationship tested here. Giannopoulos et al. (2025) associate stronger governance structures with more effective internal controls and greater stakeholder confidence, while Mwaungulu et al. (2023) report mixed evidence on whether internal controls substitute for or complement leverage. This literature is relevant

because it shows why the financial and governance context should be considered together; the present study goes further by testing whether leverage changes the association between the ICDI and reporting quality.

Janardhanan and R (2020) examined internal control and firm-specific characteristics in relation to firm value in Indian financial-services firms. Their setting and dependent variable differ from those of the present study, so the findings serve only as contextual evidence that leverage and governance characteristics can jointly affect firm outcomes; they do not directly establish an effect on financial reporting quality.

Additionally, Giannopoulos et al. (2025) examined the effectiveness of the internal control system of companies listed on the Athens Stock Exchange in Greece. The study explored the relationship between corporate governance mechanisms, internal controls, and organisational performance. The findings indicated that firms with strong governance structures, such as effective audit committees, independent boards, and comprehensive risk management systems, had more effective internal control systems. The study also found that strong internal controls improve transparency, accountability, and stakeholder confidence, and reduce organisational risk. The authors argued that strong internal controls can improve the firm's credibility with creditors and investors, facilitating access to external financing and allowing higher leverage. These results show that internal control systems can positively influence financial leverage by improving information quality and lenders' confidence.

However, Mwaungulu et al. (2023), who reviewed almost two decades of research on corporate governance, internal control, and leverage, revealed mixed evidence on the relationship between internal controls and financial leverage. Some studies found that strong internal controls reduce leverage by constraining managerial opportunism and excessive borrowing. In contrast, others argued that leverage served as an external governance mechanism that replaced internal controls. Therefore, the authors argued that the relation between internal controls and leverage is still inconclusive and very context-dependent (organisational and institutional)

Relationship between Financial Reporting Quality and Firm Leverage

Al-Jabri (2026) investigated the relationship between capital structure decisions and the financial reporting quality of firms listed on the Pakistan Stock Exchange. The sample comprised 165 non-financial companies from 2010-2023. The quality of financial reporting was measured using the Jones (1991) accrual model and the Dechow et al. (1995) accrual quality model, while leverage was proxied by the ratio of total debt to total debt plus the market value of equity. Using a random-effects model and a system generalised method of moments (GMM) approach, the study found that higher financial reporting quality was significantly associated with lower financial leverage. The results suggest that high-quality financial reporting firms have lower information asymmetry and agency costs and are therefore less debt-dependent. Moreover, the results showed that financial constraints amplified the negative impact of financial reporting quality on leverage.

Alzoubi (2016) examined the effect of audit quality on earnings management among 86 companies listed on the Amman Stock Exchange from 2007-2010. Using generalised least squares regression and discretionary accruals estimated through the Modified Jones Model, the study found that leverage was positively associated with earnings management, indicating that highly leveraged firms were more likely to manipulate earnings through discretionary accruals. This finding supports the debt covenant hypothesis, which argues that managers of firms with high debt obligations have incentives to alter reported earnings to avoid violating debt agreements. Consequently, higher leverage was associated with lower financial reporting quality.

Masud (2021) examined determinants of financial reporting quality among publicly listed food and allied companies in Bangladesh using annual reports and audited financial statements for 2015–2020 and the modified Jones model. The study reported a positive association between leverage and its reporting-quality proxy. This contrasts with evidence associating leverage with earnings management and illustrates why the direction of the direct relationship should not be assumed in advance.

However, Kalbuana et al. (2022) studied 18 retail and wholesale enterprises listed on the Indonesia Stock Exchange from 2016 to 2020 and found contradictory evidence. The study used earnings management as a dependent variable, which is typically regarded as a proxy for poor financial reporting quality. The findings indicated that leverage has no significant effect on earnings management, meaning debt levels do not necessarily affect financial reporting quality. Therefore, leverage does not automatically improve managerial discipline or financial reporting, as Masud (2021) indicated. The results suggest that even in heavily leveraged organisations, managers can manipulate profitability if internal monitoring and oversight are lacking. This suggests that leverage's monitoring role is unlikely to work in isolation; its effectiveness depends on the strength of other governance measures such as internal controls, board oversight, and audit quality.

Additionally, Amanamah (2024) examined the impact of corporate governance, financial leverage, external audit quality, and financial reporting quality on listed firms in Ghana. The study used a panel dataset of 650 firm observations from 2009 to 2021. Financial reporting quality was measured by compliance with International Financial Reporting Standards (IFRS). The results showed that financial leverage was negatively related to financial reporting quality; i.e., high-leverage firms were less likely to exhibit high IFRS compliance. The results show that higher debt obligations can lead managers to engage in financial reporting activities aimed at pleasing creditors and reducing the perceived risk of high leverage.

The evidence on leverage and financial reporting quality is also mixed. Some studies link higher leverage to greater earnings management or lower reporting quality, consistent with pressure from debt covenants; others suggest creditor scrutiny may promote more disciplined reporting, while some find no significant relationship. These differences may reflect sectoral and institutional variation, distinct definitions of leverage, and whether reporting quality is measured through discretionary accruals, IFRS compliance or other indicators. Most importantly, studies of the direct leverage–reporting relationship do not establish whether leverage conditions the relationship between internal controls and reporting quality. This study therefore addresses whether leverage changes the strength of the association between the ICDI and financial reporting quality in non-financial NSE-listed firms.

Theoretical Framework

The study combines Agency Theory and the Resource-Based View (RBV), with Agency Theory serving as the principal explanatory lens. Agency Theory explains why information asymmetry and divergent incentives between managers and capital providers can create demand for monitoring and reliable reporting. Internal controls may constrain managerial discretion, while leverage can exert two competing influences: creditors may monitor borrowers more closely, but debt-service and covenant pressure may also increase incentives to manage reported results. The interaction model tests which pattern best fits the sampled firms; it does not assume in advance that leverage is uniformly beneficial or harmful.

The Resource-Based View explains differences in organisational outcomes through firm-specific resources and capabilities (Wernerfelt, 1984; Barney, 1991; Kraaijenbrink et al., 2010). In this study, internal-control systems are treated as a governance capability that can support reliable reporting. At the same time, the ICDI is understood as a disclosure-based indicator of that capability rather than a direct measure of its quality in operation. Financial constraints associated with leverage may affect a firm's ability to maintain, implement and monitor control processes. RBV therefore complements Agency Theory: the former highlights resource and capability constraints, while the latter explains monitoring and incentives. Together, they provide a rationale for testing leverage as a moderator.

The moderation hypothesis follows from these complementary explanations. If creditor monitoring dominates, leverage could strengthen the association between internal-control disclosures and reporting quality. If debt-related pressure and resource constraints dominate, that association could weaken as leverage rises. The estimated interaction term is therefore central to the theoretical argument. Because the data are observational and the control measure is disclosure-based, the findings should be interpreted as

evidence of conditional association rather than proof that leverage itself causes changes in control effectiveness.

The moderation model contributes theoretically by moving beyond the simple assumption that more leverage is either beneficial or harmful. Instead, the study examines whether the financial condition represented by leverage changes the effectiveness of an existing governance capability. This is consistent with the study's broader multi-theoretical framework.

METHODOLOGY

The study adopted a quantitative, positivist, deductive approach. An explanatory longitudinal panel design was used because the research question concerns variation in the relationship between internal-control disclosures, leverage and financial reporting quality across firms and over time. Repeated firm-year observations allow the analysis to account for time-invariant firm characteristics through firm fixed effects and to use within-firm variation over the 2010–2025 period. The design does not, by itself, eliminate reverse causality or all time-varying omitted-variable bias; accordingly, results are interpreted as conditional associations.

The target population comprised 39 non-financial companies listed on the NSE across seven sectors: agriculture (6), automobiles and accessories (1), commercial and services (11), construction and allied (5), energy and petroleum (5), manufacturing and allied (10), and telecommunications (1). The initial population of 39 firms was distinguished from the final analytical sample of 26 firms. The study retained firms that remained actively listed throughout 2010–2025 and had sufficiently complete annual reports, audited financial statements and governance disclosures to construct the study variables; financial institutions were excluded because of their distinct regulatory and reporting environments.

Audit opinion was coded as a binary variable. Firms receiving an unmodified (unqualified) audit opinion were assigned a value of one (1), while firms receiving a qualified opinion, adverse opinion, or disclaimer of opinion were assigned a value of zero (0). This coding reflects the distinction between clean and modified audit opinions and is consistent with prior research that uses audit opinion as an indicator of reporting and audit outcomes.

Secondary data were obtained from published annual reports, audited financial statements, corporate governance reports, company websites, the NSE and the Capital Markets Authority. Internal control disclosures were used to construct the Internal Control Disclosure Index (ICDI), while financial statements provided data for firm leverage and discretionary accruals. We systematically extracted data, triangulated and cross-checked them against authoritative sources, cleaned them for inconsistencies, duplicates, missing values, and outliers, and organised them into a panel dataset. Unverifiable observations were excluded.

To assess ICDI reliability, a second coder independently coded 20 per cent of annual reports using the same criteria. Cohen's Kappa was 0.78, indicating substantial inter-coder agreement (Cohen, 1960). Ethical approval was obtained from the University of Eastern Africa, Baraton Ethics Committee and NACOSTI. Publicly available data were responsibly used, sources acknowledged, and academic integrity and transparency maintained.

Table 1: List of Companies and their Inclusion Status

Industry	Company	Status	Reason
Agricultural (6)	Eaagads Ltd	excluded	Incomplete data available
	Kakuzi Plc	Included	Complete data available
	Kapchorua Tea Kenya Plc	Included	Complete data available
	Sasini Plc	Included	Complete data available
	Limuru Tea Plc	Excluded	Incomplete annual reports
	Williamson Tea Kenya Plc	Included	Complete data available
Automobile & Accessories (1)	Car & General (K) Plc	Included	Complete data available
Commercial & Services (11)	Kenya Airways Plc	Included	Complete data available
	Nation Media Group Plc	Included	Complete data available
	Standard Group Plc	Included	Complete data available
	TPS Eastern Africa (Serena) Plc	Included	Complete data available
	Express Kenya Plc	Included	Complete data available
	Scangroup Plc	Included	Complete data available
	Longhorn Publishers Plc	Excluded	Insufficient observations
	Home Afrika Ltd	Excluded	Insufficient observations
	Nairobi Business Ventures Plc	Excluded	Incomplete annual reports
	Uchumi Supermarkets Plc	Excluded	Prolonged suspension and financial distress
	Deacons (East Africa) Plc	Excluded	Insufficient data following suspension
Construction & Allied (5)	Bamburi Cement Plc	Included	Complete data available
	East African Portland Cement Plc	Included	Complete data available
	Crown Paints Kenya Plc	Included	Complete data available
	East African Cables Plc	Included	Complete data available

Energy & Petroleum (5)	Kenya Power & Lighting Co. Plc	Included	Complete data available
	KenGen Plc	Included	Complete data available
	TotalEnergies Marketing Kenya Plc	Included	Complete data available
	KenolKobil Plc (Rubis Energy)	Excluded	Delisted following acquisition
	Umeme Ltd	Excluded	listed after the study period
Manufacturing & Allied (10)	British American Tobacco Kenya Plc	Included	Complete data available
	BOC Kenya Plc	Included	Complete data available
	Carbacid Investments	Included	Complete data available
	East African Breweries Plc	Included	Complete data available
	Eveready East Africa Plc	Included	Complete data available
	Unga Group Plc	Included	Complete data available
	Sameer Africa Plc	Included	Complete data available
	Kenya Orchards Ltd	Excluded	Missing annual reports
	Flame Tree Group Holdings Plc	Excluded	Insufficient time-series observations
	Mumias Sugar Company Plc	Excluded	Prolonged suspension and missing reports
	Rea Vipingo Plantations Ltd	Excluded	Delisted in 2015
Telecommunication (1)	Safaricom Plc	Included	Complete data available

FINDINGS AND DISCUSSION

Table 2. Direct Effects on Financial Reporting Quality

Fixed effects (within) regression Number of obs = 416
Group variable: firm Number of groups = 26

R-sq: within = 0.6801 Obs per group: min = 16
between = 0.2712 avg = 16.0
overall = 0.6537 max = 16

F(5,25) = 132.82
corr (u_i, Xb) = -0.0846 Prob > F = 0.0000

(Std. Err. adjusted for 26 clusters in firm)

FRQ	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
FA	-.0043215	.0007182	-6.02	0.000	-.0058007	-.0028423
ICS	1.497061	.082748	18.09	0.000	1.326638	1.667484
FL	.5659755	.0481199	11.76	0.000	.4668707	.6650803
_cons	-.0476266	.1727654	-0.28	0.785	-.4034435	.3081904
sigma_u	.06227988					
sigma_e	.16831622					
rho	.12042496	(fraction of variance due to u_i)				

FRQ: Financial Reporting Quality, **FA**: Firm Age**, ICS:** Internal Control System**, FL:** Firm Leverage

Source: Researcher, 2026

Table 1 presents the fixed-effects regression results with robust standard errors. The results indicate that the overall model is statistically significant (p = 0.000), implying that the explanatory variables jointly influence financial reporting quality. Furthermore, the model explains approximately 68.01 per cent of the variation in financial reporting quality, indicating strong explanatory power of the selected predictors in accounting for differences in financial reporting quality across firms. The regression results indicated that firm age had a negative and significant effect on financial reporting quality (β = -0.0043215, p = 0.000 < 0.05). The negative coefficient indicates that, holding other factors constant, a unit increase in firm age is associated with a 0.0043215-unit decrease in FRQ.

The results indicate that internal control systems have a significant positive effect on financial reporting quality, as shown by the regression coefficient for quality (β = 1.497, p < 0.05). The 95 per cent confidence level is supported by a confidence interval ranging from 1.327 to 1.667, which excludes zero, thus reinforcing the reliability and significance of the effect observed. Excluding zero from a confidence interval matters because zero represents no effect or no relationship between the independent and dependent variables. The analysis suggests that effective internal controls are crucial to improving financial reporting quality, indicating that improvements in internal control systems are associated with higher financial reporting quality. Specifically, a one-unit increase in internal control effectiveness is associated with a 1.497-unit increase in financial reporting quality, suggesting that stronger internal control mechanisms play a critical role in enhancing the reliability, accuracy, and credibility of financial reporting.

Firm leverage had a positive and statistically significant effect on financial reporting quality (β = 0.567, p < 0.05).

quality (β = 0.567, p < 0.05). The 95 per cent confidence interval was 0.467 to 0.665, indicating that the true effect is likely between 0.467 and 0.665. Because zero falls outside this range, the evidence suggests the effect is real and not zero. This supports the conclusion that the relationship is statistically significant and that the observed effect is unlikely to have occurred by chance; instead, it likely reflects a real relationship between the variables. The findings further suggest that firm leverage plays an important role in shaping financial reporting outcomes. Specifically, a one-unit increase in firm leverage is associated with a 0.567-unit increase in financial reporting quality, implying that higher leverage may enhance financial reporting quality through increased creditor monitoring, stricter debt covenant enforcement, and stronger incentives for firms to maintain transparent and credible financial disclosures.

H_{01}: Internal Control System has no Significant Effect on Financial Reporting Quality.

Table 1 indicates that ICS has a positive and statistically significant effect on financial reporting quality (β = 1.497, p < 0.05), suggesting that a one-unit increase in internal control systems is associated with a 1.497-unit increase in financial reporting quality among non-financial firms listed on the Nairobi Securities Exchange. The p-value is less than 0.05, so we reject the null hypothesis that internal control systems have no significant effect on financial reporting quality. In other words, the findings provide strong empirical evidence that effective internal control systems significantly strengthen the accuracy, reliability, and overall soundness of financial reporting by strengthening monitoring mechanisms, reducing information asymmetry, and limiting the likelihood of reporting errors and misstatements.

This finding aligns with Azizah and Aswar (2022), who found that robust internal control mechanisms improve financial reporting outcomes. They argue that such systems strengthen financial statement preparation processes, enhance oversight, and reduce the likelihood of reporting inconsistencies, thereby improving the overall quality of financial disclosures, particularly in public sector entities. From an agency theory perspective, internal control systems serve as a governance mechanism that reduces agency conflicts arising from the separation of ownership and control. By reducing information asymmetry and limiting managerial opportunism, ICS enhances monitoring effectiveness and aligns managerial actions with shareholders' interests, ultimately enhancing financial reporting quality.

H_{02}: Firm Leverage has no significant effect on Financial Reporting Quality.

Table 1 shows that firm leverage has a positive and statistically significant effect on financial reporting quality in model 5 (β = 0.567, p < 0.05). This indicates that a one-unit increase in firm leverage is associated with a 0.567-unit increase in financial reporting quality among non-financial firms listed on the Nairobi Securities Exchange. The p-value is less than 0.05, so we reject the null hypothesis that firm leverage has no significant effect on financial reporting quality. This suggests that higher firm leverage may enhance financial reporting quality by intensifying creditor oversight, reinforcing compliance with debt covenants, and motivating firms to adopt more transparent, well-disciplined financial reporting practices.

These findings align with the argument that leverage and information quality can interact to shape financing and reporting decisions. For example, Lin and Wen (2023) model the joint role of financial leverage and information quality and show that the optimal information-quality choice depends on leverage. Their theoretical setting differs from the present empirical study, but it supports examining leverage and reporting quality jointly rather than interpreting their direct association in isolation.

However, the findings contrast with Falana et al. (2025), who found a significant negative relationship between leverage and financial reporting quality for multinational firms in Nigeria. The authors argue that debt-servicing obligations and compliance with debt agreements put highly levered firms under greater financial pressure. This increases the likelihood that managers will engage in opportunistic reporting practices to improve a company's financial position to please creditors and investors, thereby reducing financial reporting quality.

Conditional Effects on Financial Reporting Quality

It was important to determine whether the interaction involving firm characteristics was statistically significant before testing its moderating effect on the c'-path. Therefore, the study initially estimated the direct effect of financial reporting quality on the interaction terms and control variables. This step ensured that the conditions for conducting moderation analysis were met.

Table 3. Conditional Direct Effects on Financial Reporting Quality

Fixed effects (within) regression Number of obs = 416
Group variable: firm Number of groups = 26

R-sq: within = 0.7442 Obs per group: min = 16
between = 0.4726 avg = 16.0
overall = 0.7283 max = 16

F (8,25) = 102.67
corr (u_i, Xb) = -0.0602 Prob > F = 0.0000

(Std. Err. adjusted for 26 clusters in firm)

FRQ	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
FA	-.0049188	.0006172	-7.97	0.000	-.0061901	-.0036476
ICS	1.45655	.0726593	20.05	0.000	1.306905	1.606195
AQ	.825863	.0477329	17.30	0.000	.7275553	.9241707
ICS*FL	-1.767498	.3584231	-4.93	0.000	-2.505684	-1.029311
_cons	-.0692374	.1470176	-0.47	0.642	-.3720259	.2335511
sigma_u	.05114767					
sigma_e	.15110041					
rho	.10280353	(fraction of variance due to u_i)				

FRQ: Financial Reporting Quality, **FA**: Firm Age**, ICS:** Internal Control System**, FL:** Firm Leverage

H_{03}: *Firm Leverage does not moderate the relationship between Internal Control System and Financial Reporting Quality*

Table 2 reports a negative and statistically significant coefficient for the interaction between the internal-control index and firm leverage ($\beta = -1.767$, SE = 0.358, $t = -4.93$, $p < .001$; 95% CI [−2.506, −1.029]). The negative interaction indicates that the positive association between internal-control disclosures and financial reporting quality becomes weaker as leverage increases. The result supports rejection of the null hypothesis of no moderation in the reported model. However, this does not mean internal controls have no value in highly leveraged firms, nor does it establish that leverage weakens controls. Rather, it is consistent with the possibility that debt-related pressure offsets some of the reporting benefit associated with disclosed internal control systems. This interpretation is compatible with the debt-pressure explanation in studies of leverage and earnings management, although differences in settings and measures should be considered when comparing results.

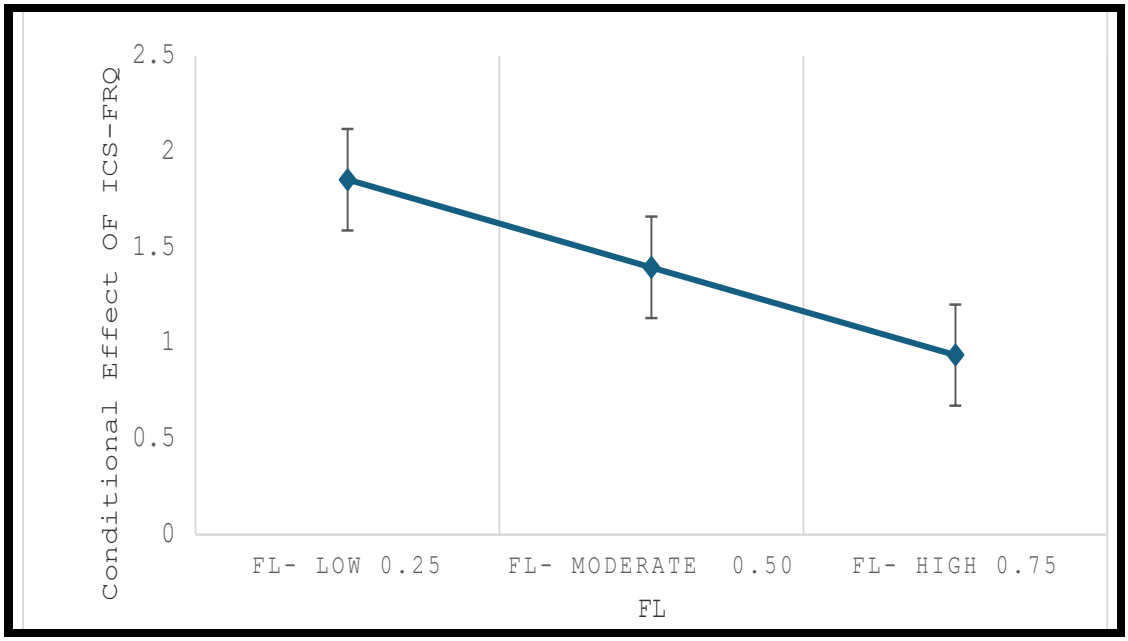

Figure 1. Moderating Role of Firm Leverage in the Association between Internal-Control Disclosures and Financial Reporting Quality

Figure 2 shows that internal control systems enhance financial reporting quality; however, this positive effect weakens as firm leverage increases. At low leverage, internal control systems have a stronger impact on improving financial reporting quality. In contrast, at higher leverage levels, internal controls are less effective, suggesting that increased debt pressure may reduce their ability to improve financial reporting quality.

Discussion

The descriptive results indicate variation across firms in the reporting-quality proxy, internal-control disclosure index and leverage. The mean FRQ value in the original analysis is −0.076, ranging from −0.1628 to 0.0000. The disclosure index has a mean of 0.704 (SD = 0.126), indicating that disclosed control components varied across the sample. Mean leverage is 0.501 (SD = 0.157), suggesting substantial variation in the proportion of assets financed by liabilities. These descriptive statistics contextualise the regression but do not, on their own, establish the quality or effectiveness of controls.

The results indicate that the average age of firms listed on the Nairobi Securities Exchange (NSE) is 4.1959, with firm age ranging from a minimum of 2.5649 to a maximum of 5.0498. The standard deviation of 0.4786 reflects notable variation in firm age across the sample. This suggests that while most non-financial firms are relatively well-established, the market includes a considerable mix of younger and more mature firms. This diversity in firm age may reflect differences in operational experience, governance structures, and reporting practices, which could influence financial reporting behaviour.

The internal control system has a mean of 0.7040, with values ranging from 0.3780 to 1.000 and a standard deviation of 0.1262. These results indicate that, on average, non-financial firms listed on the Nairobi Securities Exchange maintain relatively moderate to strong internal control systems, although there is observable variation across firms. The minimum and maximum values further highlight differences in internal control strength, with some firms showing relatively weak systems while others demonstrate fully developed, robust controls. Overall, the findings suggest that most firms maintain reasonably established internal control systems, though implementation varies across firms.

Firm leverage has a mean of 0.5008, with a minimum of 0.0967, a maximum of 0.9945, and a standard deviation of 0.1567. These results indicate that, on average, non-financial firms listed on the Nairobi

Securities Exchange finance approximately 50.08 per cent of their assets through debt, reflecting a balanced reliance on debt and equity financing. The standard deviation suggests moderate variation around the mean, indicating differences in capital structure decisions across firms. The minimum and maximum values also show significant variation, with some firms using very low leverage while others operate with highly leveraged capital structures. Overall, the findings suggest diverse financing strategies among the sampled firms, ranging from conservative to highly debt-dependent positions.

The positive correlation between the ICDI and FRQ ($r = 0.577$, $p < .001$) supports the proposition that more extensive disclosure of internal-control systems is associated with higher values of the transformed reporting-quality proxy. This association accords with research linking control weaknesses to reporting-fraud risk and with work on the relationship between internal-control quality and financial-information usefulness (Donelson et al., 2017; Monteiro et al., 2021). However, because the study measures disclosures rather than directly observed control performance, the result should not be overstated as proof that all disclosed controls operate effectively.

Leverage is positively correlated with FRQ in the bivariate analysis ($r = 0.244$, $p < .001$) and has a positive coefficient in the reported direct-effects model ($\beta = 0.566$, $p < .001$). One plausible interpretation is that creditor monitoring and covenant requirements encourage reporting discipline. This interpretation must be balanced against evidence that debt pressure can also encourage earnings management. The direct association should therefore be understood as sample- and model-specific, not as evidence that increasing leverage will necessarily improve reporting quality.

The key result was the negative interaction between the ICDI and leverage ($\beta = -1.767$, $p < .001$). This indicates that the positive association between disclosed internal controls and FRQ declines as leverage increases. Agency Theory offers one plausible explanation: managers under greater debt pressure may face stronger incentives to meet contractual targets, potentially weakening the practical reporting benefit of internal control systems. This also supports the view that a disclosed control framework may not be sufficient when financial pressure is high.

CONCLUSION AND RECOMMENDATIONS

Conclusion: The study concludes that internal-control disclosures are positively associated with financial reporting quality and that leverage is directly and positively associated with the transformed FRQ measure. In contrast, the interaction between the ICDI and leverage is negative and statistically significant. The principal conclusion is therefore conditional: the positive association between disclosed internal controls and reporting quality becomes weaker as leverage rises. This does not imply that leverage is universally harmful or that internal controls stop mattering in highly leveraged firms. Interpreting the moderation estimate remains conditional on verifying and correcting the undefined AQ term in Table 2, confirming the model specification, and aligning the plotted marginal effects with the final model.

Recommendations: The study recommends that policymakers and regulators strengthen disclosure requirements and pay closer attention to highly leveraged firms. The moderation result suggests that firms with substantial debt exposure warrant particular attention because debt pressure may weaken the effectiveness of internal control systems in producing high-quality financial reporting. Regulatory attention to debt obligations and related disclosures can therefore complement broader internal-control requirements.

For managers, the findings imply that internal control systems should be paired with disciplined leverage management. Highly leveraged firms should strengthen reporting discipline and ensure that debt obligations do not undermine control processes. Managers should recognise that creditor pressure can create reporting incentives that need to be addressed through effective governance and transparent reporting.

For creditors and other stakeholders, the finding suggests that reliance on internal controls should be assessed in conjunction with the firm's financial structure. High leverage may generate additional monitoring, but the negative interaction indicates that creditor scrutiny should not be assumed to eliminate

the reporting pressures associated with debt. Stakeholders may therefore benefit from examining both control disclosures and leverage exposure when evaluating reporting reliability.

Ultimately, the study recommends that future researchers should use dynamic panel models or structural equation modelling to address potential endogeneity and investigate more complex relationships among internal controls, leverage, and reporting quality. These approaches could further examine whether the negative moderation persists after accounting for firm-specific and temporal influences.

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