

Top Management Characteristics and Firm-Specific Factors on Fraud Ratings in Nigeria's Listed Services Companies

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Abstract

This study examines the influence of top management characteristics and firm-specific factors on fraud ratings in Nigeria's listed service companies. Using panel data from 22 firms over the period 2013–2023, fraud risk is measured using the Beneish M-Score, while independent variables include top management ownership, gender diversity, span of control, firm size, and leverage. Employing panel regression models, the findings reveal that leverage significantly reduces fraud risk, emphasizing the role of external monitoring in corporate governance. However, top management ownership, gender diversity, span of control, and firm size do not exhibit statistically significant effects on fraud ratings. These results suggest that while corporate governance mechanisms are critical, their effectiveness may vary depending on regulatory environments and industry contexts. The study contributes to the literature by integrating fraud detection measures with governance attributes, highlighting the role of leverage in financial risk mitigation. It offers theoretical contributions to agency and upper echelons theories while providing practical implications for regulators, investors, and policymakers. Strengthening governance frameworks, enhancing diversity policies, and maintaining optimal capital structures are recommended strategies for reducing fraud risk. Future research should explore these relationships across broader samples and different economic sectors to validate these findings.

Keywords: Beneish M-Score, Corporate Governance, Fraud Ratings, leverage, Top Management Characteristics.

INTRODUCTION

In an era marked by rising corporate scandals and financial manipulation, detecting and mitigating fraudulent activities has become paramount to preserving investor trust and economic stability. Fraudulent financial reporting not only erodes shareholder value but also distorts market efficiency, impairs corporate reputation, and undermines the integrity of

financial systems. As businesses face increasing regulatory scrutiny and stakeholder activism, reliable tools such as the Beneish M-Score have gained widespread attention for their ability to detect earnings manipulation through financial ratio analysis (Beneish, 1999; Khan, Rahman, & Singh, 2023).

Fraud detection, however, is not solely a function of financial data but is closely tied to internal governance mechanisms and firm-level characteristics. Top management characteristics—including ownership concentration, gender composition, and managerial span of control—are critical elements shaping strategic decisions, compliance behavior, and risk management culture (Hambrick & Mason, 1984; Nguyen, Pham, & Tran, 2021). These attributes may influence fraud risk by either promoting transparency or fostering managerial entrenchment. Simultaneously, firm-specific factors such as financial leverage and firm size significantly affect both managerial incentives and operational vulnerabilities. While high leverage can trigger financial distress and fraudulent tendencies, it can also enhance monitoring through debt covenants and creditor oversight (Chen, Zhang, & Wang, 2020; Adebayo, Yusuf, & Olanrewaju, 2022).

Despite the growing attention to corporate governance and fraud mitigation, the extant literature remains inconclusive and fragmented, especially within emerging economies like Nigeria. Prior studies have reported mixed results regarding the role of managerial ownership, gender diversity, and firm leverage in curbing fraud (Adekunle, Hassan, & Ibrahim, 2021; Kusuma, 2020; Zahra, Priem, & Rasheed, 2005). Most of these studies either focus on manufacturing firms or rely on cross-sectional data, thereby limiting their applicability to dynamic, service-oriented sectors where operational risks and fraud pathways differ significantly. Moreover, several investigations have overlooked the potential interaction between governance attributes and firm-specific financial structures, leaving a critical gap in understanding how these factors jointly influence fraud vulnerability over time.

This study addresses these gaps by examining the influence of top management characteristics (ownership, gender diversity, and span of control) and firm-specific factors (leverage and size) on fraud ratings of listed service companies in Nigeria. Using panel data from 22 firms between 2013 and 2023, the study applies the Beneish M-Score as a proxy for fraud risk and utilizes panel regression techniques to test the relationships. The significance of this study lies in its longitudinal scope, focus on a service-based industry, and contribution to the governance–fraud nexus within an African regulatory context. By integrating insights from agency and upper echelons theories, this research not only enhances theoretical understanding but also offers practical recommendations for regulators, investors, and board-level decision-makers. The study contributes to policy reforms aimed at strengthening internal control frameworks and promoting ethical governance across the Nigerian corporate landscape.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Conceptual Review

Fraud rating is a systematic assessment of the likelihood of financial statement manipulation or fraudulent activities within a firm. It provides a quantifiable risk measure that supports

stakeholders—such as investors, regulators, and auditors—in identifying potential financial misconduct. One of the most widely used tools for quantifying fraud risk is the Beneish M-Score, developed by Beneish (1999), which utilizes eight financial ratios—including the days' sales in receivables index, gross margin index, asset quality index, and leverage index—to detect earnings manipulation. The Beneish model classifies firms based on a statistical threshold, flagging those with characteristics commonly associated with fraud. Its popularity stems from its empirical accuracy and application in both academic and professional fraud detection contexts (Adebayo et al., 2022).

Top management characteristics are fundamental elements of corporate governance, influencing the firm's strategic direction, ethical standards, and internal control systems. This study focuses on three distinct top management attributes:

Top Management Ownership refers to the percentage of a firm's equity held by its top executives (e.g., CEO, CFO, executive directors). From an agency theory perspective, managerial ownership aligns the interests of managers with those of shareholders, theoretically reducing opportunistic behaviors and fraudulent tendencies (Jensen & Meckling, 1976). However, excessive ownership may also lead to entrenchment, reducing external oversight (Tang & Li, 2023).

Top Management Gender Diversity captures the proportion of female executives within top management roles. Gender diversity is often associated with ethical leadership, transparency, and improved corporate governance. Studies suggest that female executives tend to exhibit stronger risk aversion and commitment to compliance, potentially reducing fraud risk (Nguyen et al., 2021). Nevertheless, the influence of gender diversity may vary based on organizational culture, tokenism, or societal norms (Wang et al., 2019).

Top Management Span of Control denotes the number of subordinates directly reporting to top executives. It reflects the structural capacity of leadership to manage operations effectively. A wider span may promote agility but could dilute oversight, while a narrow span may ensure closer supervision but hinder responsiveness (Bandiera et al., 2013; Huang & Guo, 2023). Span of control is thus a critical managerial construct influencing internal control effectiveness and fraud risk.

Firm-specific factors also play a substantial role in determining a firm's vulnerability to financial fraud:

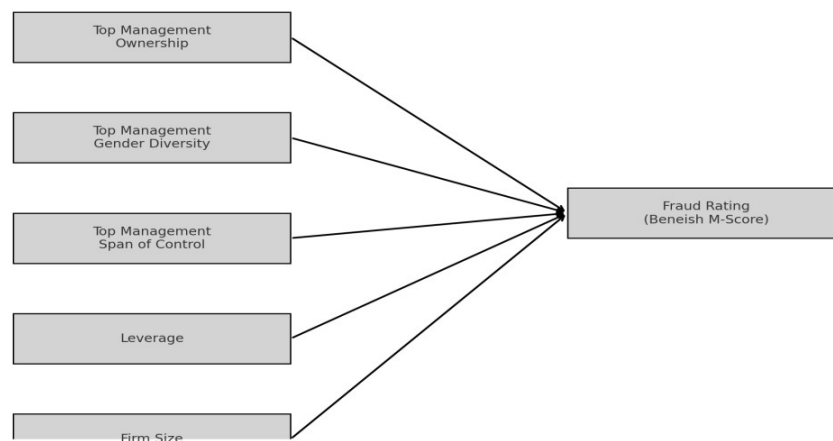
Leverage, measured as the ratio of total liabilities to total assets, indicates a firm's financial structure and exposure to debt. Higher leverage can impose external discipline through creditor monitoring, potentially reducing fraud (Nguyen et al., 2021). Conversely, firms under pressure to meet debt obligations may resort to fraudulent financial reporting to avoid covenant violations or reputational damage (Adekunle et al., 2021).

Firm Size is commonly proxied by the natural logarithm of total assets and reflects the scale and complexity of operations. Larger firms may benefit from institutionalized governance mechanisms and external audits, which reduce the likelihood of fraud (Adebayo et al., 2022).

However, organizational complexity in larger firms may obscure fraud through decentralized operations and layered reporting structures (Chen et al., 2020).

This study’s conceptual framework posits that fraud ratings are influenced by the interplay between top management characteristics and firm-specific factors. Understanding these dynamics provides insight into the effectiveness of internal governance in mitigating fraudulent behavior, particularly within the Nigerian service sector context, where institutional enforcement mechanisms may be less robust than in developed economies.

Conceptual Framework: Influence of Top Management Characteristics and Firm-Specific Factors on Fraud Rating



Source: Researchers’ Conceptualization (2025)

Figure 1 presents the conceptual framework illustrating how top management characteristics (ownership, gender diversity, and span of control) and firm-specific factors (leverage and firm size) influence fraud ratings, measured by the Beneish M-Score. This framework guides the empirical analysis in the study.

Empirical Review

Top Management Ownership (TMOWN) and Fraud Rating

Top management ownership refers to the proportion of a company’s shares held by its top executives, such as the Chief Executive Officer (CEO), directors, and senior managers. This form of ownership is believed to align the interests of managers with shareholders, potentially mitigating agency problems by encouraging long-term decision-making and reducing opportunistic behaviors (Jensen & Meckling, 1976). Empirical studies have examined the influence of top management ownership on fraud risk, with mixed findings.

Several studies support the argument that top management ownership reduces fraud risk. Nguyen et al. (2021) analyzed firms in Asian markets and found a significant negative relationship between top management ownership and fraud risk, suggesting that higher

ownership aligns managerial incentives with corporate transparency. Similarly, Khan et al. (2023) investigated global firms using the Beneish M-Score as a fraud risk proxy and found that managerial ownership above a certain threshold contributed to improved governance practices. Zahra et al. (2005) also concluded that firms with substantial managerial ownership experienced lower fraud incidences due to improved oversight.

Conversely, some studies have reported a positive relationship between top management ownership and fraud risk, citing managerial entrenchment. Tang and Li (2023) examined Chinese firms and found that excessive ownership concentration allowed executives to manipulate financial statements, reducing external scrutiny. Similarly, Kusuma (2020) analyzed Indonesian firms and concluded that firms with high managerial ownership faced a higher likelihood of fraudulent activities due to reduced monitoring. Adekunle et al. (2021) examined Nigerian manufacturing firms and found that excessive ownership by top managers often weakened external governance, increasing fraud risks.

Other studies, such as Adebayo et al. (2022), found no significant relationship, arguing that factors such as regulatory frameworks and industry-specific governance structures moderate the impact of managerial ownership. Given these conflicting findings, this study tests the following hypothesis:

H₀₁: Top management ownership has no significant effect on fraud ratings in Nigeria's listed service companies.

Top Management Gender Diversity (TMG) and Fraud Rating

Top management gender diversity refers to the representation of women in top managerial roles. A diverse leadership team is associated with improved decision-making, ethical oversight, and corporate transparency (Nguyen et al., 2021). Proponents argue that gender-diverse management teams are more likely to adhere to ethical practices and reduce the risk of financial misconduct (Khan et al., 2023).

Empirical evidence largely supports the notion that gender diversity reduces fraud risk. Nguyen et al. (2021) found that firms with a higher proportion of female executives exhibited stronger financial transparency and lower fraud ratings. Khan et al. (2023) examined global firms and found a significant negative relationship between gender diversity and fraud risk, suggesting that diverse teams fostered ethical behavior. Maulidi (2022) analyzed U.S. firms and reported that higher female representation in leadership significantly reduced corporate fraud.

However, some studies indicate a counterintuitive relationship. Chen et al. (2020) found that in some emerging markets, gender-diverse teams experienced internal conflicts that led to governance inefficiencies, indirectly increasing fraud risks. Adekunle et al. (2021) reported that firms with higher female representation in Nigerian manufacturing sectors faced challenges related to decision-making speed, which contributed to higher fraud risks. Wang et al. (2019) found that gender diversity was linked to increased fraud risks due to tokenism, where female executives had limited influence in male-dominated corporate structures.

Some studies, such as Adebayo et al. (2022), found no significant relationship, suggesting that the impact of gender diversity is highly context-dependent. This study seeks to clarify the relationship by testing the following hypothesis:

H₀₂: Top management gender diversity has no significant effect on fraud ratings in Nigeria's listed service companies.

Top Management Span of Control (TMC) and Fraud Rating

Top management span of control refers to the number of employees or subordinates directly managed by top executives. A wider span of control allows for faster decision-making but may reduce oversight quality, while a narrower span facilitates closer supervision but risks bureaucratic inefficiencies (Nguyen et al., 2021).

Several studies suggest that a broader span of control reduces fraud risk. Bandiera et al. (2013) analyzed CEO time use in 65 firms and found that wider spans of control led to improved internal communication and fraud mitigation. Huang and Guo (2023) examined Chinese firms and found that well-structured management teams enhanced oversight and reduced fraudulent activities. Similarly, Qi (2022) demonstrated that an optimal span of control positively influenced financial integrity by promoting transparency.

On the contrary, other studies highlight the risks of excessive spans of control. Chen et al. (2020) found that in emerging markets, firms with excessively broad spans of control suffered from diluted managerial supervision, increasing fraud risks. Schumacher (2021) analyzed European multinationals and concluded that top executives with too many direct reports struggled to monitor financial practices effectively, leading to higher fraud occurrences.

Adebayo et al. (2022) reported no significant relationship between managerial span of control and fraud risk, suggesting that its effect is mediated by firm culture and governance quality. To test these findings in the Nigerian service sector, the following hypothesis is proposed:

H₀₃: Top management span of control has no significant effect on fraud ratings in Nigeria's listed service companies.

Leverage (LEV) and Fraud Rating

Leverage, measured as the ratio of total liabilities to total assets, indicates a firm's financial reliance on debt. While leverage can enhance growth opportunities, excessive debt levels can pressure management into fraudulent activities (Chen et al., 2020).

Several studies confirm that higher leverage increases fraud risk. Adekunle et al. (2021) analyzed Nigerian manufacturing firms and found that highly leveraged firms were more likely to manipulate financial statements to meet debt obligations. Similarly, Khan et al. (2023) found that firms with significant debt exposure had higher fraud risks due to financial stress.

However, some studies suggest that leverage reduces fraud risks by increasing external monitoring. Nguyen et al. (2021) found that highly leveraged firms in Asia experienced stronger creditor scrutiny, which enhanced financial transparency. Adebayo et al. (2022)

supported this argument, noting that firms with higher leverage often implemented stringent governance practices to comply with debt covenants.

Jensen and Meckling (1976) theorized that leverage's effect on fraud is contingent on governance structures. Adebayo et al. (2022) found no significant relationship between leverage and fraud risk in emerging markets. To clarify its effect in the Nigerian service sector, this study tests the following hypothesis:

H₀₄: Leverage has no significant influence on fraud ratings in Nigeria's listed service companies.

Firm Size (FSIZE) and Fraud Rating

Firm size is a critical determinant of corporate governance and fraud risk. Larger firms have more resources to implement fraud detection mechanisms but may also face governance complexities that create fraud opportunities (Nguyen et al., 2021).

Empirical studies suggest that larger firms exhibit lower fraud risks. Khan et al. (2023) found that larger firms benefit from stronger internal controls and greater regulatory scrutiny. Adebayo et al. (2022) found that firm size was negatively associated with fraud risk in emerging markets due to enhanced governance frameworks.

Conversely, some studies argue that firm size increases fraud risk. Chen et al. (2020) found that complexity in large firms dilutes managerial oversight, creating fraud opportunities. Adekunle et al. (2021) analyzed Nigerian firms and found that despite having more resources, larger firms were more susceptible to fraud due to decentralized operations.

Other studies, such as Jensen and Meckling (1976), suggest that firm size's impact on fraud risk depends on industry and governance structures. To address this gap, the following hypothesis is proposed:

H₀₅: Firm size has no significant influence on fraud ratings in Nigeria's listed service companies.

Theoretical Framework

Jensen and Meckling (1976) introduced agency theory, explaining conflicts between shareholders (principals) and managers (agents) due to misaligned interests. Corporate governance mechanisms, such as top management ownership and gender diversity, help align managerial incentives, reducing fraudulent activities. Adebayo et al. (2022) found that stronger governance structures mitigate agency conflicts, lowering fraud risks in emerging markets.

Hambrick and Mason (1984) proposed that organizational outcomes reflect top management characteristics. Nguyen et al. (2021) showed that diverse leadership improves financial transparency, reducing fraud risks. Freeman (1984) emphasized balancing stakeholder interests through transparency and ethical governance. Khan et al. (2023) found strong governance reduces fraud risks.

Agency theory is most relevant to this study as it highlights how governance mechanisms, such as managerial ownership, gender diversity, and board oversight, mitigate conflicts of interest

between shareholders and managers. In Nigeria’s service sector, weak regulatory enforcement increases agency risks, making fraud detection crucial. Strong governance frameworks help align managerial actions with shareholder interests, reducing fraud occurrences. Empirical studies, including Nguyen et al. (2021) and Adekunle et al. (2022), emphasize that firms with transparent governance structures experience lower fraud risks. By analyzing top management attributes and firm-specific factors, this study applies agency theory to understand how corporate governance practices can enhance financial integrity and reduce fraudulent activities in Nigeria’s business landscape.

METHODOLOGY

This study employs a quantitative research design, aligning with the positivist research philosophy, which emphasizes objective and empirical investigation of relationships between variables. The quantitative approach allows for a systematic, data-driven examination of top management characteristics, firm-specific factors, and fraud ratings, ensuring accuracy, replicability, and precision in findings.

The population consists of all 22 listed service companies in Nigeria, as classified by the Nigerian Exchange (NGX). A census sampling technique is adopted, ensuring that all companies in the population are studied, thereby eliminating sampling bias. The study covers 2013–2023, leveraging longitudinal data to capture evolving trends and relationships over time.

The dependent variable, fraud rating, is measured using the Beneish M-Score, while the independent variables include top management gender diversity, top management ownership, span of control, firm size, and leverage. Data is collected from secondary sources, specifically annual reports and financial statements of listed firms. Reliability is ensured through data triangulation, while validity is achieved using established measurement frameworks.

The regression model is specified as follows:

$$\text{Fraud Rating (M-Score)} = \beta_0 + \beta_1\text{TMG} + \beta_2\text{TMOWN} + \beta_3\text{TMC} + \beta_4\text{FSIZE} + \beta_5\text{LEV} + \epsilon$$

where TMG represents top management gender diversity, TMOWN is top management ownership, TMC is span of control, FSIZE is firm size, LEV is leverage, and ϵ is the error term.

Data analysis includes descriptive statistics (means, standard deviations) and inferential statistics using panel regression models (fixed effects and random effects). Breusch and Pagan Lagrange Multiplier Test determines the appropriateness of panel regression over OLS, while the Hausman Test selects between fixed and random effects. STATA software is used for data analysis due to its robustness in panel data modelling.

A summary of variable measurements and supporting literature is provided below:

Variable	Measurement	Supporting Authors
Fraud Rating (Dependent)	Beneish M-Score	Beneish (1999); Khan et al. (2023)
Top Management	Shares Held by Top Management/T	Adekunle et al. (2021); Khan

Variable	Measurement	Supporting Authors
Ownership (TMOWN)	total Ordinary Shares×100	et al. (2023)
Top Management Gender Diversity (TMG)	Number of Females in Top Management/ Total Number in Top Management×100	Nguyen et al. (2021); Adebayo et al. (2022)
Top Management Span of Control (TMC)	Total Number of Employees/Number of Top Management	Chen et al. (2020); Nguyen et al. (2021)
Leverage (LEV)	Total Liabilities/Total Assets×100	Adebayo et al. (2022); Adekunle et al. (2021); Chen et al. (2020)
Firm Size (FSIZE)	Natural Logarithm of Total Assets	Jensen and Meckling (1976); Chen et al. (2020); Nguyen et al. (2021)

Source: Researcher’s Compilation (2025)

RESULTS AND DISCUSSIONS

This section presents the results of the statistical analyses on the data collected from 22 listed services companies in Nigeria.

Descriptive Statistics

In this section, we examine the descriptive statistics for both the independent and dependent variables of interest.

Table 2: Descriptive statistics for Listed services companies in Nigeria

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	N	JB {Normality}
FRR	-1.8	-2.7	184	-13.0	13.0	198	0.0000***
TMOWN	29.0	23.0	100	0.0	26.0	220	18.35 (0.0001***)
TMG	37.0	25.0	100	0.0	34.0	25	5.69 (0.0581)
TMC	149.0	22.0	549	3.2	196.0	20	5.37 (0.0681)
LEV	78.0	59.0	1379	10.0	105.0	226	0.0000***
FSIZ	16.0	16.0	19	11.0	1.5	226	3.81 (0.1491)

Source: Researcher Computation (2025)

Note: FFR = Beneish M-Score; TMOWN: Top Management Ownership; TMG: Top Management Gender Diversity; TMC: Top Management Span of Control; FSIZ: Firm Size),

LEV: Leverage* = significant at 5% level, ** = significant at 1% level, *** = significant at 0.1% level.

The table provides a comprehensive summary of descriptive statistics for the key variables examined in this study. The mean values offer insights into central tendencies, with Beneish M-Score (FRR) showing a mean of -1.8, Top Management Ownership (TMOWN) at 29, and Top Management Gender Diversity (TMG) at 37. The range of values is evident, as seen with Beneish M-Score (FRR) varying from -13 to 184 and Leverage (LEV) spanning from 10 to 1379. Variability is captured by the standard deviations, where Top Management Span of Control (TMC) exhibits the highest variability (Standard Deviation = 196), while Firm Size (FSIZ) shows the lowest (Standard Deviation = 1.5).

Normality tests using the Jarque-Bera (JB) statistic reveal significant deviations from normality for Beneish M-Score (FRR), Top Management Ownership (TMOWN), and Leverage (LEV), with p-values below the 0.1% level, denoted by ***. Marginal significance is observed for Top Management Gender Diversity (TMG) and Top Management Span of Control (TMC), with p-values of 0.0581 and 0.0681, respectively. Firm Size (FSIZ) does not exhibit significant deviations from normality, as indicated by its p-value of 0.1491. These findings suggest that most variables deviate from normal distributions, highlighting the need for robust statistical techniques to account for non-normality.

The table provides valuable insights for interpreting variable characteristics and guiding analytical approaches. The extensive range and variability observed in Leverage (LEV) and Top Management Span of Control (TMC) suggest the presence of outliers or underlying heterogeneity within the sample. Employing advanced analytical methods to address these complexities is critical for producing reliable and meaningful results.

Correlation Matrix

In examining the association among the variables, we employed the Pearson correlation coefficient (correlation matrix) and the results are presented in the table below.

Table 3: Correlation analysis

Variable	FRR	TMOWN	TMG	TMC	LEV	FSIZ
FRR	1.0					
TMOWN	-0.4538	1.0				
TMG	0.0408	-0.5364	1.0			
TMC	0.1844	-0.4342	0.8623	1.0		
LEV	-0.9074	0.4817	-0.0779	-0.1606	1.0	
FSIZ	0.3224	-0.4219	0.8441	0.8995	-0.3143	1.0

Source: Researcher Computation (2024)

The table presents the correlation matrix for the study's key variables: Beneish M-Score (FRR), Top Management Ownership (TMOWN), Top Management Gender Diversity (TMG), Top Management Span of Control (TMC), Leverage (LEV), and Firm Size (FSIZ). The values represent the strength and direction of linear relationships between pairs of variables.

A strong negative correlation is observed between Beneish M-Score (FRR) and Leverage (LEV) with a coefficient of -0.9074. This indicates that higher levels of leverage are associated with lower fraud risk as measured by FRR. Conversely, a moderate positive correlation of 0.3224 is found between FRR and Firm Size (FSIZ), suggesting that larger firms tend to exhibit higher fraud risk scores.

Top Management Ownership (TMOWN) exhibits a negative correlation with several variables, including FRR (-0.4538), Top Management Gender Diversity (TMG, -0.5364), and Top Management Span of Control (TMC, -0.4342). These results indicate that higher ownership concentration in top management may be linked to reduced diversity and narrower spans of control.

Strong positive correlations are observed among the governance-related variables. For instance, Top Management Gender Diversity (TMG) and Top Management Span of Control (TMC) show a coefficient of 0.8623, while Firm Size (FSIZ) exhibits strong associations with TMG (0.8441) and TMC (0.8995). This suggests that larger firms with higher gender diversity tend to implement broader spans of control.

Overall, the correlation matrix provides key insights into the interrelationships among the variables, emphasizing the need to account for multicollinearity in statistical analyses. Variables such as LEV and FRR, as well as TMG and TMC, display strong correlations that could influence modeling outcomes if not appropriately addressed.

Linear Regression

In testing the hypotheses for this study, we used ordinary least square linear regression.

Table 1: Regression Results

Statistic	Expected Sign	Random Effects Regression
TMOWN	-	-0.02 (0.33)
TMG	-	-0.02 (0.10)
TMC	+	0.00 (0.63)
LEV	-	-0.02 (0.00***)
FSIZ	+	0.54 (0.35)
Constant		-9.00 (0.30)
F-value (p-value)		76.95 (0.00***)

Ramsey RESET (p-value)		1.38 (0.31)
Portmanteau test (p-value)		4.00 (0.41)
Breusch and Pagan Lagrangian multiplier test (p-value)		0.00 (1.00)
Heteroskedasticity		No
R-squared		0.67 (0.4139)
Observations		19

Source: Researcher Computation (2025)

The regression model results show the relationship between the independent variables (TMOWN, TMG, TMC, LEV, FSIZ) and the dependent variable, Beneish M-Score (FRR), used as a measure of fraud risk. The negative coefficient for TMOWN (-0.02) indicates that as Top Management Ownership increases, the Beneish M-Score decreases, suggesting reduced fraud risk, although this relationship is not statistically significant ($p = 0.33$). Similarly, TMG and TMC exhibit weak and statistically insignificant relationships with FRR, indicating limited evidence to support their roles in influencing fraud risk directly.

Leverage (LEV) demonstrates a strong and statistically significant negative relationship with FRR ($p < 0.001$). This finding implies that firms with higher leverage tend to have lower fraud risk, aligning with theoretical expectations that debt may impose greater scrutiny on management. Firm Size (FSIZ) shows a positive relationship with FRR, but the relationship is not statistically significant ($p = 0.35$), suggesting that larger firms might not inherently exhibit higher fraud risk in this sample.

Overall, the model's F-value is highly significant ($p < 0.001$), confirming that the independent variables collectively explain a substantial portion of the variance in FRR. The R-squared value of 0.67 indicates that 67% of the variation in fraud risk is explained by the model, highlighting its strength. Diagnostic tests, including the Ramsey RESET test and the Breusch and Pagan Lagrangian multiplier test, confirm the model's robustness and the absence of heteroskedasticity or omitted variable bias.

Top Management Ownership (TMOWN)

The coefficient for Top Management Ownership (TMOWN) is -0.02 with a p-value of 0.33, indicating a weak and statistically insignificant relationship with fraud risk. This suggests that an increase in ownership by top management does not significantly reduce fraud risk in the studied sample. The null hypothesis (H_0 : TMOWN has no significant effect on fraud risk) cannot be rejected due to the high p-value. Khan et al (2023), Nguyen et al (2021), Zahra et al. (2005) and Chen et al. (2006) provide evidence supporting the alignment of managerial ownership with reduced fraud risk, while Tang and Li (2023) Chen et al (2020), Kusuma (2020) and Adekunle (2012) argue that excessive ownership concentration can lead to managerial entrenchment and heightened fraud risk. The insignificant result in this study may reflect a context-specific dynamic where ownership thresholds or regulatory environments in Nigeria's Services sector dilute the effect of ownership on governance outcomes.

Top Management Gender Diversity (TMG)

The coefficient for Top Management Gender Diversity (TMG) is -0.02 with a p-value of 0.10, indicating a marginally significant negative relationship with fraud risk. This finding suggests that increased gender diversity in top management may reduce fraud risk, but the evidence is not strong enough for definitive conclusions. The null hypothesis (H_0 : TMG has no significant effect on fraud risk) is not rejected at conventional significance levels. Studies by Nguyen et al (2021), Khan et al (2023), Mulidi et al (2022) and Cumming et al. (2015) support the notion that gender diversity enhances governance effectiveness and reduces fraud risk, while Adekunle et al (2021), Chen et al (2020) Bernile et al. (2018) and Wang et al. (2019) finds a negative effects, attributing variability to tokenism and structural barriers. The marginal significance in this study highlights the potential importance of gender diversity in Nigerian firms, but cultural and organizational factors may limit its effectiveness.

Top Management Span of Control (TMC)

Top Management Span of Control (TMC) has a coefficient of 0.00 and a p-value of 0.63, suggesting no meaningful relationship with fraud risk. This indicates that the breadth of managerial oversight does not significantly influence fraud likelihood in the sample. The null hypothesis (H_0 : TMC has no significant effect on fraud risk) is strongly supported. The findings of this study is in agreement with the studies of Adebayo et al. (2022) and Huang and Guo (2023), while the result is in averse with the studies of Adekunle et al (2021), Chen et al (2020) and Schumacher (2021).The absence of a significant relationship in this study may reflect nuances in organizational complexity or managerial capacity, requiring further exploration in similar contexts.

Leverage (LEV)

Leverage (LEV) exhibits a strong negative relationship with fraud risk (coefficient = -0.02, $p < 0.001$), indicating that higher leverage significantly reduces the likelihood of fraud. This finding aligns with the expectation that debt imposes external discipline on management, curbing opportunistic behavior. The null hypothesis (H_0 : LEV has no significant effect on fraud risk) is rejected, confirming the significant influence of leverage. This finding is Consistent with the results of Ngugen et al (2021), Adebayo et al (2022) and Chen et al (2020), while its inconsistent with the findings of Adekunle et al (2021), Chen et al (2020) and Khan et al (2023) all of which found a positive significant relationship between Leverage and Fraud risk. The strong statistical significance result underscores the importance of creditor monitoring in Nigeria's Services sector as a deterrent to fraud.

Firm Size (FSIZ)

Firm Size (FSIZ) has a positive but insignificant relationship with fraud risk (coefficient = 0.54, $p = 0.35$), suggesting that larger firms do not necessarily exhibit higher fraud risk in the sample. The null hypothesis (H_0 : FSIZ has no significant effect on fraud risk) cannot be rejected. This result is consistent with that of Beneish et al. (2013) argue that larger firms face greater scrutiny, which reduces fraud risk, also the positive relationship related to Ngugen et al (2021), Khan et al (2023), and Adebayo et al (2022). Whereas the result is averse to the results of Chen

et al (2020) and Adekunle et al (2021) suggesting that organizational complexity in larger firms may obscure fraudulent activities.

The lack of significance in this study could be attributed to counterbalancing effects, such as increased external monitoring counteracting the challenges posed by organizational complexity.

CONCLUSION AND RECOMMENDATION

This study examined the relationship between top management attributes (ownership, gender diversity, and span of control), leverage, firm size, and fraud risk rating in Nigeria's Services sector. The findings indicate that while leverage significantly reduces fraud risk, other variables such as top management ownership, gender diversity, span of control, and firm size do not exhibit statistically significant effects within the analyzed sample. These results underscore the pivotal role of external monitoring through leverage in mitigating fraud risk, while the insignificant effects of other variables highlight the complexity of governance mechanisms and their varying impacts across contexts. The study's outcomes emphasize the need for nuanced approaches to fraud mitigation, tailored to specific organizational and regulatory environments.

Based on the study's findings, it is recommended that service firms in Nigeria maintain an optimal capital structure that incorporates a balanced level of leverage, as higher leverage was found to significantly reduce fraud risk by enhancing external monitoring. Creditors and institutional investors should capitalize on this by enforcing financial covenants and demanding stricter transparency and compliance measures. Although top management ownership, gender diversity, and span of control were not statistically significant, firms should not disregard these governance elements, as they remain critical for long-term ethical leadership and risk oversight. Regulatory bodies such as the Nigerian Exchange and the Financial Reporting Council should promote frameworks that institutionalize gender diversity, transparent executive ownership, and effective managerial control systems. Additionally, firms should integrate fraud risk detection tools like the Beneish M-Score into their internal audit mechanisms for early identification of financial anomalies. Future research is encouraged to explore these relationships across broader sectors and jurisdictions to support evidence-based policymaking and enhance the effectiveness of corporate governance in fraud prevention

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