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(Review Article)

Fraud risk management and organizational resilience: An empirical analysis controlling for organizational culture

Sanusi A. R [1,*], Sanusi I. [2], Yinusa S.[1] and Abugh I. [1]

[1] *Postgraduate Researcher, Institute of Governance and Development Studies, Nasarawa State University, Keffi, Nasarawa State, Nigeria.*
[2] *Postgraduate Researcher, Department of Statistics, University of Ibadan, Ibadan, Oyo State, Nigeria.*

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Abstract

Fraud risk management remains a critical concern for financial institutions, as fraudulent activities threaten organizational resilience and sustainability. This study examines the impact of fraud risk management techniques—risk assessment practices, internal controls and continuous monitoring, fraud investigation and response strategies, and regulatory compliance and legal frameworks—on organizational resilience incorporating organizational culture as control variable in strengthening this relationship. A quantitative research approach was employed, utilizing a structured questionnaire to collect data from employees in the internal audit, compliance, forensic, and risk management departments of Santa micro-finance bank, Nigeria Limited. The study adopted Yamane's formula to determine the sample size and stratified random sampling to ensure adequate representation. Ordinary Least Squares (OLS) regression analysis was conducted through multiple linear regression to test the hypotheses. The reliability and validity of the research instrument were confirmed through Cronbach's alpha and expert reviews. Model diagnostics, including collinearity statistics and Durbin-Watson tests, confirmed the reliability of the regression model. The findings reveal that all four fraud risk management techniques have a significant positive effect on organizational resilience. Additionally, the control variable (organizational culture) also significantly influences organizational resilience, indicating that a strong ethical culture enhances fraud risk management effectiveness. The model explains a substantial variance in organizational resilience, further confirming the importance of these variables. Therefore, the study recommend that financial institutions should enhance their fraud risk management strategies, strengthen internal controls, and cultivate a robust organizational culture that promotes ethical behavior. Policymakers should implement stricter regulatory frameworks to ensure compliance and accountability.

Keywords: Risk Assessment Practices; Internal Controls and Continuous Monitoring; Fraud Investigation and Response Strategies; Regulatory Compliance and Legal Framework; Organizational Resilience

1. Introduction

Fraud poses a significant threat to businesses worldwide, undermining financial stability, organizational integrity, and stakeholder trust. The increasing complexity of financial transactions, globalization, and technological advancements has intensified the risk of fraudulent activities within organizations (Duke II & Kankpang, 2013). Effective fraud risk management (FRM) strategies are therefore essential for mitigating these risks and strengthening organizational resilience. Organizational resilience, in this context, refers to the ability of an entity to anticipate, prepare for, respond to, and adapt to unexpected fraud-related challenges while maintaining operational continuity (Salawu et al., 2022). In the Nigerian business environment, the interplay between FRM practices and organizational culture is critical. A robust organizational culture, characterized by shared ethical values, transparency, and accountability, significantly influences

* Corresponding author: Sanusi Adebisi Ridwan

the implementation and effectiveness of FRM strategies. Organizations that embed strong ethical norms within their operational frameworks tend to exhibit higher levels of fraud prevention and detection, ultimately enhancing resilience (Mbatha, 2023)

Risk assessment practices are foundational to FRM, involving the identification and evaluation of potential fraud risks before they escalate. Organizations that conduct comprehensive risk assessments are better positioned to develop proactive strategies, thereby enhancing their resilience (Salawu et al., 2022). However, the effectiveness of risk assessments is contingent upon an organizational culture that promotes transparency and accountability. When employees and management share ethical values, they are more likely to support fraud prevention efforts, strengthening the company's ability to withstand fraudulent threats (Mbatha & Moosa, 2024). Internal controls and continuous monitoring are critical components of FRM, serving to detect irregularities early and prevent potential losses. Studies indicate that organizations with strong internal control mechanisms demonstrate higher levels of resilience, as they can quickly adapt to fraud-related disruptions (Duke II & Kankpang, 2013). Nonetheless, the effectiveness of internal controls is influenced by the organization's cultural norms, particularly in fostering a compliance-driven environment. Employees in organizations with a weak ethical culture may bypass internal controls, undermining resilience efforts (Kumar et al., 2018).

Fraud investigation and response strategies are essential for enhancing organizational resilience, ensuring that fraudulent incidents are promptly addressed and mitigated. A company's response to fraud incidents often determines its ability to recover and adapt. Research has shown that organizations with strong investigative frameworks experience fewer disruptions and financial losses compared to those without structured fraud response mechanisms (Mbatha, 2023). However, organizational culture plays an important role by influencing how employees perceive and react to fraud investigations. A culture that encourages whistleblowing and transparency enhances the effectiveness of fraud response strategies (Kumar et al., 2018). Regulatory compliance and ethical leadership further shape FRM and resilience by ensuring adherence to industry standards and governance structures. Organizations that integrate ethical leadership into their governance frameworks foster a culture of integrity, reducing the likelihood of fraud occurrences. In contrast, companies with weak ethical leadership and poor compliance structures are more susceptible to fraud risks and struggle with resilience (Salawu et al., 2022). Consequently, organizational culture serves as a crucial mediator in determining the success of FRM initiatives and their impact on organizational resilience (Mbatha & Moosa, 2024).

1.1. Statement of Problem

Fraud remains a significant challenge for businesses in Nigeria, threatening financial stability, operational continuity, and stakeholder confidence. Despite the implementation of fraud risk management (FRM) strategies—such as risk assessment, internal controls, and regulatory compliance—many organizations continue to experience financial losses and reputational damage due to fraudulent activities (Mbatha & Moosa, 2024). One critical factor influencing the effectiveness of FRM is organizational culture, as companies with weak ethical frameworks often struggle to enforce anti-fraud policies and encourage whistleblowing (Kumar et al., 2018). While studies have explored the direct relationship between FRM and organizational resilience, the role of organizational culture in this relationship remains underexamined in the Nigerian context. Given the increasing complexity of fraud schemes and regulatory enforcement challenges, there is an urgent need to investigate how organizational culture shapes fraud prevention efforts and enhances resilience in Osanta Micro-finance bank, Nigeria Limited.

1.2. Research Gap

Previous study (such as Duke II & Kankpang, 2013; Salawu et al., 2022) on fraud risk management (FRM) has primarily focused on internal controls, risk assessments, and regulatory compliance, with limited emphasis on the role of organizational culture in shaping fraud prevention outcomes. While studies have highlighted the importance of ethical leadership and transparency, few have explored how these cultural elements directly impact fraud resilience, particularly in the Nigerian business landscape. Furthermore, most existing literature is centered on developed economies, leaving a gap in understanding how regulatory frameworks, enforcement mechanisms, and organizational culture influence FRM in Osanta micro-finance bank, Nigeria Limited. Addressing this gap is essential for developing tailored fraud prevention strategies that align with the unique socio-economic and regulatory dynamics of Nigerian businesses.

1.3. Scope of the Study

This study examines fraud risk management (FRM) practices and their impact on organizational resilience in Osanta Micro-finance Bank, Igboho, Oyo state. The research focuses on Osanta Micro-finance Bank, Nigeria Limited to provide a comprehensive analysis of fraud prevention strategies. The study population consists of key stakeholders such as risk management officers, internal auditors, compliance personnel, and forensic expert who play crucial roles in fraud detection and mitigation.

1.4. Conceptual Review

1.4.1. Risk Assessment and Proactive Fraud Prevention

Risk assessment is a cornerstone of effective FRM, involving the identification, evaluation, and prioritization of potential fraud risks before they escalate into financial losses or reputational damage. Organizations that conduct comprehensive risk assessments are better positioned to develop proactive strategies, thereby enhancing their resilience (Salawu et al., 2022). Studies suggest that structured fraud risk assessments help organizations anticipate emerging fraud threats, allocate resources effectively, and establish preventive mechanisms (Chen et al., 2021).

However, the effectiveness of risk assessment is largely dependent on an organizational culture that promotes ethical decision-making and encourages employees to participate in fraud detection efforts. Employees who perceive their organization as fostering an ethical climate are more likely to report fraudulent activities, thereby reinforcing the effectiveness of risk management frameworks (Mbatha & Moosa, 2024). Conversely, in organizations where ethical leadership is weak, employees may hesitate to report fraudulent activities due to fear of retaliation or organizational indifference (Kumar et al., 2018).

1.4.2. Internal Controls and Continuous Monitoring

Internal controls serve as a critical component of FRM, ensuring that financial processes are safeguarded against fraudulent manipulation. These controls include segregation of duties, access restrictions, real-time financial monitoring, and automated fraud detection systems. According to Duke II & Kankpang (2013), organizations with robust internal control systems exhibit higher levels of resilience, as they can detect anomalies early and respond effectively to fraud threats.

Continuous monitoring further enhances fraud risk mitigation by utilizing data analytics and artificial intelligence to identify suspicious financial transactions. Recent studies have highlighted that organizations implementing AI-driven fraud detection systems experience a 40% reduction in fraud-related financial losses compared to those relying solely on traditional internal controls (Todorović et al., 2022). However, the success of these measures depends on organizational culture—companies with a weak ethical climate may encounter employee resistance to monitoring mechanisms, which can undermine fraud prevention efforts (Kumar et al., 2018).

1.4.3. Fraud Investigation and Response Mechanisms

Fraud investigation and response strategies are integral to enhancing organizational resilience, ensuring that fraudulent incidents are promptly addressed and mitigated. An organization's ability to investigate and respond to fraud determines its long-term sustainability and financial health (Mbatha, 2023). Research has shown that companies with structured fraud investigation frameworks experience fewer disruptions and financial losses than those with weak investigative capabilities (Wells, 2020).

A well-defined fraud response mechanism includes the establishment of whistleblowing policies, independent fraud investigation committees, and collaboration with regulatory bodies. Companies that foster a culture of transparency and accountability are more likely to encourage whistleblowers, thereby strengthening their fraud detection and response mechanisms (Kumar et al., 2018). Moreover, organizations that integrate forensic accounting techniques into their fraud investigations are better equipped to trace and recover misappropriated funds (Owolabi & Oluwadare, 2021).

1.4.4. Regulatory Compliance and Ethical Leadership

Regulatory compliance and ethical leadership play a crucial role in shaping FRM effectiveness and organizational resilience. Compliance with regulatory requirements ensures that organizations adhere to industry standards, reducing exposure to fraud risks (Salawu et al., 2022). Ethical leadership, on the other hand, fosters a corporate culture that prioritizes integrity, accountability, and ethical business practices. Leaders who model ethical behavior set a precedent for employees, thereby minimizing the likelihood of fraudulent activities within the organization (Mbatha & Moosa, 2024).

However, weak regulatory enforcement in Nigeria has been identified as a challenge to effective fraud prevention. Studies indicate that despite the presence of regulatory frameworks such as the Economic and Financial Crimes

Commission (EFCC) Act, enforcement gaps have allowed fraudulent activities to persist in certain sectors (Adegbite, 2020). Strengthening regulatory compliance through stricter enforcement and corporate governance reforms is essential for enhancing fraud risk management and organizational resilience.

1.5. Theoretical Underpinning

1.5.1. Fraud Triangle Theory

The Fraud Triangle Theory (FTT), introduced by criminologist Donald Cressey in 1953, posits that three primary factors—pressure, opportunity, and rationalization—converge to foster fraudulent behavior within organizations. Pressure refers to financial or personal stresses that compel individuals toward unethical actions. Opportunity arises from weak internal controls or oversight, enabling fraudulent acts. Rationalization involves the individual's justification of their unethical behavior as acceptable under the circumstances. Owusu et al. (2022) examined state-owned enterprises in Ghana and found that pressure, opportunity, and rationalization significantly predict employees' engagement in workplace fraud. Similarly, Rahman and Jie (2024) analyzed Chinese listed companies, revealing that financial leverage and liquidity (pressure), alongside audit size and board independence (opportunity), are critical indicators of accounting fraud. Additionally, Anisykurlillah et al. (2023) investigated Indonesian firms, highlighting that financial target (pressure) and the nature of the industry (opportunity) influence financial statement fraud, with institutional ownership moderating these effects.

1.5.2. Agency Theory

Agency Theory, formulated by Jensen and Meckling in 1976, explores the relationship between principals (owners) and agents (managers), emphasizing conflicts arising from divergent interests and information asymmetry. Agents may pursue personal goals that conflict with principals' interests, leading to inefficiencies and potential misconduct. Khan et al. (2020) examined how managerial ownership influences firm performance, finding that higher ownership aligns managers' interests with shareholders, reducing agency costs. Similarly, Li and Wang (2019) investigated executive compensation structures, revealing that performance-based incentives mitigate agency problems by aligning managerial actions with shareholder wealth maximization. Furthermore, research by Chen et al. (2021) highlighted that board independence serves as a monitoring mechanism, curbing managerial opportunism and enhancing firm value.

1.5.3. Institutional Theory

Institutional Theory examines how organizations conform to established norms, rules, and cultural beliefs within their environments to gain legitimacy and ensure survival. It posits that organizational structures and practices are significantly influenced by institutional pressures, leading to homogeneity across organizations within the same field. Recent research has expanded on this theory. For instance, Marquis and Tilcsik (2016) explored how industry and community peers influence corporate philanthropy, demonstrating that firms adapt their practices to align with institutional expectations. Similarly, Rodner et al. (2020) analyzed the Venezuelan cultural sector, illustrating how spatial contexts affect institutional work and organizational behavior. Additionally, Saqib et al. (2021) investigated human resource management practices in Pakistan, highlighting the impact of institutional pressures on managerial decisions.

1.6. Theoretical Framework

The Fraud Triangle Theory (FTT), Agency Theory, and Institutional Theory provide a robust framework for understanding how fraud risk management techniques influence organizational resilience. FTT is applicable as it highlights how financial pressures, opportunities arising from weak internal controls, and rationalization of unethical behavior contribute to fraud risks, necessitating strong risk assessment practices and internal monitoring. Agency Theory is relevant in explaining the conflicts between organizational stakeholders, particularly how ineffective governance and misaligned managerial incentives can lead to fraud, emphasizing the need for fraud investigation and response strategies. Institutional Theory underscores the role of regulatory compliance and organizational culture in shaping fraud management practices, as organizations often align with industry standards to maintain legitimacy.

2. Literature Review and Hypotheses Development

Aminat, Ezekiel, and Obafemi (2023) conducted a study to assess the impact of internal control mechanisms, including risk assessment, on fraud detection and prevention in Nigerian deposit money banks. Utilizing a descriptive research design, primary data were collected from management staff of selected banks and analyzed using multiple OLS estimation. The findings revealed that risk assessment exerts a positive significant relationship with fraud detection and prevention, with a coefficient estimate of 0.4082 ($p=0.0199<0.05$). The study concluded that regular risk assessments enhance the banks' ability to detect and prevent fraud, thereby contributing to organizational resilience. It recommended that management should consistently carry out risk assessments to improve internal controls and reduce fraudulent activities.

Johnson, Uchegbu, and Okoye (2024) evaluated the effectiveness of internal control systems as a means of preventing fraud in Nigerian financial institutions. Employing a descriptive research design, data were gathered through questionnaires administered to 200 respondents, with 160 retrieved for analysis. The study utilized simple percentages and Z-test statistical tools for data analysis. The findings indicated that a lack of a good internal control system is a major cause of fraud in financial institutions. The study concluded that establishing a standard internal control system is essential for promoting operational continuity and ensuring the solvency of banks. It recommended that bank management should create and maintain robust internal control systems to prevent fraud and enhance organizational resilience.

Adebayo, Olagunju, and Bankole (2022) investigated the effect of fraud risk management techniques on fraud reduction in Nigeria's oil and gas sector. Using structured questionnaires, they collected data from 100 staff members across accounting and risk management departments. The study employed regression for data analysis and found that fraud risk management techniques, including internal control, whistleblowing, fraud awareness/training, and fraud response, had a significant positive effect on fraud reduction. The study concluded that implementing these techniques effectively enhances fraud reduction and recommended their widespread adoption in the oil and gas sector.

Saadat & Sopelola (2024) examined the relationship between organizational culture and risk management practices in Nigeria's banking sector. Utilizing a descriptive cross-sectional research approach, they collected data through digital questionnaires from 131 respondents. The analysis, conducted using SPSS, indicated that cultural elements such as leadership, accountability, effective challenge, and compensation significantly influence risk management practices. The study concluded that fostering a proactive risk management environment through effective leadership and accountability is crucial and recommended encouraging diverse perspectives and maintaining fair compensation structures. The Chartered Institute of Internal Auditors (2024) introduced a new Internal Audit Code of Practice in the UK to enhance corporate governance and restore trust after accounting scandals. The code urges auditors to explicitly review risks such as a firm's culture, climate change, artificial intelligence, cybersecurity, fraud, and economic crime. Although not specific to Nigeria, the principles outlined in the code are applicable globally, including in Nigeria, emphasizing the importance of robust internal controls and continuous monitoring in enhancing organizational resilience.

Olofinlade (2021) investigated the role of forensic audits in addressing management frauds in Nigerian deposit money banks. The study utilized secondary data from audited financial statements of listed deposit money banks and employed panel regression techniques for analysis. Findings revealed a positive relationship between forensic audits and the prevention of management frauds, faithful representation of financial records, and understandability of financial statements. The study concluded that forensic audit mechanisms are effective tools for preventing management frauds and recommended training for strategic management and staff on forensic accounting/audit. The following hypotheses will be tested in this study:

- **H_1:** Risk assessment practices have a significant positive impact on organizational resilience.
- **H_2:** Internal controls and continuous monitoring have a significant positive impact on organizational resilience.
- **H_3:** Fraud investigation and response strategies have a significant positive influence on organizational resilience.
- **H_4:** Regulatory compliance and legal frameworks significantly contribute to organizational resilience.
- **H_5:** Organizational culture significantly influences organizational resilience.

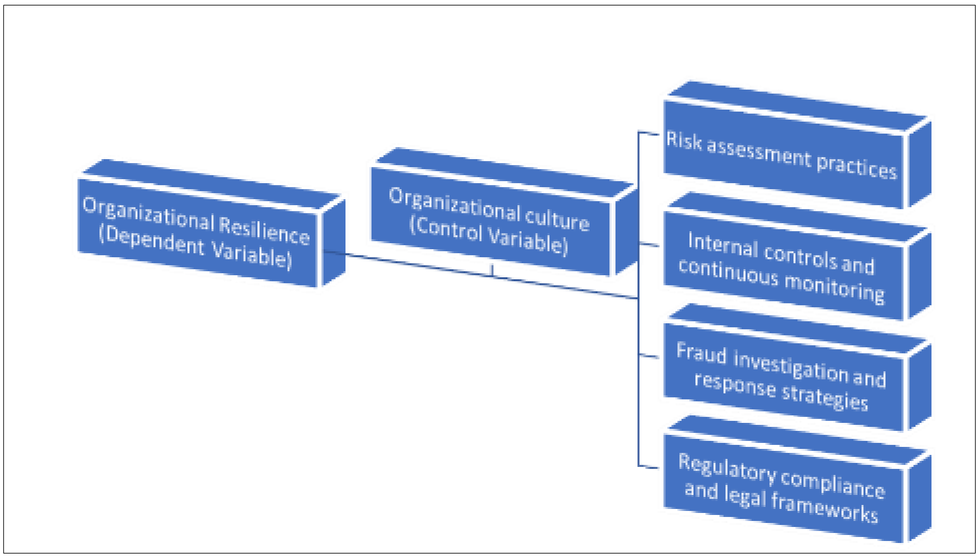

Figure 1 Conceptual Framework

3. Methodology

3.1. Research Design

This study adopts a quantitative research design, utilizing a survey method to examine the impact of fraud risk management techniques on organizational resilience. The study employs a descriptive and inferential approach, allowing for the identification of relationships between variables while providing empirical evidence on how fraud risk management strategies influence resilience within organizations. This approach ensures objectivity, enabling statistical analysis to quantify the extent to which fraud risk management enhances organizational resilience.

3.2. Population of the Study

The population comprises employees from Osanta Micro-finance Bank, Nigeria Limited, a prominent financial institution headquartered at Igboho, Oyo State, Nigeria. The study targets departments directly involved in fraud risk management, including internal audit, compliance, forensic and risk management units. The target population for this study is 2500 base on staff record. This selection ensures that data is collected from personnel with relevant expertise and experience in implementing and overseeing fraud risk management strategies within the organization.

3.3. Sampling Technique and Sample Size

This study employs a stratified random sampling technique to ensure adequate representation of various departments involved in fraud risk management at Osanta Micro-finance Bank Nigeria Limited. Stratification is necessary to capture the perspectives of employees in departments such as internal audit, compliance, and risk management.

To determine the sample size, Yamane's (1967) formula for sample size determination is used:

$$n = \frac{N}{1 + N(e^2)}$$

Where:

n = Sample size

N = Population size

e = Margin of error (typically 5% or 0.05)

$$n = \frac{2500}{1 + 2500(0.05^2)}$$

$$n = \frac{2500}{1 + 6.25}$$

$$n = \frac{2500}{7.25}$$

$$n = 345$$

Thus, the required sample size is approximately 345 respondents. Hence, the sample distribution is as follows:

Table 1 Sample Distribution of Respondents

Department	Male	Female	Total Sample
Internal Audit	60	20	80
Compliance	50	35	85
Forensic	40	25	65
Risk Management	73	42	115
Total	223	122	345

However, of the 345 questionnaires distributed, 320 completed questionnaires were retrieved, representing a response rate of 91%.

3.4. Sources of Data

The study relies on primary data collected through a structured questionnaire administered to professionals within the sampled organization.

3.5. Methods of Data Collection

A structured questionnaire is the primary instrument for data collection, designed to measure fraud risk management techniques and their impact on organizational resilience. The questionnaire consists of close-ended questions, employing a five-point Likert scale to capture respondents' perceptions and experiences. The survey is administered through electronic and physical distribution, ensuring wide participation.

3.6. Validity and Reliability

To ensure validity, the questionnaire undergoes expert review by fraud risk management professionals and academics to confirm content relevance. A pilot study is conducted with 30 respondents, and feedback is used to refine the instrument. Reliability is assessed using Cronbach's Alpha coefficient, ensuring internal consistency of the survey items. A reliability scores above 0.70 is considered acceptable. A Cronbach Alpha value of 0.882 indicates strong internal consistency of the items which suggests that the study is reliable.

Table 2 Reliability Test

No of Items	Cronbach Alpha
23	0.882

3.7. Technique of Data Analysis

The collected data is analyzed using descriptive and inferential statistics. Descriptive statistics (mean and standard deviation) summarize the data, while inferential analysis (multiple regression analysis) examines the relationships between fraud risk management techniques and organizational resilience. The Statistical Package for Social Sciences (SPSS) version 27 is used for data processing and hypothesis testing. Results are interpreted at a 95% confidence level to determine the significance of findings.

3.8. Variable Measurement

3.8.1. Dependent Variable

- **Organizational Resilience –** The ability of companies to withstand, adapt to, and recover from fraud-related challenges.

3.8.2. Independent Variables (Fraud Risk Management Techniques)

- **Risk Assessment Practices** – Identifying and evaluating potential fraud risks.
- **Internal Controls & Monitoring** – Policies, checks, and continuous monitoring to detect and prevent fraud.
- **Fraud Investigation & Response Strategies –** Mechanisms for addressing fraud incidents.
- **Regulatory Compliance & Legal Frameworks** – Adherence to industry standards and government regulations.

3.8.3. Control Variable

- **Organizational Culture –** The shared values, beliefs, and norms that influence how fraud risk management strategies are implemented and their impact on resilience.

3.9. Model Specification

The study employs a multiple regression model to examine the impact of Fraud Risk Management Techniques on Organizational Resilience, with Organizational Culture as the control variable. The model is specified as follows:

Functional Form

$OR = f(RA, ICM, FIRS, RCL, OC)$

Structural Model:

$OR = \alpha_0 + \alpha_1(RA) + \alpha_2(ICM) + \alpha_3(FIRS) + \alpha_4(RCL) + \alpha_5(OC) + \varepsilon$

3.9.1. Were

- OR = Organizational Resilience (Dependent Variable)
- RA = Risk Assessment Practices
- ICM = Internal Controls & Monitoring
- FIRS = Fraud Investigation & Response Strategies
- RCL = Regulatory Compliance & Legal Frameworks
- OC = Organizational Culture (Control Variable)

α_0 is the intercept

$\alpha_1, \dots, \alpha_5$ are the coefficients of the independent variables.

ε is the error term

3.9.2. Model Diagnostic

- Diagnostic tests were conducted to check for any violations of these assumptions, including:
- Multicollinearity: The Variance Inflation Factor (VIF) was performed to identify strong correlations among independent variables.
- Autocorrelation: The Durbin-Watson test was employed to assess autocorrelation in the residuals.

4. Result

4.1. Descriptive Statistics

Table 3 Summary Statistics

Variables	Mean	Std. Deviation
RA	3.470	0.882
ICM	3.503	0.883
FIRS	3.506	0.883
RCL	3.513	0.877
OC	3.495	0.863
OR	4.482	0.464

The descriptive statistics presented in Table 3 provide an overview of the central tendency and dispersion of the key variables in the study. Organizational Resilience (OR) recorded the highest mean value of 4.482 with a relatively low standard deviation of 0.464, suggesting that respondents generally perceived their organizations as resilient, with minimal variability in their responses. Among the Fraud Risk Management Techniques (FRMT) components, Regulatory Compliance & Legal Frameworks (RCL) exhibited the highest mean of 3.513 and a standard deviation of 0.877, indicating a strong emphasis on compliance within the organizations surveyed. Fraud Investigation & Response Strategies (FIRS) and Internal Controls & Monitoring (ICM) showed similar mean values of 3.506 and 3.503, respectively, both with a standard deviation of 0.883, reflecting a consistent perception of fraud control measures across respondents. Risk Assessment (RA) had a mean of 3.470 and a standard deviation of 0.882, signifying a slightly lower but still moderate emphasis on risk evaluation processes. Organizational Culture (OC), which serves as a control variable, had a mean of 3.495 and a standard deviation of 0.863, indicating that cultural factors influencing fraud risk management and resilience were moderately present but varied among organizations.

4.2. OLS Regression

Table 4 Model Summary

R	R Square	Adjusted R Square	Std. Error	Durbin-Watson
0.679	0.46	0.455	0.343	2.13

The model summary presented in Table 4 shows the strength and explanatory power of the regression model. The R-value of 0.679 indicates a strong positive correlation between the independent variables and organizational resilience. The R-Square value of 0.46 implies that approximately 46% of the variation in organizational resilience can be explained by the predictor variables included in the model, while the Adjusted R-Square of 0.455 accounts for the degrees of freedom, confirming a slight adjustment for the number of predictors. The standard error of 0.343 suggests that the variability of the residuals is relatively low, indicating that the model provides a reasonable fit to the data. Additionally, the Durbin-Watson statistic of 2.13 falls within the acceptable range (close to 2), suggesting that there is no significant issue of autocorrelation in the residuals, reinforcing the reliability of the model.

Table 5 ANOVA

Source of variation	Sum of Squares	df	Mean Square	F	P-value
Regression	38.562	4	9.64	82.124	0.000
Residual	45.195	385	0.117		
Total	83.756	389			

The ANOVA results in Table 5 shows the overall significance of the regression model. The p-value of 0.000 is highly significant, indicating that the model is fit which implies that there is linear relationship between the dependent variable and the independent variables.

Table 6 OLS Coefficients

OR	B	Std. Error	t	P-value
(Constant)	1.883	0.149	12.66	0.000
RA	0.229	0.02	11.558	0.000
ICM	0.219	0.02	11.081	0.000
FIRS	0.174	0.02	8.818	0.000
RCL	0.123	0.02	6.168	0.000

Table 6 present the OLS regression coefficients of the model. The constant term (1.883, p = 0.000) indicates the baseline level of organizational resilience when all independent variables are held at zero. The coefficient for risk assessment practices (RA) is 0.229 (p = 0.000), supporting H1 that risk assessment practices have a significant positive impact on organizational resilience. This suggests that organizations that actively identify and evaluate fraud risks experience greater resilience. Internal controls and continuous monitoring (ICM) exhibit a coefficient of 0.219 (p = 0.000), supporting H2 that internal controls and continuous monitoring have a significant positive impact on organizational resilience. This implies that organizations with strong internal control mechanisms and continuous oversight can better mitigate fraud risks, enhancing resilience. Fraud investigation and response strategies (FIRS) have a coefficient of 0.174 (p = 0.000), supporting H3 that fraud investigation and response strategies significantly influence organizational resilience. This indicates that organizations with structured fraud response mechanisms can recover from fraudulent activities more effectively. Lastly, regulatory compliance and legal frameworks (RCL) show a coefficient of 0.123 (p = 0.000), supporting H4 that regulatory compliance and legal frameworks significantly contribute to organizational resilience. This highlights that adherence to industry regulations and legal standards strengthens an organization's ability to withstand fraud-related risks.

Table 7 Collinearity Statistics

Tolerance	VIF
0.993	1.007
0.991	1.009
0.996	1.004
0.994	1.006

The collinearity statistics presented in Table 7 assess the potential multicollinearity among the independent variables in the regression model. The Variance Inflation Factor (VIF) values range between 1.004 and 1.009, while the corresponding tolerance values are close to 1. These results indicate absence of multicollinearity, as a VIF value below 10 and a tolerance value above 0.1 suggest that the independent variables are not highly correlated.

4.3. Effect of the Control Variable

Table 8 Model Summary

R	R Square	Adjusted R Square	Std. Error	Durbin-Watson
0.909	0.827	0.825	0.194	1.949

The results presented in Table 8 shows the model summary after incorporating the control variable. The R value of 0.909 indicates a very strong correlation between the predictors and the dependent variable. The R Square value of 0.827 suggests that 82.7% of the variation in organizational resilience can be explained by the combined influence of fraud risk management techniques and organizational culture, highlighting the substantial role of the control variable.

The Adjusted R Square of 0.825 confirms the model's reliability by accounting for the number of predictors included. The standard error of 0.194 indicates a high level of precision in the model's estimates. Additionally, the Durbin-Watson statistic of 1.949 falls within the acceptable range (1.5–2.5), indicating no significant autocorrelation in the residuals.

Table 9 Total Effect Model

OR	B	Std. Error	t	P-value
(Constant)	0.756	0.093	8.109	0.000
RA	0.239	0.011	21.267	0.000
ICM	0.217	0.011	19.377	0.000
FIRS	0.159	0.011	14.233	0.000
RCL	0.126	0.011	11.138	0.000
OC	0.326	0.011	28.508	0.000

The results in Table 9 highlight the total effect of fraud risk management techniques and organizational culture on organizational resilience. The constant value (B = 0.756, p = 0.000) indicates that even in the absence of the independent variables, organizational resilience maintains a baseline positive value. The coefficient for risk assessment practices (RA) is 0.239 (p = 0.000), supporting H1 and demonstrating that effective risk assessment significantly enhances organizational resilience. Internal controls and continuous monitoring (ICM) have a positive effect (B = 0.217, p = 0.000), confirming H2 that strong internal controls contribute to resilience. Fraud investigation and response strategies (FIRS) also have a significant positive effect (B = 0.159, p = 0.000), aligning with H3 that robust fraud response mechanisms enhance resilience. Regulatory compliance and legal frameworks (RCL) exhibit a positive relationship with organizational resilience (B = 0.126, p = 0.000), validating H4 that adherence to regulations strengthens resilience. Furthermore, organizational culture (OC) has the highest impact (B = 0.326, p = 0.000), reinforcing its role in enhancing fraud risk management effectiveness. The consistently significant p-values ($p < 0.05$) confirm the statistical significance of all predictors, emphasizing that a combination of strong fraud risk management practices and a positive organizational culture substantially strengthens organizational resilience.

5. Discussion of Findings

The findings of this study provide significant knowledge into the relationship between fraud risk management techniques and organizational resilience, with a particular emphasis on the significant role of organizational culture. The descriptive statistics revealed that all independent variables, including risk assessment practices (RA), internal controls and continuous monitoring (ICM), fraud investigation and response strategies (FIRS), and regulatory compliance and legal frameworks (RCL), exhibited mean values above 3.4, indicating that these fraud risk management techniques are well-implemented in the studied financial institution. Furthermore, organizational resilience (OR) recorded the highest mean value of 4.482, demonstrating that the institution exhibits strong resilience against fraud-related threats.

The Ordinary Least Squares (OLS) regression analysis confirmed that all four fraud risk management techniques had a statistically significant and positive impact on organizational resilience. Specifically, risk assessment practices (β = 0.229, p = 0.000) supported H1, confirming that organizations that proactively assess fraud risks are better positioned to maintain resilience. Internal controls and continuous monitoring (β = 0.219, p = 0.000) supported H2, affirming the crucial role of strong internal control systems in mitigating fraud risks and enhancing organizational resilience. The significant effect of fraud investigation and response strategies (β = 0.174, p = 0.000) supported H3, demonstrating that timely and effective responses to fraud incidents contribute to maintaining stability within an organization. Additionally, regulatory compliance and legal frameworks (β = 0.123, p = 0.000) supported H4, indicating that adherence to legal and regulatory requirements strengthens resilience by reducing vulnerability to fraud-related disruptions.

The effect of organizational culture was further examined, with results from the interaction effect model (β = 0.326, p = 0.000) confirming that organizational culture significantly influenced organizational resilience, supporting H5. This implies that an organization's cultural environment, including ethical values, transparency, and accountability, enhances the effectiveness of fraud risk management techniques in fostering resilience. The model summary further demonstrated that the incorporating organizational culture as a control variable significantly improved the explanatory power of the model (R^2 = 0.827), highlighting its vital role in strengthening resilience against fraud risks. These findings align with existing literature (such as Aminat et al., (2023); Adebayo et al., (2022) Saadat & Sopelola (2024)) emphasizing that organizations with robust risk assessment frameworks are more adaptable and less susceptible to financial losses from fraudulent activities.

6. Conclusion

This study has established that fraud risk management techniques significantly enhance organizational resilience, with organizational culture playing an important role. The regression analysis confirmed that risk assessment practices, internal controls and continuous monitoring, fraud investigation and response strategies, and regulatory compliance and legal frameworks all positively influence organizational resilience. Additionally, the effect of organizational culture further strengthens this relationship, highlighting the importance of fostering a strong ethical and transparent environment within financial institutions.

Recommendations

- Financial institutions should enhance their risk assessment practices by implementing advanced fraud detection mechanisms and continuous risk evaluations.
- Organizations should strengthen internal controls and monitoring systems to detect and prevent fraudulent activities in real-time.
- A well-defined fraud investigation and response framework should be established to ensure timely and effective fraud mitigation strategies.
- Regulatory compliance should be prioritized, with organizations adopting strict adherence to legal frameworks and industry best practices.
- Organizational culture should be reinforced through leadership commitment to ethical practices, transparency, and accountability in fraud risk management.

Policy Implication

The findings of this study have significant policy implications for financial institutions and regulatory bodies. Policymakers should formulate and enforce stricter regulatory frameworks that mandate financial institutions to implement robust fraud risk management strategies. Additionally, regulatory agencies should emphasize the role of corporate governance in fostering a culture of transparency and accountability. Organizations should also be required to conduct periodic fraud risk assessments and ensure compliance with established legal and ethical standards to enhance resilience against financial fraud and operational disruptions.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflict of interest related to this study.

Statement of ethical approval

This study was conducted in compliance with ethical research standards, ensuring confidentiality, transparency, and objectivity in data collection, analysis, and reporting.

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