

EFFECT OF FORENSIC ACCOUNTING TECHNIQUES ON OCCUPATIONAL FRAUD IN SELECTED CONSTRUCTION COMPANIES IN NIGERIA

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ABSTRACT

This study investigates the effect of forensic accounting techniques on the prevention of occupational fraud in selected construction companies in Nigeria. The study specifically explores the use of data mining, fraud risk assessment, and financial statement analysis in detecting and mitigating occupational fraud. The study adopted quantitative research design. All the accountants, auditors, and project managers in construction firms were used as population. The study used data collected from 89 sampled respondents. A structured questionnaire was used to collect data from accountants, auditors, and project managers in construction firms. Mean and standard deviation were used to answer the research questions and regression analysis was used to test the hypotheses at 0.05 level of significant. The results show that data mining and fraud risk assessment have significant positive effects on fraud prevention, while financial statement analysis has a positive but insignificant impact. The findings highlight the importance of integrating advanced forensic accounting methods to safeguard against fraud and improve transparency within construction firms. Recommendations include investing in data mining technologies and promoting a culture of accountability and fraud prevention.

Keywords: Forensic Accounting, Occupational Fraud, Data Mining, Fraud Risk Assessment, Financial Statement Analysis.

1. INTRODUCTION

The construction industry includes the planning, design, development, and erection of infrastructure, real estate, and various physical structures. It includes various activities such as residential construction erecting homes, apartments, and housing complexes; commercial construction developing office buildings, retail spaces, and other business infrastructures; industrial construction establishing factories, power plants, and other industrial facilities; and civil engineering projects creating infrastructure like roads, bridges, dams, and tunnels. This sector encompasses a range of specialists, including architects, engineers, contractors, and labourers, along with entities responsible for funding, materials, and project management. The industry is a crucial catalyst for economic advancement and employment generation, considerably enhancing a nation's GDP by constructing vital infrastructure for both public and private utilisation.

Occupational fraud poses a considerable threat to construction firms owing to the intricacy of their projects, elevated transaction volumes, and widespread reliance on subcontractors and suppliers (Akeju & Babajide, 2017). Prevalent types of occupational fraud within the construction sector encompass the inflation of project expenses, the fabrication of financial documents, and the

involvement in bid-rigging or bribery. Forensic accounting approaches have become essential instruments for the detection and prevention of professional fraud. Forensic accounting integrates accounting, auditing, and investigation expertise to detect fraudulent actions. Forensic accounting methodologies, including data mining, fraud risk evaluation, and financial statement analysis, are crucial instruments in identifying and mitigating occupational fraud (Owojori & Asaolu, 2009; Akenbor & Ironkwe, 2014). The detrimental impact of occupational fraud is substantial. It encompasses both economic and non-economic losses (PriceWaterhouseCoopers, 2014). One of the most immediate and evident effects is the financial loss it generates. This leads to diminished profitability, financial instability, and occasionally, insolvency. The ramifications of occupational fraud extend beyond financial statements. It can significantly harm an organization's reputation. When the news of fraud becomes public, it erodes trust of key stakeholders, including customers, investors, and the broader community.

Data mining techniques entail the analysis of extensive databases to discern patterns or anomalies that may signify fraudulent actions. Data mining in the construction business can be utilised for procurement, payroll, and contract management to identify anomalies such as duplicate invoices or dubious payment patterns (Akeju & Babajide, 2017). This technique is essential for detecting fraud that could otherwise remain undetected within the huge transaction volumes characteristic of building projects. Fraud risk assessment entails the identification and evaluation of potential threats inside an organisation. Construction firms, due to their dependence on subcontractors, long procurement processes, and numerous financial transactions, are particularly vulnerable to fraud threats (Owojori & Asaolu, 2009). Fraud risk assessment enables firms to identify vulnerabilities in controls and develop methods to mitigate these risks, thereby preventing fraud proactively. Financial statement analysis is a forensic accounting method employed to identify fraud by scrutinising discrepancies in a company's financial reports. Construction firms frequently possess intricate financial frameworks and transactions, facilitating the concealment of illegal activity. Forensic accountants can detect and mitigate occupational fraud by scrutinising financial accounts for indicators of manipulation, like exaggerated revenues or minimised liabilities (Okoye & Gbegi, 2013). When deployed properly, these strategies can equip construction companies with the necessary capabilities to avoid and detect fraud prior to incurring substantial financial losses.

The interrelation of these forensic accounting techniques is crucial for establishing an effective system to mitigate occupational fraud in construction firms. Data mining reveals anomalies, fraud risk assessment pinpoints vulnerabilities, and financial statement analysis identifies reporting inconsistencies. Collectively, these methodologies constitute a holistic strategy for fraud prevention in an industry prone to financial misconduct.

1.2 Statement of the Problem

Fraud remains a pervasive problem in the Nigerian construction sector, resulting in project delays, financial losses, and a deterioration in infrastructure quality. Notwithstanding attempts to enhance accountability, numerous construction firms continue to lack efficient systems for identifying and mitigating fraud. This is mostly attributable to inadequate internal controls, insufficient transparency in financial reporting, and the intricacy of building projects, which encompass

multiple contractors and subcontractors (Akenbor & Ironkwe, 2014). Forensic accounting methodologies, including data mining, fraud risk assessment, and financial statement analysis, have demonstrated their efficacy as vital instruments for fraud prevention in several industries (Akeju & Babajide, 2017). The application of these strategies in construction can markedly diminish the incidence of fraud (Okoye & Gbegi, 2013)

Previous studies have investigated the function of forensic accounting in fraud prevention across several sectors. Akenbor and Ironkwe (2014) examined forensic auditing procedures within the banking sector, whereas Okoye and Gbegi (2013) analysed its function in the public sector. Although forensic accounting techniques like data mining, fraud risk assessment, and financial statement analysis have demonstrated efficacy in several industries, their use within Nigeria's construction industry is inadequately explored. There exists a notable deficiency of empirical research examining the effective implementation of these approaches to reduce occupational fraud within the construction industry. The correlation between forensic accounting methodologies and their efficacy in fraud prevention inside construction firms warrants additional investigation, especially in the Nigerian setting. This study seeks to address this deficiency by offering novel insights into the efficacy of these strategies in combating fraud within Nigeria's construction industry. The research seeks to examine the application of data mining, fraud risk assessment, and financial statement analysis in mitigating occupational fraud inside specific construction firms in Nigeria. It seeks to furnish the construction companies with practical insights to enhance their fraud protection strategies and mitigate financial losses linked to fraud.

This study consequently examined the subsequent research questions: What is the impact of data mining techniques on the prevention of occupational fraud in certain construction enterprises in Nigeria? What is the impact of fraud risk assessment on the prevention of occupational fraud in certain construction firms in Nigeria? What is the impact of financial statement analysis on the prevention of occupational fraud in certain construction enterprises in Nigeria?

2. LITERATURE REVIEW

2.1 Conceptual Review

2.1.1 Forensic Accounting

Forensic accounting uses investigation and analysis to find financial irregularities. It goes beyond basic accounting by addressing legal difficulties and supporting litigation. Expert opinions and evidence are crucial in judicial procedures. Investigative accounting or fraud audit is a combination of forensic science and accounting (Eiya, & Otalor, 2013). It covers asset theft, financial statement fraud, corruption, and embezzlement. Forensic accounting inquiry, according to Oyedokun (2022), involves evaluating transactions, mistreatment documents, interviews, and electronic material to identify dishonest transactions. Investigation is crucial to forensic accounting and auditing, but only when the event or transaction is questionable.

2.1.2 Mining Data

Data mining is the statistically reliable, previously unknown, and actionable discovery of interesting patterns in huge databases (Elkan, 2001). According to Hormozi and Giles (2004), data mining became popular in the 1990s and is now used by companies to improve performance and

acquire a competitive edge. Data mining as an advanced analytical tool can help auditors make decisions and discover accounting fraud (Sharma, & Panigrahi, 2013). Data mining can help identify fraudulent trends such transactions without business motives, according to Kovalerchuk et al. (2007). They added that the main issue is that a single transaction often conceals its lack of commercial purpose or value. Thus, data mining must use background knowledge to find suspicious patterns in complex transactions and other evidence. The method extracts and analyses data patterns, information, and trends from huge databases (Ewa, 2022).

2.1.3 Fraud Risk Assessment

Fraud risk assessment addresses fraud's impact, likelihood, and impact (Rehman, & Hashim, 2020). Grove and Clouse (2020) state that fraud risk assessment has traditionally focused on two factors: the likelihood or probability of the risk occurring and the impact or significance of the potential effect, including direct and indirect costs to the company. The pace at which a cybersecurity risk occurs or the time it takes to harm the firm was agreed upon as a third component, risk velocity

Fraud risk assessment proactively identifies and addresses an organization's internal and external fraud vulnerabilities (ACFE, 2016). COSO (2016) identified twelve key fraud risk assessment foci. Overall, fraud risk assessment requires managers to work together. It targets all organisational levels to identify fraud threats. This assessment extends beyond identification to examine the organization's internal and external circumstances. While estimating risk likelihood and impact. Recognition of individual managers' override controls is also important. Fraud risk assessment extends beyond quantitative analysis to analyse employee behaviour, addressing triangular fraud's complications. The procedure entails assessing the organization's fraud control and determining risk mitigation strategies. It requires precise data and methods for informed evaluation and response. Regular fraud risk assessments, a documented procedure that adapts to changing risk landscapes, promote transparency and accountability in the organization's approach to fraud prevention and management.

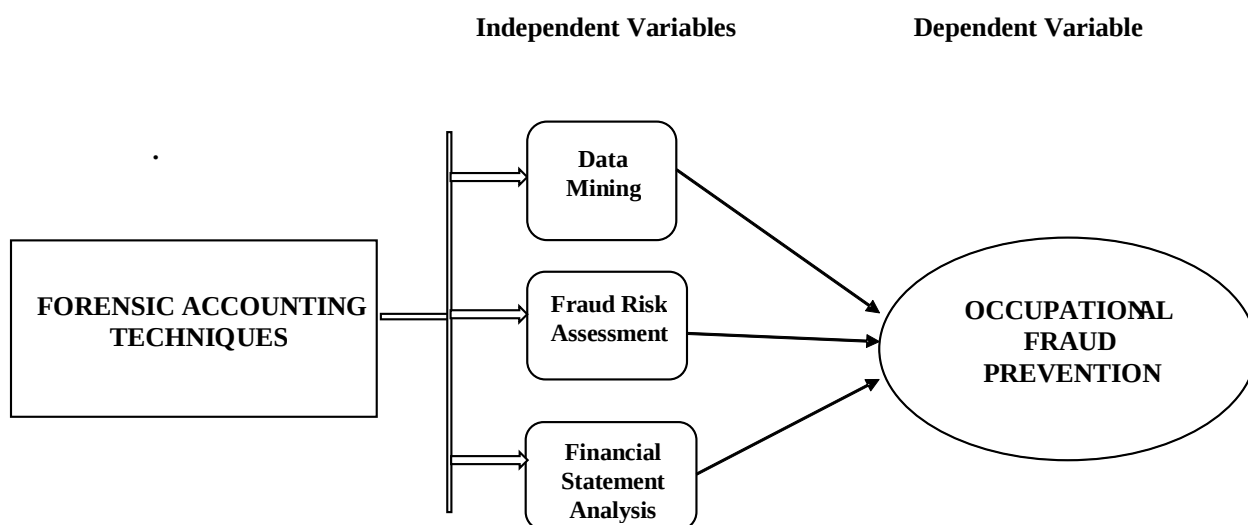
2.1.4 Financial Statement Analysis

Kasmir (2012) states that financial statement analysis can be used to assess a company's health by analysing cash flow conditions or organisational performance, both partial and overall. Forensic accounting relies on financial statement examination to find fraud, anomalies, and conflicts. Financial statement analysis is essential in forensic accounting for fraud detection and investigation, according to Wells (2019). To detect fraud, financial statements, ratios, trends, and patterns are examined for irregularities. This analysis is a research foundation. Financial statement analysis helps forensic accountants follow cash and find asset misuse. They can reconstruct fund movements and discover embezzlement or fraud by evaluating cash flow patterns, unexpected transactions, or financial record anomalies (Singleton et al., 2014). Financial statement analysis helps forensic accountants assess damages and losses in financial disputes and litigation. They evaluate financial harm to individuals or organisations and provide expert views on monetary damages by assessing fraud or financial misrepresentation (Golden et al., 2017). Forensic accountants testify in court using financial statement analysis. They may explain complex financial ideas, present their findings, and offer professional advice or analysis. Their experience helps build

court evidence credibility and weight (Balogna et al., 2017).

2.1.6 Conceptual Framework

The relationship between forensic accounting techniques and occupational fraud in selected construction companies. The independent variables are data mining, fraud risk assessment, and financial stamen analysis, while the dependent variable is occupational fraud.



Source: Author's Design, (2024)

Figure 2.1:Conceptual Framework

Theoretical Review

After the fraud triangle, Steve Albrecht introduced the fraud diamond theory in 1979. Pressure, opportunity, and rationalisation cause fraud with capability. The paradigm explains fraud with personal integrity and organisational environment. Wolfe and Hermanson (2004) found that even with pressure, opportunity, and explanation, lying is implausible without capacity. Fraudsters must be skillful and knowledgeable. Pressure drives Fraud Diamond. Fraudsters require pressure. Greed, living beyond one's means, excessive expenses or debt, poor credit, personal financial losses, and failing to reach a financial forecast often led to fraud. Avarice, lifestyle upgrading, and high living standards produce money problems. Non-financial causes include workplace injustice, frustration, and masking poor performance (Rahmatika et al., 2019). Fraud requires imaginable chance. Inefficient governance and control enable corporate fraud. Internal accounting controls flaws. Crime is enabled by perception and belief. Fraud rises as detection is hard (Cressey, 1953). Opportunity includes the organization's manipulation potential and fraud-enabling characteristics. Bad job division, poor internal control, irregular audits, and other factors can encourage employee fraud (Abdullahi, & Mansor, 2015). The capable will commit fraud (Sujana et al., 2018).

Final step: rationalise. Rationality promotes fraud (Rustiarini et al., 2019). Fraudsters rationalise

to avoid morals and trust violations (Cressey, 1953). Aprillia (2017) says fraudsters want reasons. Fourth, ability. Employees may spot fraud opportunities that others miss (Ruankaew, 2016). The ability to lie. Explore internal systems, locate flaws, and exploit them. The Fraud Diamond's capability part depends on perceived competence or the expectation that fraud may go undetected. David T. Wolfe and Dana R. Hermanson's 2004 fraud triangle inspired fraud diamond theory. They hoped adding "capability" to the Fraud triangle hypothesis would improve detection and prevention. Wolfe and Hermanson tested fraud ability, pressure, opportunity, and rationale. Lacks require individual abilities. Fraud chances exist (Achmad, & Pamungkas, 2018). Like the Fraud Triangle, opportunity involves inadequate internal controls, supervision, or monitoring that allow fraud to go undetected (Dorminey et al., 2010). External or internal pressure causes fraud. Debt, luxury, and financial problems can lead to illicit earnings (Cressey, 1953). Dishonesty is justified. Fraudsters justify their activities morally (Roden et al., 2016). Fraudsters require expertise. Technical specialists who exploit weaknesses are more prone to perpetrate fraud, according to Wolfe & Hermanson (2004)

The Fraud Triangle is improved by the Fraud Diamond showing that not all pressured and rationalised people commit fraud. Capability emphasises chance-taking. Forensic accountants evaluate risk better with the Fraud Diamond. Fraud risk is explained by opportunity, pressure, rationalisation, and capability (Lokanan, 2015). Improved internal controls, ethics, and anti-fraud training can prevent all Fraud Diamond components. Forensic accountants focus on all four component intersections. The personalised approach improves fraud detection and inquiry efficiency (Kassem & Higson, 2012).

Fraud Diamond Theory enhances Fraud Triangle. This method clarifies forensic accounting fraud causes. The dynamic Fraud Diamond helps forensic accountants and corporations avoid and detect fraud (Albrecht et al., 2006).

2.3 Empirical Review

2.3.1 Data Mining and Occupational Fraud

In Greece, Argyriou et al. (2013) examined data mining and occupational fraud. The study found that most fraud detection, including occupational fraud, uses data-mining. It covers relational data mining, graph-pattern matching, and pattern matching to detect occupational fraud in corporate transactions and operations. This includes fraud detection via visual data mining.

In Nigeria, Ikechukwu et al. (2020) examined data mining and occupational fraud. Data mining helps track and identify public sector occupational fraud, the study found. A significant link was found between data mining (DM) and public sector payroll and personnel fraud detection. According to the findings, public sector organisations can detect payroll and personnel fraud via data mining. Using data mining sparingly or not at all reduces the public sector's ability to detect payroll fraud. According to the report, public sector operations and systems should completely use data mining to detect payroll and personnel fraud.

A 2020 Malaysian study by Ahmad et al. on data mining and occupational fraud. The study discusses how K-means clustering, decision trees, and neural networks may detect and stop telecom occupational fraud. It emphasises how predictive and descriptive data mining insights

identify unsupervised data patterns, anomalies, and connections. A case study explains how data mining, particularly the CHAID decision tree, created automated fraud-detection software with an 80% accuracy rate. Anomaly detection in the Naive Bayes model for precise telecommunications classifier differentiation yielded successful results.

Nigerian Bako et al. (2022) examined forensic accounting and occupational fraud detection. This study found that data mining dramatically improves Nigerian deposit money banks' occupational fraud detection. This shows that data mining improves occupational fraud detection. Data mining methods include querying account records to find irregularities and red flags may increase occupational fraud detection.

2.3.2 Risk Assessment and Occupational Fraud

In Jordan, Shanikat et al. (2014) studied occupational fraud prevention. This study asked Jordanian internal auditors, chief accounting officers, and chief financial officers to rank fraud prevention mechanisms. The study found that external financial statement audits, internal audit functions, and management review of internal control were the most effective fraud prevention methods. An effective internal control system, including fraud risk assessment, is needed to prevent and mitigate occupational fraud in organisations.

UK-based Suh et al. (2019) examined how to reduce opportunity and fraud risk variables for occupational fraud. Financial institution occupational fraud risk assessment is stressed in the study. Anti-fraud controls' perceived efficacy is negatively correlated with occupational fraud. The perceived efficacy of anti-fraud procedures is a crucial influence in preventing fraud, which reduces opportunity qualitatively. By showing that operationalising control mechanisms is more important than the quantity of anti-fraud measures, the study advocates prioritising substance over form in fraud risk assessment.

US company Denman (2019) reported on occupational fraud and asset protection. Study fraud risk assessment is crucial to identifying internal fraud vulnerabilities. It helps identify innate and residual risks including industry, management style, and account fraud. Fraud risk assessments help organisations identify the most vulnerable areas to fraud. This data helps them implement internal measures to detect and prevent employee fraud. This approach helps companies reduce fraud and protect their assets.

In Palestine, Mouamer et al. (2020) examined how fraud detection and prevention tools reduce occupational fraud. The study emphasises the importance of assessing occupational fraud risk. This highlights how the fraud triangle model helps determine which internal controls are ideal for preventing and detecting occupational fraud. Fraud detection and prevention methods greatly improve occupational fraud prevention, according to the study. Thus, occupational fraud risk reduction requires risk assessment and appropriate instruments and procedures.

2.3.3 Financial and Occupational Fraud Analysis

A 2020 Indian study by Vijayakumar and Mugdha A Monopoly board game is used to teach financial statement analysis (FSA) to information technology management students with little to no finance or accounting background. Given the students' lack of accounting knowledge, the study

seeks to determine how the board game influences financial statement analysis comprehension and learning. How the board game can be utilised to apply financial statement analysis ideas and how it influences students' excitement, teamwork, and memory are examined.

In Indonesia, Purnama et al. (2020) studied Financial Statement Analysis to Evaluate Company Performance. Financial statements are crucial to this study since they assess PT Shinrai Indonesia's financial performance. The study evaluates liquidity, activity, profitability, and solvency measures to understand firm performance and financial health. Managerial decisions, financial strengths and weaknesses, and problem-solving depend on this assessment. Additionally, financial statement analysis helps interested parties and possible creditors understand the company's financial condition and possibilities.

2.4 Literature Gaps

Several studies have examined the effects of forensic accounting on occupational fraud, with conflicting results. In 2022, empirical research, mainly by Ewa (2022) and Oyedokun (2022), used the latest occupational fraud methods to fill this gap. However, a critical evaluation found little research on forensic accounting procedures and occupational fraud in North Central Nigeria, the study's emphasis. To address the problem and literature gaps, this study examines forensic accounting procedures and occupational fraud in selected North Central Nigerian states.

3. METHODOLOGY

This study adopted a quantitative research design to assess the effect of forensic accounting techniques on occupational fraud prevention in selected construction companies in Nigeria. A survey method was used to collect data from key personnel in construction companies, including accountants, auditors, and project managers. The population includes staff of five selected construction companies in Nigeria. The study targeted companies that have a high risk of occupational fraud due to the size and scope of their operations. The sample used for the study was 100 out of which 89 responded to the field survey. A structured questionnaire was used for data collection. The instrument was validated and the reliability of the instrument was established through a pilot study on 20 respondents who are not part of the sample used in this study. The Cronbach's Alpha method of reliability was used and to measure the internal consistency of the instrument and reliability coefficient of 0.82 was obtained which indicate that the instrument is reliable enough. The data collected were analyzed using descriptive statistics such as mean and standard deviation to answered the research questions, and multiple regression analysis to determine the relationship between the independent variables (data mining, fraud risk assessment, and financial statement analysis) and the dependent variable (occupational fraud prevention). The hypotheses were tested at 0.05 level of significant.

4. RESULTS

Research Question 1: how does data mining techniques prevent occupational fraud in selected construction companies?

Table 4.1: Respondents' opinion on how data mining techniques preventing occupational fraud.

S/N	Data Mining	N	Mean	St.D	Remarks
1	I am aware of specific data mining tools or technologies being used in my construction company to address occupational fraud.	89	4.08	1.072	Agreed
2	The vulnerability of specific areas within a construction company can be mitigated through the application of data mining.	89	3.92	1.226	Agreed
3	Implementation of data mining in the construction industry requires specialized training for employees to use and interpret the results effectively.	89	4.03	1.449	Agreed
4	Construction companies actively investing in data mining technologies are better equipped to manage risks.	89	3.78	1.425	Agreed
5	Certain data sources within construction companies are more valuable for effective data mining.	89	4.24	1.120	Agreed
6	I am confident in the ability of data mining algorithms to identify irregular patterns in construction projects.	89	4.53	0.754	Agreed
	Grand Mean Value		4.09	1.174	Agreed

Any mean score equals to 3.00 and above is agree otherwise is Disagree

The result in Table 1 show that respondents generally agree that data mining techniques are effective in preventing occupational fraud in the construction industry, as indicated by the mean values ranging from 3.78 to 4.53 across the six statements. The highest agreement is on the confidence in data mining algorithms to identify irregular patterns ($M = 4.53$, $St.D = 0.754$), showing strong consensus. The respondents were of the opine that there is awareness of data mining tools ($M = 4.08$, $St.D = 1.072$) being used in construction company to address occupational fraud. Also, respondents agreed that the value of certain data sources within construction companies are more valuable for effective data mining ($M = 4.24$, $St.D = 1.120$). The respondent believes that there is necessity of specialized training ($M = 4.03$, $St.D = 1.449$). The respondents were of the opinion that investment in data mining technologies are better equipped to manage risks ($M = 3.78$, $St.D = 1.425$). The analysis implies that there is broad agreement on the importance and effectiveness of data mining in mitigating fraud, there is some variability in the perceived need for training and the benefits of technological investment.

Research Question 2: how does financial statement analysis prevent occupational fraud in selected construction companies?

Table 4.2: Respondents' Opinion on the how financial statement analysis Prevent Occupational Fraud

S/N	Financial Statement Analysis	N	Mean	St.D	Remarks
1	I am aware of the importance of conducting regular financial statement analysis to detect any potential irregularities within construction company finances.	89	3.67	1.459	Agreed
2	The manipulation of financial statements is a common method used by individuals within the construction industry.	89	4.06	1.115	Agreed
3	Regular and thorough financial statement analysis can function as an early warning system for detecting potential irregularities within construction companies.	89	4.19	1.043	Agreed
4	Implementing advanced technology and data analytics can enhance the ability of construction companies to detect and prevent discrepancies through financial statement analysis.	89	3.85	1.336	Agreed
5	Construction companies that neglect to conduct regular financial statement analysis are more susceptible to financial losses.	89	4.22	1.175	Agreed
6	Background checks on employees can significantly reduce the likelihood of misrepresentation through financial statement manipulation in construction companies.	89	4.07	1.471	Agreed
	Grand Mean Value		4.01	1.266	Agreed

Any mean score equals to 3.00 and above is agree otherwise is Disagree

The report presented in Table 6 revealed that the respondents agree that financial statement analysis is an effective tool for preventing occupational fraud in the construction industry, as evidenced by mean values ranging from 3.67 to 4.22. The highest agreement is on the susceptibility of companies to financial losses if they neglect regular financial statement analysis ($M = 4.22$, $St.D = 1.175$). The respondents were of the similar opinion that the role of financial statement analysis serves as an early warning system to prevent fraud ($M = 4.19$, $St.D = 1.043$). The respondents had the same view that awareness of the importance of regular analysis will help to prevent fraud ($M = 3.67$, $St.D = 1.459$). The respondents believe that the use of advanced technology enhance detection and prevention of fraud ($M = 3.85$, $St.D = 1.336$). The results indicates that respondents agreed that background checks on employees can significantly reduce the likelihood of misrepresentation through financial statement manipulation in construction companies ($St.D = 1.471$). Generally, there is strong agreement on the importance of financial statement analysis in detecting and preventing fraud, though opinions the views of the respondents as presented in Table 2.

Research Question 3: how does fraud risk assessment prevent occupational fraud in selected construction companies?

Table 4.3: Respondents' Opinion on how fraud risk assessment prevents occupational fraud

S/N	Fraud Risk Assessment	N	Mean	St.D	Remarks
1	My company conducts regular fraud risk assessments to adapt to changing circumstances within construction companies.	89	3.35	1.471	Agreed
2	The outcomes of a well-conducted fraud risk assessment provide valuable insights into vulnerable areas within construction companies	89	3.30	1.626	Agreed
3	The effectiveness of a fraud risk assessment relies on the active involvement and cooperation of employees at all levels within construction companies.	89	4.06	1.151	Agreed
4	Construction companies that prioritize and invest in ongoing fraud risk assessments are more resilient.	89	3.73	1.371	Agreed
5	Continuous monitoring and reassessment of fraud risks are necessary to adapt to evolving methods and tactics within construction companies.	89	4.05	1.417	Agreed
6	External expertise is crucial in conducting a thorough and unbiased fraud risk assessment, ensuring all potential risks are identified within construction companies.	89	4.19	1.437	Agreed
	Grand Mean Value		3.78	1.412	Agreed

Any mean score equals to 3.00 and above is agree otherwise is Disagree

The mean and standard deviation values from Table 3 suggest a generally favorable attitude towards the role of fraud risk assessment in preventing occupational fraud within construction companies. Respondents express agreement with statements emphasizing the importance of various aspects of fraud risk assessment, such as regular assessments to adapt to changing circumstances (Mean = 3.35, St.D = 1.471). The respondents agreed with the provision of valuable insights into vulnerable areas (Mean = 3.30, St.D = 1.626). The respondents were of the opinion that there is necessity of continuous monitoring and reassessment (Mean = 4.05, St.D = 1.417). Furthermore, there is strong consensus among the respondents on the significance of employee involvement in risk assessment (Mean = 4.06, St.D = 1.151). It is revealed that external expertise is needed in conducting thorough and unbiased assessments (Mean = 4.19, St.D = 1.437). Also, the respondents were of the opinion that construction companies that prioritize and invest in ongoing fraud risk assessments are more resilient. Generally, based on the analysis in Table 3, reveal that the respondents they recognized the multifaceted role of fraud risk assessment in safeguarding against occupational fraud.

4.2 Test of Hypotheses

Table 4.4: Multiple Regression analysis showing effect of data mining techniques, financial statement analysis, fraud risk assessment on the prevention of occupational fraud.

Model	Unstandardize d Coefficients		Standardize d Coefficients	t	Sig.	R-Square	Adj. R-square	F-Value	P.value
	B	Std. Error	Beta						
1 (Constant)	.387	.790		.491	.625	0.821	0.673	58.380	0.000
DMT	1.075	.171	.920	6.288	.000				
FSA	.058	.082	.045	.701	.085				
FRA	1.266	.119	1.543	10.631	.000				

The multiple regression analysis presented in Table 4 evaluates the impact of data mining techniques (DMT), financial statement analysis (FSA), and fraud risk assessment (FRA) on preventing occupational fraud. The model shows a high explanatory power with an R-square of 0.821 and an adjusted R-square of 0.673, indicating that approximately 82.1% of the variance in occupational fraud prevention can be explained by these predictors. The F-value of 58.380 and a p-value of 0.000 suggest that the overall model is statistically significant. Specifically, DMT (B = 1.075, t = 6.288, p = 0.000) and FRA (B = 1.266, t = 10.631, p = 0.000) have significant positive effects on fraud prevention. Hypotheses 1 and 2 are rejected. Hence, the null hypothesis is rejected. FSA has a positive effect but does not have a significant impact on fraud prevention (B = 0.058, t = 0.701, p = 0.085). The hypothesis 3 is accepted. This result underscores the evolving landscape of fraud prevention methodologies, highlighting the proactive and dynamic nature of data mining techniques and fraud risk assessment compared to the more retrospective and static approach of financial statement analysis. Data mining leverages advanced algorithms to sift through vast datasets, enabling the timely detection of anomalies and patterns indicative of fraudulent behavior. Concurrently, fraud risk assessment offers a systematic examination of organizational vulnerabilities, empowering tailored prevention strategies and fostering a culture of vigilance. Conversely, financial statement analysis, while valuable for identifying discrepancies post facto, often lacks the agility and granularity needed to thwart sophisticated fraud schemes in real time. Thus, while financial statement analysis remains a crucial component of fraud detection efforts, its efficacy is eclipsed by the proactive and multifaceted capabilities of data mining and fraud risk assessment in combating occupational fraud.

5. DISCUSSION OF FINDINGS

Findings of the study reveal that DMT have a significant positive effect on fraud prevention. The result could be because DMT allows for real-time monitoring of transactions and activities, enabling organizations to detect and respond to fraudulent behavior as it occurs. This proactive approach reduces the window of opportunity for fraudsters and enhances the effectiveness of prevention efforts. The findings corroborate with the study of Ikechukwu et al. (2020) who revealed a noteworthy affirmative correlation between the application of data mining techniques (DM) and the identification of payroll and personnel fraud within the public sector. The findings support the study of Bako et al. (2022) who asserted that using data mining techniques to detect

anomalies and red flags, like querying account entries, will improve the detection of occupational fraud.

Findings of the study show that FSA has a positive but does not have a significant impact on fraud prevention. The result could be due to the fact that FSA involves subjective judgments and interpretations of financial data, which can vary among analysts and may lead to inconsistencies in fraud detection. Different analysts may interpret the same financial information differently, leading to varying conclusions about the presence or likelihood of fraud. Also, it could be due to FSA primarily relies on historical financial data and trends to assess the financial health and performance of an organization. While it can identify anomalies or irregularities in financial statements that may indicate potential fraud, its retrospective nature may limit its effectiveness in preventing fraud in real-time. The findings slightly support the study of Purnama et al. (2020) who found that financial statement analysis offers insightful information to interested parties and potential creditors, improving their comprehension of the company's financial situation and prospects.

Findings reveals that fraud risk assessment have a significant positive effect on fraud prevention. The result could be because fraud risk assessment involves a systematic evaluation of an organization's operations, processes, and controls to identify vulnerabilities to fraud. This comprehensive understanding enables organizations to proactively address potential fraud risks before they escalate into fraudulent activities. The finding supports the study of Shanikat et al. (2014) who revealed that preventing and lessening the effects of occupational fraud in organizations requires a robust and efficient internal control system, which includes fraud risk assessment.

6. CONCLUSION

The research shows that construction firms should use data mining to their advantage in order to stop fraud. Utilizing DMT, construction companies can instantly sift through mountains of transaction data in search of patterns that could point to fraud. Businesses can protect project budgets, keep stakeholders' trust, and reduce losses from occupational fraud by taking this preventative measure. The study concluded that FSA remains a valuable tool for financial analysis, its role in fraud prevention may need to be reassessed and supplemented with more dynamic and comprehensive approaches. It is also concluded that by systematically evaluating potential vulnerabilities and implementing targeted preventive measures, construction firms can effectively deter fraudulent behavior and minimize associated risks.

7. RECOMMENDATIONS

The following are the recommendations made for this study.

1. To better detect fraud, construction companies should invest in innovative data mining tools and methodologies. This can necessitate the purchase of state-of-the-art software systems that analyze massive amounts of transaction data in real-time using artificial intelligence and machine learning techniques. Using DMT, construction companies can prevent financial losses by quickly detecting suspicious patterns and anomalies that could be signs of fraud.
2. Construction firms should not rely solely on financial analysis tools like FSA as a way of detecting fraud. To achieve this goal, it may be necessary to deploy a mix of preventative

actions, including, fraud risk assessment, strengthened internal controls, and fraud detection and prevention training for staff. To lessen the likelihood of monetary losses and harm to their reputation, construction companies should diversify their fraud prevention strategies to better detect and prevent fraud across all areas of business.

3. Construction companies should encourage a culture of honesty and responsibility among all employees. Employees must be educated on the significance of fraud prevention, given training to identify and report fraudulent activity, and given clear methods to report suspected instances of fraud. The construction industry can improve its overall efforts to prevent fraud and protect its financial interests by encouraging a culture of honesty, openness, and responsibility among its employees. This will make it less likely that fraudulent behavior will occur.

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