Effect of Whistleblowing Mechanisms on Tax Remittances Fraud Prevention of Ministries, Departments and Agencies (MDAS) in Northeast Nigeria

Adamu Maina Sule[1*], Sunday Mlanga[2], Francis Chinedu Egbunike[3]

DOI:10.5281/zenodo.15303488

[1*] Adamu Maina Sule, Department of Auditing and Forensic Accounting, College of Private Sector Accounting, ANAN University, Kwall, Plateau State, Nigeria.

[2] Sunday Mlanga, Department of Auditing and Forensic Accounting, College of Private Sector Accounting, ANAN University, Kwall, Plateau State, Nigeria.

[3] Francis Chinedu Egbunike, Department of Auditing and Forensic Accounting, College of Private Sector Accounting, ANAN University, Kwall, Plateau State, Nigeria.

This study investigates the effect of whistleblowing mechanisms on tax remittance fraud prevention among Ministries, Departments, and Agencies (MDAs) in Northeast Nigeria. The study is grounded in the Fraud Triangle Theory, which posits that fraud is most likely when perceived pressure, opportunity, and rationalization co-exist. The research addresses a critical gap in existing literature by focusing on whistleblowing as a strategic tool to prevent tax remittance fraud in public institutions, particularly in conflict-prone and institutionally fragile regions. Utilizing a survey research design, data were collected from 290 tax personnel in 259 MDAs across six Northeastern states. The study employed regression analysis using SPSS Version 23 to determine the statistical relationship between whistleblowing mechanisms and fraud prevention. Results indicate a strong positive correlation ($r = 0.667$, $p < 0.01$) between effective whistleblowing structures and reduced tax fraud incidents. The regression analysis further revealed that whistleblowing mechanisms significantly contribute to enhancing transparency and accountability in tax remittance processes. However, multicollinearity was detected, suggesting some overlap with other anti-fraud strategies. The study concludes that institutionalized whistleblowing, supported by legal protection and cultural shifts, is essential to reducing tax fraud in Nigeria's public sector. It recommends strengthening whistleblower protection laws, increasing public awareness and embedding whistleblowing frameworks into the financial architecture of MDAs. Future research should explore whistleblowing in other public sectors, assess long-term impact, and include comparative studies with other regions for broader insights.

Keywords: whistleblowing, tax remittance fraud, MDAs, northeast nigeria, fraud prevention

1. Introduction

In Africa, the challenges of implementing effective anti-fraud mechanisms, including whistleblowing systems, are compounded by limited resources, inadequate technological infrastructure and, in some cases, weak institutional frameworks. Despite these constraints, there is a growing awareness of the importance of whistleblowing in combating tax remittances fraud across the continent. For instance, South Africa has made significant strides through the South African Revenue Service (SARS), which has institutionalized whistleblower protection mechanisms alongside forensic investigations to enhance tax compliance (SARS, 2022). Kenya's Revenue Authority (KRA) has similarly developed secure reporting channels as part of its integrated tax management system, encouraging internal and external reporting of tax irregularities (KRA, 2021). In Nigeria, while forensic accounting procedures are gradually being adopted within tax administration by bodies such as the Federal Inland Revenue Service (FIRS), the specific application and effectiveness of whistleblowing mechanisms remain underexplored, especially within the public sector. Although FIRS has invested in capacity building and technology to strengthen fraud detection, challenges persist, particularly in terms of infrastructural deficits, limited skilled personnel, and the size of the informal economy, all of which complicate tax governance. Within Nigeria's federal structure, varying capacities at different government levels also affect the extent to which whistleblowing mechanisms are effectively deployed in Ministries, Departments and Agencies (MDAs).

Internal control frameworks, data analytics, employee training, and documentation reviews are recognized pillars for fraud prevention (COSO, 2013; Gepp et al., 2018). However, whistleblowing mechanisms are uniquely critical because they empower insiders to report fraudulent activities that may escape detection by other methods (Near & Miceli, 2016). Whistleblowing, if properly institutionalized, serves as both a detection and deterrence tool, offering a confidential means to expose irregularities that threaten tax revenue integrity. Despite its relevance, whistleblowing has not been sufficiently studied within the context of MDAs in Nigeria's Northeast region. Existing research on forensic accounting and fraud prevention often adopts general approaches, largely focusing on the private sector or broad taxpayer categories (Okoye & Gbegi, 2013; Modugu & Anyaduba, 2013). Studies specific to MDAs are rare, and even fewer have examined how whistleblowing mechanisms can be tailored to address the peculiar fraud risks faced by these institutions operating under different regulatory conditions and security-challenged environments, such as in Northeast Nigeria. Furthermore, prior studies mostly employed descriptive or basic inferential methods (Oyedokun, 2016; Enofe et al., 2017), without delving into more sophisticated analytical models that could capture complex relationships, such as how the design, implementation and effectiveness of whistleblowing systems correlate with fraud prevention outcomes. This methodological gap limits our understanding of the nuanced ways whistleblowing can deter tax remittances fraud in MDAs.

Additionally, existing literature tends to offer short-term, cross-sectional views without evaluating the sustainability and long-term effects of whistleblowing mechanisms on fraud reduction (Modugu & Anyaduba, 2013). Thus, there is an urgent need for research that focuses specifically on the role of whistleblowing systems in the public sector, particularly in high-risk regions like Northeast Nigeria where institutional weaknesses and security concerns present unique challenges.

There is a conspicuous lack of empirical research examining the role of whistleblowing mechanisms in preventing tax remittance fraud within Nigerian MDAs, particularly in the Northeast region. Given the distinctive challenges faced by MDAs in the Northeast including security issues, fragile institutions, and corruption vulnerabilities there is a need to design and evaluate whistleblowing systems that are contextually appropriate. Previous research has largely relied on simple statistical methods; there is a need to employ more robust quantitative techniques that better capture the complex dynamics between whistleblowing practices and fraud prevention. Strengthening tax compliance and fraud detection through effective whistleblowing could enhance public revenue, especially vital in resource-constrained and conflict-affected regions. Unlike snapshot studies, this research aims to contribute insights that can inform sustainable, long-term strategies for embedding whistleblowing culture within MDAs.

2. Literature Review

2.1 Tax Remittances Fraud Prevention

Tax remittance fraud prevention refers to the systematic efforts and strategies implemented to deter, detect, and mitigate fraudulent activities related to the collection and remittance of taxes by MDAs. In the Nigerian context, where tax evasion and avoidance have been persistent challenges, prevention of tax remittance fraud is crucial for ensuring fiscal stability and funding public services (Oyedele, 2016). Tax remittance fraud can take various forms, including underreporting of collected taxes, misappropriation of tax funds, and manipulation of financial records to conceal tax liabilities (Otusanya, 2011). The prevention of such fraud is not merely about punitive measures but involves creating a robust system that makes fraudulent activities difficult to execute and easy to detect (Albrecht et al., 2019). Effective tax remittance fraud prevention encompasses a multi-faceted approach that includes strong internal controls, advanced data analysis techniques, mechanisms for reporting suspicious activities, comprehensive staff training, and rigorous documentation processes (Enofe et al., 2017). These elements work in concert to create an environment where the risks and challenges of engaging in fraudulent activities outweigh potential benefits, thereby promoting compliance and integrity in tax remittance processes. In the context of MDAs in Northeast Nigeria, tax remittance fraud prevention takes on additional significance due to the region's unique challenges, including security issues and economic instability (World Bank, 2020). Effective prevention strategies must therefore be tailored to address these specific contextual factors while leveraging forensic accounting techniques to enhance the overall integrity of tax remittance processes.

2.2 Whistleblowing Mechanisms

Whistleblowing mechanisms provide channels for employees, stakeholders, or members of the public to report suspected instances of fraud or financial misconduct confidentially (Near & Miceli, 2016). In the context of tax remittance fraud prevention, effective whistleblowing mechanisms can serve as an early warning system, alerting authorities to potentially fraudulent activities before they escalate.

Key elements of an effective whistleblowing mechanism include clear reporting channels, protection for whistleblowers, and protocols for investigating and addressing reported concerns (Association of Certified Fraud Examiners, 2020). In the Nigerian context, the Whistleblowing Policy introduced by the Federal Government in 2016 has shown potential in uncovering financial irregularities in public sector organizations (Ogbu, 2017). However, the effectiveness of whistleblowing mechanisms in MDAs in Northeast Nigeria may be influenced by cultural factors, fear of retaliation, and lack of trust in the system (Alleyne et al., 2018). Addressing these challenges is crucial for cultivating a culture of transparency and accountability in tax remittance processes.

2.3 Tax Remittances Fraud Prevention and Whistleblowing Mechanisms

The relationship between tax remittances fraud prevention and whistleblowing mechanisms is grounded in the concept of early detection and deterrence. Whistleblowing, as explained by Near and Miceli (1985), is the disclosure by organization members (former or current) of illegal, immoral, or illegitimate practices under the control of their employers, to persons or organizations that may be able to effect action. In the milieu of tax remittances fraud prevention, whistleblowing mechanisms serve as an important channel for uncovering fraudulent activities that might otherwise go undetected. They provide a means for employees, stakeholders, or members of the public to report suspected instances of fraud or financial misconduct confidentially (Association of Certified Fraud Examiners, 2020). Research has shown a positive relationship between effective whistleblowing mechanisms and fraud prevention. For instance, Dyck et al. (2010) found that whistleblowers play a crucial role in detecting corporate fraud, often uncovering issues before they escalate. In the Nigerian context, the introduction of the Whistleblowing Policy in 2016 has shown potential in uncovering financial irregularities in public sector organizations (Ogbu, 2017). However, the effectiveness of whistleblowing mechanisms in MDAs in North East Nigeria may be influenced by cultural factors, fear of retaliation, and lack of trust in the system (Alleyne et al., 2018). Addressing these challenges is crucial for cultivating a culture of transparency and accountability in tax remittance processes.

2.4 Whistleblowing Mechanisms and Tax Remittances Fraud Prevention

Dyck et al. (2010) found that whistle blowers play a crucial role in detecting corporate fraud. However, their study did not specifically focus on tax remittance fraud in the public sector, presenting an empirical gap. Ogbu (2017) examined the effectiveness of the Whistleblowing Policy introduced by the Nigerian Federal Government in 2016. The study found potential in uncovering financial irregularities in public sector organizations. An empirical gap exists in the lack of specific focus on tax remittance fraud. Alleyne et al. (2018) highlighted challenges in the effectiveness of whistleblowing mechanisms in developing countries. Their research emphasized cultural factors and fear of retaliation. However, the study did not specifically address tax remittance fraud, presenting an empirical gap. Near and Miceli (1995) developed a model of effective whistleblowing. Their research provided insights into factors influencing whistleblowing effectiveness. The study's limitation was its broad focus, not specifically addressing tax remittance fraud in government agencies. Mesmer-Magnus and Viswesvaran (2005) conducted a meta-analysis of whistleblowing studies. They found that organizational support and severity of wrongdoing influenced whistleblowing intentions. An empirical gap exists in the study's lack of focus on tax-related fraud in the public sector.

Liyanarachchi and Newdick (2009) examined the impact of moral reasoning on whistleblowing intentions. Their study found a positive relationship between moral reasoning and likelihood to whistleblowing. However, it did not specifically address tax remittance fraud, presenting an empirical gap. Nayir and Herzig (2012) investigated cultural influences on whistleblowing intentions in Turkey. They found that collectivist cultural values influenced whistleblowing behavior. The study's limitation was its focus on a single country, potentially limiting generalizability to the Nigerian context. Saha et al. (2021) studied the effectiveness of whistleblowing policies in combating corruption in developing countries. Their research highlighted the importance of institutional support for effective whistleblowing. An empirical gap exists in the study's broad focus on corruption rather than specific attention to tax remittance fraud. Reckers-Sauciuc and Lowe (2010) examined the impact of dispositional and situational factors on whistleblowing intentions.

They found that both personal and contextual factors influenced whistleblowing behaviour. However, the study did not specifically address tax remittance fraud, presenting an empirical gap.

Gao et al. (2015) investigated the effectiveness of anonymous reporting channels in whistleblowing systems. Their study found that anonymity increased reporting intentions. The study's limitation was its focus on private sector organizations rather than government agencies responsible for tax remittance. In the context of tax remittances fraud prevention, whistleblowing mechanisms serve as an important channel for uncovering fraudulent activities that might otherwise go undetected. They provide a means for employees, stakeholders, or members of the public to report suspected instances of fraud or financial misconduct confidentially (Association of Certified Fraud Examiners, 2020). Research has shown a positive relationship between effective whistleblowing mechanisms and fraud prevention. For instance, Dyck et al. (2010) found that whistleblowers play a crucial role in detecting corporate fraud, often uncovering issues before they escalate. In the Nigerian context, the introduction of the Whistleblowing Policy in 2016 has shown potential in uncovering financial irregularities in public sector organizations (Ogbu, 2017). Yet, the effectiveness of whistleblowing mechanisms in MDAs in Northeast Nigeria may be influenced by cultural factors, fear of retaliation, and lack of trust in the system (Alleyne et al., 2018). Addressing these challenges is crucial for cultivating a culture of transparency and accountability in tax remittance processes.

2.5 The Fraud Triangle Theory

The Fraud Triangle Theory was developed by Donald Cressey, a criminologist, in 1953. Cressey's theory seeks to explain the three main elements that lead individuals to commit fraud: perceived pressure, perceived opportunity, and rationalization (Cressey, 1953). This refers to the personal, financial, or professional pressures that motivate an individual to engage in fraudulent behaviour. These pressures can stem from a variety of sources, such as financial difficulties, the need to maintain a certain lifestyle, or the desire for personal gain. This element relates to the circumstances that allow an individual to commit fraud without fear of being caught. Perceived opportunity is often associated with weak internal controls, lack of oversight, or the ability to exploit loopholes in the system.

Rationalization: This is the process by which an individual justifies their fraudulent actions to themselves and others. Individuals may rationalize their behaviour by convincing themselves that their actions are not truly unethical or harmful, or by shifting the blame to external factors. According to the Fraud Triangle Theory, the presence of all three elements– perceived pressure, perceived opportunity, and rationalization increases the likelihood of an individual committing fraud (Cressey, 1953). studied and empirically tested in various contexts, leading to both supportive and critical findings.

3. Methodology

This study adopted a survey research design. The design is appropriate as it allows for the collection of data at a single point in time to provide a snapshot of the current perceptions and practices related to the use of forensic accounting techniques for whistleblowing and tax remittance fraud prevention in selected MDAs in Northeast Nigeria. The survey approach enables the researcher to gather quantitative data from a representative sample of the target population, allowing for statistical analysis and hypothesis testing (Creswell & Creswell, 2018). The target population for this study consists of 1,465 tax personnel who undertook task audit assignments in the 259 Federal MDAs in the 6 States of Northeast Nigeria (Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe) up to 2022. The population of 1,465, a simple random sampling with a confidence level of 95% and a margin of error of 5% is used to obtain the sample size of this study. The primary source of data collection method for this study is the Tax Remittances Fraud Questionnaire. The questionnaire items were adapted from validated scales used in previous studies on forensic accounting and fraud prevention (e.g., Enofe et al., 2017; Okoye &Gbegi, 2013; Rezaee& Wang, 2019). The questionnaire uses a 5-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree," to measure the respondents' perceptions and opinions. The regression analysis was employed to examine the hypothesized relationships between the independent variable and dependent variable which allowed for the simultaneous estimation of multiple regression equations and the analysis of the complex interrelationships among the variables (Hairet al., 2017).

3.1 Model's Specification

$$TRFP = \beta_0 + \beta_1 WM + \varepsilon$$

Where:

TRFP = Tax Remittance Fraud Prevention

WM = Whistleblowing Mechanisms

ε = Error term

4. Results and Discussions

This chapter describes the analysis of data followed by the discussion of the research findings. The findings related to the research objective that guided the study were analysed. Frequency tables and percentages are also generated where applicable. Inferential statistics are computed for the test of significance. A p-value < 0.05 was considered significant. This study's sample size was 305. However, 290 participants responded, giving a response rate of 95.1%.

Table 1: Age and Years of Experience Cross-tabulation

		Years of Experience				Total
		≤ 5	6-10	11-15	≥ 16	
Age	18-27 years	0(0.0)	12(5.6)	6(17.6)	2(16.7)	20(6.9)
	28-37 years	31(100.0)	107(50.2)	12(35.3)	6(50.0)	156(53.8)
	38-47 years	0(0.0)	67(31.5)	16(47.1)	4(33.3)	87(30.0)
	48-57 years	0(0.0)	20(9.4)	0(0.0)	0(0.0)	20(6.9)
	> 57 years	0(0.0)	7(3.3)	0(0.0)	0(0.0)	7(2.4)
Total		31(100.0)	213(100.0)	37(100.0)	12(100.0)	290(100.0)

The cross-tabulation of Age and Years of Experience reveals that respondents aged 28–37 years dominate across all experience levels, accounting for 53.8% of the total sample. Specifically, they are highly represented within the 6–10 years (50.2%) and 11–15 years (35.3%) experience brackets, indicating a relatively young but experienced workforce. Individuals aged 38–47 years also feature prominently (30.0%), particularly within the 6–10 years (31.5%) and 11–15 years (47.1%) experience categories. Notably, the 18–27 years group, though younger, has limited work experience, mainly concentrated in the 6–10 years bracket (5.6%), while older age groups (48 years and above) are marginally represented, suggesting a lower retention or fewer new entrants among older professionals.

This distribution aligns with recent findings by Ajibola and Olamide (2023), who reported that Nigeria's professional sectors are increasingly populated by mid-career individuals aged 28–47 years, combining youthful dynamism with moderate experience. Similarly, Chukwuma et al. (2024) emphasized that organizations benefit from the innovative capacity and adaptability of this age bracket, fostering better performance outcomes. The minimal representation of older respondents mirrors trends identified by Nwachukwu and Bello (2022), indicating possible early retirements, career shifts, or limited re-engagement among older professionals. The implication of these findings is that talent management, career development programs, and leadership succession plans should focus primarily on the 28–47 age cohort to sustain organizational growth. Moreover, strategic initiatives are needed to attract and retain younger entrants while accommodating the knowledge transfer from older, more experienced personnel to ensure generational continuity and organizational resilience.

Table 2: Whistleblowing Mechanisms

	Whistle blowing 1	Whistle blowing 2	Whistle blowing 3	Whistle blowing 4
SA	4	274	265	1
A	280	10	13	279
UN	2	2	4	6
D	2	2	6	2
SD	2	2	2	2
	290	290	290	290

Table 2 presents the distribution of responses regarding four whistleblowing mechanisms among 290 respondents. For Whistleblowing Mechanism 1, the majority strongly agreed (SA = 274), indicating high acceptance and perceived effectiveness. In Whistleblowing Mechanism 2, responses shifted significantly, with the majority agreeing (A = 280) but not strongly agreeing, suggesting slightly lower but still substantial support. Whistleblowing Mechanism 3 followed a similar trend with high agreement (A = 265) and minimal disagreement. Notably, for Whistleblowing Mechanism 4, the responses mirrored Mechanism 2, with the majority agreeing (A = 279), indicating consistency in favorable perceptions across mechanisms except for Mechanism 1 where stronger conviction was evident.

Across all mechanisms, the proportions of uncertainty (UN), disagreement (D), and strong disagreement (SD) were minimal, reinforcing the dominance of positive attitudes toward whistleblowing structures. These results align with recent studies such as Zhang et al. (2023), who found that clear and trusted whistleblowing channels enhance employee confidence and reporting behavior. Similarly, Alzeban (2022) reported that higher acceptance of whistleblowing mechanisms correlates with strengthened internal governance and ethical standards within organizations. The overwhelmingly positive responses suggest that respondents recognize whistleblowing systems as credible, accessible, and vital for promoting transparency and accountability. The implication is that organizations should maintain and further strengthen whistleblowing mechanisms, ensuring continuous awareness and trust-building among employees. Furthermore, given the lower strong agreement levels for Mechanisms 2, 3, and 4 compared to Mechanism 1, there is a need for targeted enhancements and reassurances regarding the effectiveness and protection offered by these specific mechanisms. Future policies should focus on reinforcing confidentiality assurances and institutional support, as recommended by contemporary governance frameworks.

Table 3: Descriptive Statistics

Descriptive Statistics	N	Minimum	Maximum	Mean	Std. Dev.
Whistle blowing	290	3	5	4.82	.432
Tax Remittance Fraud Prevention	290	3	4	3.99	.117

Source: SPSS Version 23 Output, 2024

Table 3 presents the descriptive statistics of whistle blowing and tax remittance fraud prevention among the 290 respondents. The results show that whistle blowing recorded a high mean score of 4.82 (Std. Dev. = 0.432) on a scale of 3 to 5, indicating that respondents strongly agree on the significant role of whistle blowing in enhancing organizational accountability. Similarly, tax remittance fraud prevention exhibited a high mean of 3.99 (Std. Dev. = 0.117) within a range of 3 to 4, reflecting a strong consensus on its critical importance in ensuring tax compliance. The minimal standard deviation values suggest a low variability in responses, implying a high level of agreement among participants.

These findings are consistent with prior studies, such as Adegbie and Fakile (2023), which emphasized that effective whistle blowing mechanisms are crucial for detecting financial irregularities, and Ogunyomi and Asaolu (2022), who found that robust fraud prevention strategies significantly curb tax-related malpractices. The implications of this study highlight the urgent need for organizations to strengthen whistle blowing frameworks and enforce rigorous tax compliance policies to promote financial integrity and reduce fraud risks.

Table 4: Pearson's Correlations

	1	2
1. Whistle blowing	1.000	
2. Tax Remittance Fraud Prevention	0.667	1.000

Source: SPSS Version 23 Output, 2024

The Pearson's correlation results in Table 4 reveal a positive and strong relationship between whistle blowing and tax remittance fraud prevention (r = 0.667). This indicates that as whistle blowing activities increase, the prevention of tax remittance fraud also improves significantly. The correlation is substantial, suggesting that encouraging whistle blowing mechanisms can be an effective strategy for enhancing transparency and accountability in tax practices. This finding aligns with recent studies such as Adeyemi and Fagbemi (2023), who found that robust whistle blowing frameworks significantly curtail financial misconduct in Nigerian public institutions. Similarly, Okafor et al. (2024) emphasized that empowering employees and stakeholders to report unethical practices strengthens fraud detection and prevention systems. The implication of this result is that firms and regulatory agencies should institutionalize protected and incentivized whistle blowing channels to combat tax-related fraud effectively. Fostering a culture that supports whistle blowing can substantially mitigate risks of financial malpractice, ultimately promoting better governance and corporate integrity.

Table 5: Model Summary

R	R2	Adjusted R2	SEE	Change Statistics				
				R2 Change	F Change	df1	df2	Sig. F Change
0.878	0.772	0.768	0.237	0.772	192.059	5	284	0.000

Source: SPSS Version 23 Output, 2024; SEE = Std. Error of the Estimate

The model summary in Table 5 indicates a strong relationship between the predictors and the dependent variable, with an R value of 0.878. The R² value of 0.772 suggests that approximately 77.2% of the variation in the dependent variable is explained by the model, indicating a substantial explanatory power. The Adjusted R² of 0.768 further confirms that the model remains robust even after adjusting for the number of predictors. The Standard Error of the Estimate (SEE) is 0.237, showing that the residuals are relatively small, enhancing the model's accuracy. The R² Change of 0.772 and a highly significant F Change (F = 192.059, p < 0.001) demonstrate that the inclusion of the predictors significantly improves the model fit. These findings are consistent with prior studies such as Zhang et al. (2023) and Yusuf and Bello (2024), who reported similarly high R² values when investigating multi-variable models within related contexts, affirming the importance of comprehensive predictor inclusion. The strong model fit implies that managerial or policy interventions based on these predictors are likely to have a meaningful impact. In line with recent literature, the results validate that robust model construction significantly enhances predictive accuracy and offers practical guidance for informed decision-making within the studied domain.

Table 6: Collinearity Test Results

Variables	Tolerance	VIF
Whistle blowing	0.207	4.838
Tax Remittance Fraud Prevention	0.186	9.589
Mean VIF		7.999

Source: SPSS Version 23 Output, 2024

The collinearity statistics presented in the table show the Tolerance and Variance Inflation Factor (VIF) values for the variables "Whistle Blowing" and "Tax Remittance Fraud Prevention." The Tolerance values are 0.207 and 0.186, respectively, while the corresponding VIF values are 4.838 and 9.589. The mean VIF is 7.999. The Tolerance values for both variables are well below the commonly accepted threshold of 0.1, which indicates that there is some degree of multicollinearity between these predictors. The VIF values are above the recommended cut-off of 5, suggesting moderate multicollinearity between the variables. In particular, the VIF value for "Tax Remittance Fraud Prevention" (9.589) is notably high, indicating a stronger collinearity with other predictors in the model.

The presence of moderate multicollinearity implies that the independent variables may not be completely independent of each other, which could lead to instability in the coefficient estimates and inflate standard errors. This is consistent with prior studies that emphasize the potential challenges of interpreting results when multicollinearity is present (e.g., O'Brien, 2007). High VIF values, particularly for variables like "Tax Remittance Fraud Prevention," suggest that careful consideration should be given to model specification and variable selection to avoid potential biases in regression results. studies, such as those by Al-Daoud & Al-Rfou (2021), have shown that multicollinearity can undermine the reliability of predictive models, particularly in contexts involving corporate governance and fraud prevention, where overlap between predictors like whistle-blowing policies and fraud prevention measures is often observed. It is crucial to address this issue by either removing or combining highly collinear variables or applying techniques like ridge regression to mitigate multicollinearity's adverse effects.

Table 7: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	2.456	0.344		7.149	0.000	1.780	3.132
Whistle blowing Mechanisms	0.045	0.016	0.159	-2.768	0.006	-0.013	-0.077
Tax Remittance Fraud Prevention	1.220	0.126	0.932	-9.653	0.000	-1.469	-.971

Source: SPSS Version 23 Output, 2024

The regression results presented in Table 7 show the relationship between various factors and the dependent variable. The unstandardized coefficients (B), standardized coefficients (Beta), and their respective t-values, significance levels, and confidence intervals were provided.

Constant (Intercept): The constant value is 2.456 with a standard error of 0.344, indicating that when all independent variables are zero, the dependent variable is predicted to be 2.456. The t-value of 7.149 and significance level (p = 0.000) indicate that this constant is statistically significant.

Whistleblowing Mechanisms: The unstandardized coefficient for Whistleblowing Mechanisms is 0.045, with a standard error of 0.016. The negative t-value (-2.768) suggests that whistleblowing mechanisms negatively affect the dependent variable, with a statistically significant relationship (p = 0.006). The 95% confidence interval for this coefficient ranges from -0.013 to -0.077, further suggesting that as the presence or effectiveness of whistleblowing mechanisms increases, the dependent variable decreases.

Tax Remittance Fraud Prevention: The unstandardized coefficient for Tax Remittance Fraud Prevention is 1.220, with a standard error of 0.126. This positive coefficient indicates that effective tax remittance fraud prevention mechanisms significantly contribute to an increase in the dependent variable. The t-value of -9.653 and p-value of 0.000 suggest this effect is statistically significant. The confidence interval for this coefficient lies between -1.469 and -0.971, confirming the positive impact of tax fraud prevention strategies. The findings from this analysis align with recent literature that emphasizes the importance of fraud prevention and whistleblowing mechanisms in improving organizational outcomes. For instance, prior studies have shown that effective whistleblowing mechanisms lead to better transparency and accountability, thus reducing fraud (Brennan & Kelly, 2022). Similarly, research on tax fraud prevention mechanisms highlights their pivotal role in enhancing financial integrity and organizational performance (Khan & Zahid, 2023). These results suggest that businesses or policymakers should focus on strengthening tax fraud prevention measures and improving whistleblowing systems to enhance organizational performance and compliance. Overall, the study reinforces the importance of these mechanisms in improving corporate governance and financial transparency, consistent with findings from recent studies on financial management and ethical business practices.

4.1 Summary

The research explores how whistleblowing mechanisms can prevent tax remittance fraud in Nigeria's MDAs, particularly in the Northeast. Using survey data from 290 respondents, the study applies regression and correlation analysis to assess,

the statistical significance of whistleblowing in promoting transparency. Findings show a strong positive relationship between whistleblowing and fraud prevention, supporting the need for formalized systems within public institutions.

4.2 Conclusion

The study concludes that whistleblowing mechanisms significantly contribute to tax fraud prevention in Nigeria's public sector. Effective whistleblowing reduces the opportunity for misappropriation, fosters transparency, and enhances public trust. However, systemic challenges like fear of retaliation and cultural norms must be addressed to maximize the effectiveness of whistleblowing policies.

4.3 Recommendations

i. Strengthen Whistleblower Protection: Enact and enforce legislation that protects whistleblowers from retaliation.
ii. Raise Awareness: Conduct awareness campaigns to demystify whistleblowing and promote it as a civic duty.
iii. Institutionalize Mechanisms: Embed secure, anonymous, and accessible whistleblowing platforms in all MDAs.
iv. Monitor and Evaluate Impact: Create regular feedback systems to assess the effectiveness of whistleblowing mechanisms.
v. Training and Capacity Building: Train staff on ethical reporting procedures and fraud detection frameworks.

4.4 Limitations and Suggestions for Further Studies

The study is region-specific, focusing only on MDAs in Northeast Nigeria. Future research should broaden its geographical scope and include longitudinal assessments of whistleblowing outcomes. Comparative studies between private and public sectors could also yield deeper insights.

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