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Impact of Computerised Accounting Information Systems on Payroll Management, Fraud Mitigation in the Nigerian Public Sector: A Case Study of Taraba State Government

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Abstract

This study examined the impact of computerised accounting information systems on payroll management and fraud mitigation in selected Ministries, Departments, and Agencies (MDAs) of the Taraba State Government. Specifically, it assessed the influence of payroll automation, access control, and audit trail on enhancing payroll administration and reducing fraudulent activities. The study adopted a survey research design, targeting 150 staff in Taraba State who are involved in payroll processing, accounting, auditing, information communication technology, and administrative roles, selected through a stratified random sampling technique. Data were collected using structured questionnaires and analysed using descriptive statistics, correlation, and multiple regression analysis with the aid of SPSS. The findings reveal that all three components of computerised accounting systems (payroll automation, access control, and audit trail) have positive and statistically significant effects on payroll management and fraud mitigation. The study concludes that strengthening these system controls is critical for effective payroll administration and fraud prevention in the public sector. Based on these findings, it is recommended that government MDAs fully implement and regularly update automated payroll systems, enforce strict access control measures, and maintain comprehensive audit trails. This will ensure transparency, improve efficiency, and safeguard public resources in payroll management.

Keywords: ***Internal Controls, Payroll Automation, Audit Trail, Fraud Prevention, Public Sector Governance***

1. Introduction

In contemporary public sector finance, payroll management remains a critical area of concern due to its large share of government recurrent expenditures and its vulnerability to fraud and abuse. Payroll fraud, including the manipulation of employee records, the existence of "ghost workers," and unauthorised salary payments, has historically eroded public funds and weakened accountability in many developing countries, including Nigeria (Ajao et al. 2022). The pervasiveness of such practices has prompted government reforms aimed at strengthening financial controls and transparency within public service systems. One key reform initiative in

Nigeria has been the adoption of computerised accounting information systems (CAIS) to manage and process payroll transactions. CAIS refers to digital platforms that integrate financial and human resource processes, enabling automation, real-time validation, and enhanced tracking of accounting data. The use of electronic payroll systems, including integrated payroll and personnel information systems like IPPIS and other national financial management platforms, has been promoted to reduce human error, limit unauthorised access, and ensure the integrity of payroll data (Nankyer, 2024; Ibrahim et al., 2025).

Taraba State Government's payroll, like those of other states, employs a large workforce spanning civil service, health, education, and local government sectors. Over the past few years, Taraba State has embarked on various efforts to modernise its payroll system and improve accountability in public service payment processes. In 2025, the state government initiated a comprehensive payroll audit and staff verification exercise aimed at identifying irregularities within the civil service payroll. Preliminary findings from this exercise revealed that several thousand names on the payroll could not be verified as active civil servants. A verification committee reported that approximately 7,000 to 7,800 entries were questionable, suggesting the potential presence of ghost workers (Akpeji, 2025).

The introduction of computerised systems is thus seen as a key strategic reform to strengthen accountability and enhance the efficiency of payroll management in the Taraba State public sector. In payroll management, CAIS automates salary computation, tax deductions, pension contributions, and employee record management, thereby reducing manual intervention and the likelihood of arithmetic errors. CAIS offers a structural opportunity to mitigate risks associated with fraudulent payroll practices. In summary, while computerised accounting information systems offer a pathway to more transparent and effective payroll management, their success in mitigating fraud risk depends on the adequacy of implementation, complementary internal controls, and supportive institutional capacity.

Payroll management in the Nigerian public sector remains one of the most significant areas of financial vulnerability, with persistent cases of payroll fraud undermining transparency and effective use of public funds. Despite reforms and modernisation efforts, the incidence of payroll irregularities such as ghost workers, duplicate payments, manipulation of allowances, and unauthorised salary disbursements continues to drain limited government resources and weaken governance outcomes (Ajao et al., 2022). In many state government agencies, including Taraba State Government, traditional payroll practices were historically manual or semi-automated, relying on paper-based records and fragmented systems. These practices made it easier for fraudsters to exploit control weaknesses and insert fictitious employees into the payroll, inflate overtime claims, and manipulate personnel data for financial gain. Such activities have not only contributed to wastage of public funds, but also raised concerns among stakeholders regarding accountability, audit compliance, and overall public service effectiveness (Onowu & Oludi, 2024).

To address these challenges, public organisations across Nigeria have increasingly introduced computerised accounting information systems that integrate payroll functions with broader financial management systems. These digital platforms are designed to automate calculations, enforce access controls, enable real-time validation checks, and maintain audit trails, theoretically strengthening internal controls and reducing opportunities for fraudulent activities (Ibrahim et al., 2025). In several states, integrated payroll systems have been linked with biometric verification and centralised personnel databases to eliminate ghost workers and improve payroll accuracy (Nankyer, 2024).

However, the mere adoption of computerised systems does not automatically guarantee effective fraud mitigation. Empirical evidence indicates that organisational, technological, and human factors influence the extent to which such systems improve control outcomes. Challenges such as inadequate information technology infrastructure, inconsistent implementation, lack of staff training, and resistance to change continue to undermine the potential benefits of digital payroll systems in many public sector contexts (Mohammed & Okoroigwe, 2025). Although some studies report reductions in payroll errors and fraudulent cases after adopting computerised systems, other research highlights gaps in system integrity monitoring and weak enforcement of audit findings. Ibrahim et al. (2025) found that even with automated controls, cases of unreported payroll adjustments and unauthorised salary changes were detected due to lack of supervision and poor internal audit follow-up. This suggests that technological solutions must be accompanied by robust governance practices to effectively mitigate fraud risk.

Despite these insights, there is limited context-specific research that evaluates the impact of computerised accounting information systems on payroll management and fraud mitigation in Taraba State Government. Most existing studies focus on federal agencies or other state contexts, leaving a gap in understanding how contextual factors such as local governance practices, staff capacity, and system utilisation influence the effectiveness of CAIS in Taraba State. Without empirically grounded knowledge, policymakers may overestimate the control benefits of computerised systems or fail to address persistent weaknesses in payroll controls. The effectiveness of CAIS depends largely on system design, implementation quality, monitoring procedures, and the ethical environment within the organisation. Weak access controls, poor system configuration, inadequate segregation of duties, and lack of independent IT audits can create vulnerabilities within computerised systems. In some cases, system administrators or insiders with high-level access privileges may exploit technical loopholes to manipulate payroll data in more sophisticated ways than in manual systems. Therefore, the study seeks to examine the impact of computerised accounting information systems on payroll management and fraud mitigation in Taraba State Government.

The study examines payroll management, payroll fraud, fraud mitigation, and computerised accounting information systems, supported by relevant theories and empirical literature. It adopts a structured methodology to collect and analyse data, presents and discusses findings, and concludes with recommendations based on the study's results.

2. Literature Review

The literature review provides existing literature on the impact of computerised accounting information systems on payroll management and fraud mitigation in the Nigerian public sector. The review comprises the conceptual framework, empirical studies and theoretical review.

2.1.1 Concept of Payroll Management

Payroll management is a fundamental administrative and accounting function in any organisation because it involves calculating, processing, and paying employees' salaries and wages. It is a key component of financial management and human resource administration, ensuring that employees are compensated accurately and in accordance with organisational policies and statutory regulations (Umar, 2020). According to Umar, Payroll management refers to the systematic process of calculating, recording, and distributing employees' salaries, wages, bonuses, and deductions within an organisation. It involves maintaining records of employees' earnings, determining statutory deductions such as taxes and pension contributions,

and ensuring that employees receive their net pay within a specified pay period (Jetir, 2024). In modern organisations, payroll management also includes the use of automated systems or payroll software to process employee compensation efficiently. These systems calculate wages, hours worked, deductions, and tax withholdings for each pay period while maintaining accurate employee payroll records (Sap, 2024). According to recent studies, payroll administration has become increasingly complex due to the large volume of payroll data, the need to compute various allowances and deductions, and the requirement to maintain accurate records for thousands of employees in large organisations (Ahmed et al., 2023).

2.1.2 Nature of Payroll Management

Payroll management is a continuous and systematic process that involves collecting employee data, calculating wages, applying deductions, and paying employees at regular intervals such as weekly, bi-weekly, or monthly. It requires a high level of accuracy because errors in payroll processing can result in financial losses, employee dissatisfaction, and legal consequences (Jetir, 2024). Furthermore, payroll management is governed by numerous rules and regulations relating to taxation, labour laws, and employee benefits. These regulations often vary across countries and organisations, making payroll administration a complex task that requires appropriate systems and internal control mechanisms to ensure compliance and transparency. In public sector institutions, payroll management is particularly important because it involves large numbers of employees and substantial government expenditure. Effective payroll management ensures that only legitimate employees receive salaries and that public funds are used appropriately.

2.1.3 Payroll Fraud

Payroll fraud is defined as the intentional manipulation of payroll data for illegitimate financial gain. Common forms include ghost workers, unauthorised bonuses, inflated wages, and duplicate salary payments (Singleton & Singleton, 2022). Pay rolling is the process which an organisation passes through to pay its employees. It deals with records relating to the employees' salaries, deductions, bonuses and income (Murray, 2017). Rietsema (2018) described payroll as a means or process by which an employee is paid by the organisation for the services rendered. According to Ovaga and Eme (2020), government payrolling is defined as the listing of all the people who are employed by the Government council, showing the actual amount to be paid to each worker at the end of every month. Therefore, before any person is payrolled in the local government, he or she must be a bona fide worker of the council. Payrolling is the process of listing the names of people employed in an organisation, showing the amount of money to be paid to each of them (Hornby, 2001). Payrolling therefore can be seen as an exercise that is carried out in any establishment where there are workers employed by an employer. It is done both in private and government organisations provided there are employees.

The payroll unit is a section in the finance department headed by the Treasurer of the council. In order to make sure that employees are paid on a monthly basis, attendance time sheets and overtime sheets, where applicable, are submitted by the various departments and units to the payroll unit before the end of every month. These sheets will be compiled by the payroll officer and will be properly scrutinised by the internal auditor (IA). The Unit should ensure that workers' salaries are prepared on time to ensure prompt payment. To achieve this, the unit should design a system of recording and computing that will ensure payment of correct amounts to authorised employees at due time as well as against unauthorised payment to fictitious persons. It must ensure that all computations are made in accordance with the

financial memoranda (FM) approved by the Commissioner for government and other rules and regulations guiding payrolling in the government system. The payroll unit should build necessary data on every employee for accurate information in processing his earning.

2.1.4 Fraud Mitigation

Fraud mitigation refers to the strategies, policies, systems, and controls implemented by an organisation to reduce, prevent, detect, and manage fraudulent activities before they cause significant financial or operational damage. It involves identifying potential fraud risks and putting measures in place to minimise the likelihood and impact of fraud. Fraud mitigation is a proactive and continuous process through which organisations design and implement internal controls, monitoring systems, and governance structures aimed at limiting opportunities for fraud, detecting fraudulent activities early, and reducing the financial and reputational losses associated with fraud. It focuses on reducing the risk and impact of fraud rather than eliminating it, because fraud risks can never be entirely removed from any system.

The concept of fraud mitigation is closely linked to fraud risk management, which focuses on identifying areas that are vulnerable to fraudulent activities and implementing appropriate internal controls to address such risks. Organisations often adopt proactive measures such as segregation of duties, authorisation procedures, internal audits, and monitoring systems to prevent and detect fraudulent activities before they cause significant financial loss or reputational damage (Wells, 2017). Fraud mitigation also involves the use of organisational policies and ethical standards to guide employee behaviour and discourage fraudulent practices. Establishing a strong ethical culture within an organisation helps promote accountability and transparency among employees. When employees are aware of strict anti-fraud policies and the consequences of fraudulent actions, the likelihood of fraud occurrence is significantly reduced (Singleton & Singleton, 2010).

2.1.5 Computerised Accounting Information Systems (CAIS)

Computerised Accounting Information Systems are technology-driven platforms designed to capture, process, and report financial transactions in real time using automated procedures. CAIS in payroll management encompass systems that integrate personnel data, automate wage computations, generate audit trails, and provide internal controls for fraud mitigation (Romney & Steinbart, 2020).

According to Provita et al. (2024), a Computerised Accounting Information System (CAIS) is an information system that integrates accounting functions with computer hardware and software to collect, store, process and report financial and accounting data for managerial and organisational decision-making. In CAIS, technology automates traditional accounting processes to improve speed, accuracy, and relevance of financial information. Provita et al. (2024) asserted that most computerisations offer core and non-core feature modules, all of which have the same user experience and are seamlessly interconnected. Computerised Accounting Information Systems (CAIS) consist of several core modules that work together to facilitate the efficient processing, recording, and reporting of financial transactions within an organisation. These modules include: The general ledger serves as the central repository of all financial transactions. It records and summarises information from various accounting activities and provides the basis for preparing financial statements such as the statement of financial position and income statement. This module manages money owed to the organisation by customers or other entities. Its records credit sales, tracks outstanding balances, monitors collections, and generates customer account statements. The accounts payable module records and manages obligations owed by the organisation to suppliers, contractors, and service

providers. It facilitates invoice processing, payment scheduling, and creditor account management. This module automates employee compensation processes, including salary computation, deductions, tax calculations, pension contributions, allowances, and payslip generation. It enhances payroll accuracy and reduces payroll fraud. The inventory module tracks the movement, quantity, and value of inventory items. It helps organisations maintain adequate stock levels, monitor stock usage, and minimise losses resulting from poor inventory control. This module compares an organisation's accounting records with bank statements to identify discrepancies and ensure the accuracy of cash balances. It helps detect errors, omissions, and unauthorised transactions. This module assists in budget preparation, budget monitoring, variance analysis, and the generation of financial reports for management decision-making and accountability purposes. The fixed assets module records and manages information relating to long-term assets such as buildings, vehicles, machinery, and equipment. It calculates depreciation and maintains asset registers for effective asset control. Examples include electronic payment processing, debt collection, payroll and time sheet management, departmental accounting and support for multi-currency or value-added taxation. Some systems can also be connected with Enterprise Resource Planning (ERP), inventory management and Customer Relationship Management (CRM) systems.

Ismail (2016) suggested that computerised accounting has allowed governments and their accountants to complete functional tasks more quickly and accurately, as well as interpret and report data more efficiently. This way, the government can focus on their strategic roles and handle complex issues, such as ensuring better cash management, a payroll management system, an expenditure ceiling and a government budget and budgetary system. Hosain (2019), Computerised Accounting Information System is a technical system linking information systems with economic functions (organisational finance). CAIS not only protects data but also collects primary data and converts it into useful information for managerial decision-making. It implies maintenance of only one set of books for both financial and cost accounts. Computerised accounting saves time and money, and increases account accuracy. Accountants who wish to remain competitive in the contemporary workforce need to keep their paperless accounting skills up to date. Accounting firms need to embrace computerised accounting to remain competitive in the digital age.

Payroll Automation: Payroll automation is the use of computerised systems or software to manage and process employee payroll automatically instead of doing it manually. In simple terms, payroll automation means using technology to calculate salaries, deductions, taxes, allowances, and generate payslips with minimal human intervention.

Access Control: Access control is a security mechanism used to regulate who can access, view, or modify information, systems, or resources within an organisation. In simple terms, access control ensures that only authorised individuals can enter a system or use certain information.

Audit Trail: Audit trail refers to a chronological record of all activities or transactions in a system that allows users and auditors to trace what happened, when it happened, and who performed the action. In simple terms, an audit trail is a record that tracks every change or transaction made in a system.

2.2 Theoretical review

2.2.1 Fraud Triangle Theory

The Fraud Triangle Theory, developed by Donald Cressey in 1953, offers a robust conceptual lens through which payroll fraud in the public sector can be understood and addressed. The theory posits that for occupational fraud to occur, three critical elements must be present:

pressure, opportunity, and rationalisation. Pressure, often financial or personal in nature, creates the motive for fraud. Rationalisation provides the cognitive framework that allows individuals to justify dishonest acts, such as believing that the government can afford the loss, or that everyone else engages in similar practices. However, opportunity is considered the most critical of the three, as it represents the practical chance to commit fraud undetected. In many public sector institutions in Nigeria, weak internal controls, lack of automation, manual payroll processes, and inadequate oversight have historically created ample opportunity for payroll fraud to thrive. Practices such as the inclusion of ghost workers, duplicate salary payments, and unauthorised allowances are direct consequences of these systemic vulnerabilities. The Fraud Triangle Theory explains that fraud occurs due to pressure, opportunity, and rationalisation. Computerised accounting information systems reduce fraud risk by eliminating opportunity through improved internal controls, audit trails, and system security. Therefore, the theory supports this study by explaining how computerised accounting systems help mitigate payroll fraud in Taraba State Government.

2.3 Empirical Review

Osei-Bonsu and Mensah (2023) explored the role of CAIS in enhancing payroll accountability in Ghana's public health sector. The study employed a longitudinal research design, analysing payroll data and audit reports over ten years, complemented with interviews of payroll officers. Their analysis showed a clear downward trend in payroll fraud cases following CAIS implementation, particularly after biometric authentication was introduced. However, the study emphasised that lack of periodic system updates and poor system-user feedback mechanisms hindered long-term efficiency. Although the longitudinal approach added depth to the analysis, the study did not sufficiently control for confounding variables such as changes in audit practices or salary structure reforms, which may have also contributed to fraud reduction.

Umar and Abubakar (2022) investigated the effectiveness of the Integrated Payroll and Personnel Information System (IPPIS) in minimising payroll fraud across federal ministries in Nigeria. The study adopted a descriptive survey design and used both primary and secondary data, analysed through content analysis and regression models. Results showed that IPPIS contributed to a significant reduction in the number of ghost workers and unauthorised allowances, particularly after its enforcement by the federal government. However, it also uncovered loopholes such as unauthorised system access and back-end data manipulation by internal insiders. A notable strength of this study is its use of mixed data sources, which increases the reliability of findings, but its limitation lies in failing to incorporate comparative analysis with states not using IPPIS, which would have highlighted the system's relative effectiveness.

Mohammed and Oyekunle (2021) examined the influence of CAIS on the control of payroll fraud in Nigeria's Ministry of Finance. Using a cross-sectional design, they gathered data from 120 staff using Likert-scale questionnaires and applied structural equation modeling (SEM) to test the relationships among variables. The findings showed that automation, access control, and integrated reporting significantly reduced incidences of payroll fraud. The study also indicated that employee awareness and technical knowledge moderated the effectiveness of the systems. While the methodological rigor of using SEM strengthened the statistical validity of the results, the study lacked a temporal perspective, failing to show changes in fraud levels over time, which would have been useful in confirming causality rather than just correlation.

Adebayo and Salawu (2020) investigated the effect of computerised payroll systems on fraud detection and prevention in Nigerian federal universities. The study adopted a survey research design, collecting primary data through structured questionnaires administered to payroll

officers, internal auditors, and bursary staff across six selected universities. Using descriptive statistics and multiple regression analysis, the study found a statistically significant relationship between the use of CAIS and reduction in payroll fraud, particularly in detecting ghost workers and duplicate salary payments. However, the study also acknowledged that the effectiveness of CAIS was compromised by poor staff training and resistance to change. A major critique of this study is its reliance solely on perception-based data without triangulating with secondary data from actual payroll reports or audit records, which limits the objectivity and generalisability of the findings.

Kusi et al. (2019) assessed the implementation of financial management information systems (FMIS) on payroll fraud control in the Ghanaian public sector. They adopted a mixed-method approach, using both interviews and documentary reviews from the Controller and Accountant General's Department. The study revealed that FMIS, as a form of CAIS, led to the elimination of approximately 30,000 ghost workers and improved internal controls over payroll disbursements. Nonetheless, it also found that some government departments bypassed system protocols due to political interference and low institutional compliance. A key limitation of this study lies in its overreliance on elite interviews, which may have introduced confirmation bias, and its limited coverage of only central government entities, excluding local government systems that may have more systemic vulnerabilities.

Sunday et al. (2019) examined the effect of the implementation TSA, IPPIS and FMIS on fraud in Public Interest Entities in Nigeria. The theoretical structure of the work anchored on the Meta Theory Model, Circumvention Innovation Theory and Public Finance management theory which highlight the relationship between computerised innovations in government establishments and fraud management. The descriptive research design was employed, and questionnaire administered on respondents randomly selected from the studied Ministries. The linear regression model was employed in establishing the relationship between variables. Results of the statistical test reveal that TSA, IPPIS, and IFMIS have positive and significant relationship with Fraud and fraud management as well as jointly impact the performances of Public Interest Entities. Based on findings of the study, it was recommended among others that IPPIS be fully implemented to address the ghost workers syndrome in Public Interest Entities and that public officers be technologically trained to effectively utilise TSA, IPPIS and IFMIS platforms.

Paul et al. (2019) informed the advent of digital integrated personnel and payroll information systems of most African countries. The introduction of the electronic financial governance system in the public sector of the African economies was immensely clouded with several shortcomings. It is because of this, that this paper attempts to examine the effectiveness, identify the challenges and the mitigating factors put in place to cushion the effects of the challenges using IPPIS or IPPD as the case might be. Using three African countries, namely, Kenya, Ghana and Nigeria, the paper found via views articulated from journal articles, newspapers and a few published works that IPPIS or IPPD has achieved some level of success in term of accuracy, timeliness, reliability in personnel and financial data generation and processing. These helped in weeding out ghost workers, resulting in huge financial savings for the government. Notwithstanding, pockets of challenges were found, namely, lack of Oracle-based training and retraining and arbitrary posting of IPPIS staff, inability to carry out data cleansing exercise before migrating them to the digital devices, failure to introduce any relevant modules that could cover some personnel and payroll activities like staff retirement and termination of appointment. To avert these troubles, some mitigating strategies like improved version and Oracle-based system of the IPPIS or IPPD were developed. Also, there is an

existing policy in some of the countries stipulating that IPPIS staff can only be posted after three years.

Chowdhury et al. (2018) conducted a study in Bangladesh to evaluate the effect of e-Governance applications on payroll fraud in public administration. The study employed a case study approach involving the Ministry of Education and used a combination of payroll audit reports and semi-structured interviews. The findings highlighted that the transition from manual payroll systems to CAIS significantly reduced wage leakage by 40% over five years. However, it also showed that inadequate IT infrastructure and poor internet connectivity in rural regions slowed down the adoption and full functionality of the systems. A critical limitation of this study is its heavy contextual specificity findings rooted in Bangladesh's bureaucratic and technological environment may not easily be transferrable to the Nigerian setting without adjusting for institutional differences.

Ogbonna and Friday (2018) examined the impact of Government Integrated Financial Management Information System (GIFMIS) on Economic Development of Nigeria. Secondary data was collected from the Budget Office of the Federation, Office of the Accountant- General of the Federation, National Bureau of Statistic and United Nation Development Program and analysed with the use of statistical package for social science (SPSS) and t-test to test the significant difference in independent and dependent variables. The empirical findings revealed among other things, that GIFMIS have impacted positively on Nigeria's economic development. It was concluded from the study that GIFMIS adopted by Federal Government of Nigeria (FGN) has impacted positively on its economic development through the budgeting and budgetary system, payroll management system, cash management reforms, expenditure ceiling for MDAs in Nigeria within the time under review. The study recommends, among others, that the government should strengthen GIFMIS module and cover other area of interest in the national budget to achieve more on human capital development, investment in critical infrastructures, gross domestic product, and per capita income. The savings of over N126 billion from the implementation of GIFMIS could be channeled to human capital development like education, health or investment in critical infrastructure like roads, port or diversify the economy. Therefore, GIFMIS is a good platform and effective and efficient strategy in the management of government finances. It reduces incidences of government borrowing, provides holistic financial information and minimises fraud in Nigeria.

Obara, et al. (2017) studied accounting system and payroll fraud in the Nigerian public sector. The study used structured and well validated questionnaire distributed to staff of Ministries, Departments, and Agencies (MDAs) of Government Parastatals in Rivers State of Nigeria. Data gathered were presented using descriptive statistical tools such as tables, percentages, and charts. Findings from the study revealed that there was a significant correlation between the effectiveness of manual and computerised accounting system payroll fraud in the Nigerian public sector. However, the study concentrated on the public sector using Rivers State as an instance, while this current study focused on the Nigerian public sector (at the Federal level) at large.

3. Methodology

This study adopted a survey research design. This design is considered appropriate because it enables the researcher to obtain relevant information from staff of Taraba State Ministries, Departments, and Agencies (MDAs) regarding the use of computerised accounting information systems on payroll management and fraud mitigation. The population of the study consists of 240 staff involved in payroll processing, accounting, auditing, and financial management in selected Taraba State Ministries, Departments, and Agencies. The population of this study

consists of 240 staff members drawn from selected Ministries, Departments, and Agencies (MDAs) of the Taraba State Government who are directly involved in payroll administration, accounting, auditing, and financial management activities. The population comprises 60 Accountants, 45 Internal Auditors, 50 Payroll Officers, 35 Information and Communication Technology (ICT) Personnel, and 50 Administrative Officers. These officers were drawn from the Ministry of Finance, Office of the Accountant-General, Ministry of Education, Ministry of Health, and other selected MDAs where computerised accounting information systems are actively utilised in payroll processing and financial management. The selection of these categories of staff was based on their direct involvement in the operation, monitoring, and control of payroll systems within the public sector.

Therefore, the sample size for this study is 150 respondents. This study adopted a stratified random sampling technique. The sample was divided into strata based on professional roles, including: Accountants, Auditors, Payroll officers, ICT personnel, and administrative staff. Random sampling was then used to select respondents from each group to ensure fair representation. Data collected were analysed using descriptive statistics frequency, percentage, Mean, Standard Deviation, Inferential statistics Regression Analysis, Correlation Analysis, ANOVA, Coefficient regression was conducted using SPSS (Statistical Package for Social Sciences).

Model Specification

This research adopted the model of accounting information systems control frameworks developed by Romney and Steinbart (2018). The model is hereby specified below:

$$PMFM = \beta_0 + \beta_1 PA + \beta_2 AC + \beta_3 AT + \mu$$

Where:
PMFM = Payroll Management and Fraud Mitigation (Dependent Variable)

$\boldsymbol{\beta_0}$ = Intercept or constant

$\boldsymbol{\beta_1 - \beta_3}$ = Coefficients of the independent variables

PA = Payroll Automation

AC = Access Control

AT = Audit Trail

$\boldsymbol{\mu}$ = Error term representing other factors not included in the model

This model emphasised that computerised accounting information systems equipped with internal control mechanisms such as payroll automation, access control, and audit trail enhance payroll management efficiency, strengthen risk control, and mitigate fraud in the organisation.

Table 1: Measurement of Variables

S/N	PROXY	TYPE	MEASUREMENT
	Variables of interest		
1	Payroll management and Fraud mitigation	Dependent	Accuracy of salary payments, timeliness of salary disbursement, reduction in payroll errors, elimination of ghost workers, prevention of unauthorised salary payments, detection of payroll irregularities.

2	Payroll automation	Independent	Automated salary computation, automatic deduction of taxes and pensions, electronic Automated salary computation, automatic deduction of taxes and pensions, electronic generation of pay slips, reduction in manual payroll processing, integration of payroll records.
3	Access control	Independent	Password protection of payroll systems, role-based access privileges, user authentication procedures, authorisation requirements for payroll modifications, restriction of unauthorised access.
4	Audit trail	Independent	Availability of transaction logs, tracking of payroll changes, traceability of payroll transactions, ease of detecting irregularities, maintenance of historical payroll records.

Source: Authors' Compilation (2026)

4. Results and Discussions

Table 2: Descriptive Statistics of Respondents by Professional Role

Professional Role	Frequency	Percentage (%)
Accountants	35	23.3
Internal Auditors	28	18.7
Payroll Officers	32	21.3
ICT Personnel	25	16.7
Administrative Officers	30	20.0
Total	**150**	**100**

Source: SPSS Output (2026)

Table 2 indicates that accountants constitute the largest proportion of respondents with 23.3 per cent of the sample, followed by payroll officers with 21.3 per cent and administrative officers with 20 per cent. Internal auditors represent 18.7 per cent of the respondents, while ICT personnel account for 16.7 per cent. This distribution shows that the study captured opinions from all relevant professional groups involved in payroll processing and financial management within the selected Ministries, Departments, and Agencies of Taraba State.

Table 3: Descriptive Statistics of Study Variables

Variable	N	Mean	Std. Deviation
Payroll Automation (PA)	150	3.82	0.74
Access Control (AC)	150	3.65	0.81
Audit Trail (AT)	150	3.71	0.76
Payroll Management and Fraud Mitigation (PMFM)	150	3.89	0.69

Source: Research Data (2026)

The descriptive statistics reveal that the mean values for all the study variables are above the midpoint of the scale, indicating that respondents generally agree that computerised accounting information system components such as payroll automation, access control, and audit trail

contribute positively to payroll management and fraud mitigation in the selected government MDAs. Payroll management and fraud mitigation recorded the highest mean value of 3.89 with a standard deviation of 0.69, suggesting relatively consistent responses among participants. Payroll automation also shows a high mean score of 3.82, implying that automated payroll systems are widely perceived as effective in improving payroll accuracy and reducing fraudulent practices. Similarly, access control and audit trail exhibit moderate variability, indicating that respondents have fairly similar perceptions regarding the importance of system security and transaction tracking in strengthening payroll management.

Table 4: Correlation Matrix

Variables	PMFM	PA	AC	AT
Payroll Management & Fraud Mitigation (PMFM)	1.000			
Payroll Automation (PA)	0.623**	1.000		
Access Control (AC)	0.571**	0.542**	1.000	
Audit Trail (AT)	0.598**	0.486**	0.515**	1.000

Source: Research Data (2026)

The correlation analysis was conducted to examine the relationship between the dependent variable, payroll management and fraud mitigation (PMFM), and the independent variables, namely payroll automation (PA), access control (AC), and audit trail (AT). The results show that payroll automation has a positive relationship with payroll management and fraud mitigation ($r = 0.623$). This implies that improvements in payroll automation are associated with better payroll administration and a reduction in fraudulent practices within the Ministries, Departments, and Agencies studied.

The table also reveals that access control is positively correlated with payroll management and fraud mitigation ($r = 0.571$). This suggests that when strong restrictions and authorisation procedures are implemented within payroll systems, the effectiveness of payroll management improves and the risk of fraud is reduced.

Similarly, audit trail demonstrates a positive relationship with payroll management and fraud mitigation ($r = 0.598$). This indicates that maintaining detailed electronic records of payroll transactions enhances transparency, accountability, and monitoring, which helps minimise fraudulent activities in payroll processing.

The results further show moderate positive relationships among the independent variables themselves. Payroll automation is positively correlated with access control ($r = 0.542$) and audit trail ($r = 0.486$), while access control also has a positive relationship with audit trail ($r = 0.515$). These relationships suggest that the components of computerised accounting information systems tend to work together in strengthening internal control mechanisms within payroll operations.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.712	0.507	0.497	0.486

Source: Research Data (2026)

The model summary presents the overall explanatory power of the regression model used in the study. The results show a correlation coefficient (R) of 0.712, indicating a strong positive

relationship between the independent variables, including payroll automation, access control, and audit trail, and the dependent variable, payroll management and fraud mitigation. The coefficient of determination (R^2) is 0.507, which means that approximately 50.7 per cent of the changes in payroll management and fraud mitigation can be explained by the combined effect of payroll automation, access control, and audit trail. The adjusted R^2 value of 0.497 also confirms that the model explains a considerable proportion of the variation in the dependent variable after adjusting for the number of predictors included in the model. This suggests that the variables used in the study provide a meaningful explanation of payroll management and fraud mitigation within the selected Ministries, Departments, and Agencies.

Table 6: ANOVA Result

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	35.842	3	11.947	50.56	0.000
Residual	34.502	146	0.236		
Total	70.344	149			

Source: Research Data (2026)

The ANOVA result evaluates whether the regression model as a whole is statistically significant. The findings show an F-statistic of 50.56 with a probability value of 0.000. Since the significance level is less than 0.05, the model is considered statistically significant. This indicates that payroll automation, access control, and audit trail jointly have a significant influence on payroll management and fraud mitigation. In other words, the combination of these computerised accounting information system controls contributes meaningfully to improving payroll administration and reducing the likelihood of fraud in the selected government MDAs.

Table 7: Result and Interpretation

Model	**Unstandardised Coefficients (B)**	**Std. Error**	**Standardised Coefficients (Beta)**	**t**	**Sig.**
(Constant)	0.812	0.214		3.79	0.000
Payroll Automation (PA)	0.348	0.073	0.362	4.76	0.000
Access Control (AC)	0.271	0.069	0.298	3.93	0.000
Audit Trail (AT)	0.305	0.071	0.324	4.29	0.000

Source: Research Data (2026)

Discussion of the Results

The findings of this study revealed that payroll automation has a positive and statistically significant effect on payroll management and fraud mitigation in the selected Ministries, Departments, and Agencies (MDAs) of the Taraba State Government. The result implies that the adoption of automated payroll systems enhances the accuracy, efficiency, and transparency of payroll operations while reducing opportunities for payroll-related fraud. By minimising manual intervention in salary computation and record management, payroll automation helps eliminate errors, duplicate payments, and the inclusion of ghost workers. This finding is consistent with the study of Mohammed and Oyekunle (2021), who found that payroll automation significantly reduced incidences of payroll fraud in Nigeria's Ministry of Finance. The finding also supports the work of Adebayo and Salawu (2020), who reported that computerised payroll systems improved fraud detection and prevention in Nigerian federal universities. Similarly, Umar and Abubakar (2022) observed that the implementation of the

Integrated Payroll and Personnel Information System (IPPIS) contributed significantly to the reduction of ghost workers and unauthorised salary payments in federal ministries.

The study further found that access control has a positive and significant relationship with payroll management and fraud mitigation. This indicates that restricting payroll system access to authorised personnel enhances accountability and reduces the risk of unauthorised manipulation of payroll records. Effective access control mechanisms such as password protection, user authentication, and role-based authorisation strengthen internal control systems and safeguard payroll information from abuse. This finding agrees with Mohammed and Oyekunle (2021), who reported that strong access control mechanisms significantly improved payroll fraud control in public sector organisations. The result is also in line with the findings of Osei-Bonsu and Mensah (2023), who concluded that improved system security and user authorisation procedures enhanced payroll accountability within Ghana's public health sector. The findings also revealed that audit trail has a positive and statistically significant effect on payroll management and fraud mitigation. This suggests that maintaining detailed records of payroll transactions promotes transparency, accountability, and effective monitoring of payroll activities. Audit trails make it easier for management and auditors to identify irregularities, trace unauthorised transactions, and detect fraudulent activities within payroll systems. This finding corroborates the study of Kusi et al. (2019), which found that computerised financial management information systems improved payroll control through enhanced transaction tracking and monitoring. The result is also consistent with Chowdhury et al. (2018), who reported that electronic payroll systems significantly reduced payroll fraud by improving the traceability of payroll transactions and strengthening oversight mechanisms.

Overall, the findings demonstrate that payroll automation, access control, and audit trail jointly contribute to effective payroll management and fraud mitigation in the public sector. The results support the Fraud Triangle Theory, which posits that fraud occurs when opportunity exists. By strengthening internal controls through automation, restricted access, and transaction monitoring, computerised accounting information systems reduce opportunities for fraudulent practices and enhance accountability in public sector payroll administration. These findings are further supported by Sunday et al. (2019), who concluded that digital financial management systems such as IPPIS and IFMIS significantly improved fraud management and accountability within Nigerian public institutions.

5. Conclusion and Recommendations

The study concludes that computerised accounting information system controls play a significant role in improving payroll management and mitigating fraud in Taraba State Government Ministries, Departments, and Agencies. The findings revealed that payroll automation, access control, and audit trail all have positive and statistically significant effects on payroll management and fraud mitigation. This indicates that the adoption of automated payroll systems, effective system access restrictions, and proper documentation of transactions enhances transparency, accountability, and efficiency in payroll administration.

Based on the findings of the study, several recommendations are proposed to improve payroll management and reduce fraud in Taraba State Government Ministries, Departments, and Agencies.

i. Government institutions should strengthen the implementation of payroll automation systems. Automating payroll processes helps reduce manual errors, eliminates duplicate entries, and minimises opportunities for manipulation of payroll records. Therefore, the Taraba State Government should continue to invest in modern

computerised payroll systems and ensure that payroll operations are fully integrated and regularly updated to improve efficiency and transparency.

ii. Strong access control mechanisms should be established and strictly enforced within the payroll management system. Access to payroll data should be limited only to authorised personnel based on their job responsibilities. This can be achieved through the use of secure login credentials, password protection, and multi-level authorisation procedures. Such measures will help prevent unauthorised access and reduce the risk of fraudulent alterations to payroll information.

iii. There should be proper maintenance and monitoring of audit trails within the computerised accounting system. Every payroll transaction and system activity should be recorded and easily traceable. This will enhance transparency and make it easier for internal auditors and management to detect irregularities in payroll processing. Regular reviews of audit trail records should also be conducted to ensure accountability and strengthen internal control within the payroll system.

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