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EFFECT OF INFORMATION AND COMMUNICATION TECHNOLOGY ON FRAUD DETECTION AND PREVENTION IN TARABA STATE

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Abstract

The study examined the effect of information and communication technology on fraud detection and prevention in selected ministries department and agencies in Taraba State. The study employed survey research design and correlational research design. The population of the study includes all employees of the Taraba State Ministry of Finance, the Taraba State Ministry of Information and Orientation and Ministry of Digital Economy and Innovation. The total population is 113. The employed the census sampling techniques to adopts the entire population as sample size. The study administered 113 questionnaires to the respondents. However, only 97 questionnaires were retrieved. The study frequencies and ordinary least square to analyzed the data. The study found that artificial intelligence has positive and insignificant effect on fraud detection and prevention. Biometric authentication has negative and significant effect fraud detection and prevention. The study found that continue online auditing has positive and insignificant effect on fraud detection and prevention. The study recommends that Taraba State government should increase AI adoption in MDAs by investing in AI tools and providing regular training sessions for staff on AI-based fraud detection. The Taraba State government and relevant agencies should implement this immediately to stay ahead of evolving fraud techniques. The Ministry of Finance and anti-fraud units should spearhead training programmes, involving both policymakers and operational staff, to foster acceptance and effective use of AI tools. Also, the government should address the challenges associated with BA by simplifying its integration, reducing implementation costs, and ensuring proper training. Policy adjustments could include implementing simplified biometric checks to encourage user acceptance. The Taraba State government, working with technology providers, should launch pilot programmes within six months, gradually scaling BA implementation as feedback is incorporated. Agency directors and policymakers should work with IT teams to modify BA to suit the organizational environment better.

Keywords: Fraud Detection, ICT, Financial Crime, Cybersecurity, Taraba State Introduction

Introduction

Fraud remains a significant challenge in Nigeria, impacting both on public and private sectors. It manifests in various forms such as embezzlement, bribery, cybercrime, and identity theft. According to the Nigeria Inter-Bank Settlement System (NIBSS), fraud attempts rose significantly in 2023, with billions of Naira lost to fraudulent activities (Hussaini & Aliyu, 2022). In Taraba State, similar trends have been observed, with increasing reports of financial misappropriation and cyber-related crimes impacting local businesses and government operations (Tyopuusu, 2024).

Furthermore, over the years, many countries in the world are often exposed to different types of occupational fraud by their employees. These fraud incidents affect a wide range of people from management, employees, auditors, creditors, and investors. Countries that have been battling with fraud incidence are making efforts to prevent fraud and proactively manage the fraud menace. Preventing fraud is a considerable challenge to organizations as fraudsters continuously discover different methods to

commit fraud while the detection of fraud is even more difficult as fraudsters usually attempt to conceal their tracks (Kalana, 2019).

More so, fraud has totally penetrated both the arms and tiers of Nigeria government as a result of feeble internal control system that is extremely prone to treasury looting. According to Mugo (2013), chance to commit fraud is easy because government staff have acquaintance to both classified and confidential information with technological innovation. With this, they become part of swindle cartel by siphoning billions of naira away from government via some force and rationalization. Fraud, error and misuse of government resources, which cannot be traced to any race or tribe, is seen as unearthed and a number of control mechanism made, for instance treasury single account (TSA) have not yielded the expected results. However, the likelihood of fraud and errors occurring will significantly be reduce if not totally eradicated by establishing preventive measures in assuring that every worker understands the policies and procedures by settling out regular checks on the activities, and evaluating once in a while the accounting information to spot any differences most especially through the use of Information Communication Technology (ICT) (Filipe, 2017).

Consequently, several hundreds of government directors and other staff are being incarcerated and imprisoned for defrauding government of its property, while several thousands are being dismissed on account of this unlawful act, others who read the reports are coming up with newer, more sophisticated ideas to commit the very crime as well as the ever-tightening control measures being instituted by government are being over-ridden daily, sometimes even by those who enacted them (Idowu, & Adedokun, 2013; Nigerian Bureau of Statistics, 2023; Nigeria Inter-bank Settlement System, 2023). As result of all these, the federal government and some states in Nigeria embarked on some control measures known as reform like Treasury Single Account and
Infrastructural Development such as using ICT, in order to see how to minimize frauds if not totally eradicated in public service. Information communication technology system if used as complementary factor with a well-structured internal control and right hand put in charge may strengthen and lead to efficient accounting within the system thereby preventing fraud that may occur (Aremu, 2020).

More so, Nigeria has implemented various measures to combat fraud, such as the establishment of anti-corruption agencies like the Economic and Financial Crimes Commission (EFCC) and the Independent Corrupt Practices Commission (ICPC). These agencies leverage information and communication technology (ICT) to enhance their investigative capabilities. In addition, AI technologies are being increasingly adopted in Nigeria for various applications, including fraud detection. Artificial Intelligence (AI) algorithms can analyze large datasets to identify unusual patterns and behavior's indicative of fraudulent activity. In Taraba State, AI-driven tools are being explored to enhance the efficiency of fraud detection processes in both the public and private sectors (Smith, 2020).

In addition, biometric authentication, such as fingerprint and facial recognition, is becoming widespread in Nigeria. This technology is used to secure transactions and access to sensitive information (Johnson, 2019). In Taraba State, biometric systems have been implemented in public service delivery in order to prevent impersonation and unauthorized access, thereby reducing fraud risks. On the other hand, interactive data extractive analysis involves the use of sophisticated software to analyze and visualize data trends, helping organizations identify fraud patterns. This approach is gaining attention in Nigeria, with financial institutions adopting these tools to monitor transactions in real-time. Taraba State government is expected to bean uptake in data analysis tools to improve the detection of financial anomalies within government accounts.

Similarly, continuous online auditing allows for the real-time monitoring of financial transactions, enabling the immediate identification and rectification of fraudulent activities. This method is increasingly being adopted in Nigeria, with some state governments implementing online audit systems to enhance fiscal oversight. In Taraba State, continuous auditing has not been used to ensure compliance with financial regulations and to detect fraud at an early stage (Ahmed et al., 2017). Also, the adoption of computerized system control mechanisms in Nigeria has improved the integrity of financial processes. These systems automate the management and monitoring of financial transactions, reducing human intervention and the potential for fraud. In Taraba State, computerized controls are yet to be fully implemented in various sectors to streamline operations and minimize fraud risks. However, it is on these notes that, this study will aim at examining the effect of ICT on fraud prevention by using Taraba state selected Ministries, Departments and Agencies in Jalingo.

1.1 Statement of the problem

Fraud in Nigeria, including Taraba State, is pervasive and manifests in various forms such as cybercrime, embezzlement, and procurement fraud. The 2023 report by the Nigeria Inter-Bank Settlement System (NIBSS) highlighted a significant rise in fraudulent activities, resulting in billions of Naira in losses. This escalating trend underscores the inefficacy of existing fraud prevention and detection mechanisms. In Taraba State, the challenges are equally pronounced. Despite the deployment of digital financial management systems, fraud persists due to issues like inadequate technology infrastructure, limited technical expertise, and resistance to adopting new technologies. Key government officials, including those in power and the Taraba State Ministries of Department and Agencies and they have been in the nets of Nigeria anti-Corruption

Commission; have been implicated in several high-profile fraud cases (Abubakar, 2023).

Also, the persistence of fraud in Nigeria and Taraba State, despite various anti-fraud initiatives, underscores a critical failure in the implementation of effective fraud prevention and detection mechanisms (Echezona & Moguluwa, 2022; Shaki et al. 2021). This failure may be attributed to several factors such as inadequate ICT infrastructure, insufficient technical expertise, and resistance from government officials. While national studies provide a broad understanding of fraud dynamics, they often overlook the unique challenges faced by states like Taraba. There is an urgent need for targeted research that addresses these specific regional issues and evaluates the practical impact of modern ICT tools in combating fraud at the state level. Without addressing these gaps, fraud will continue to undermine economic development and public trust in Taraba State.

Empirically, previous studies on fraud prevention and detection in Nigeria have primarily focused on the broader national context, often neglecting specific regional dynamics. For instance, Ojo and Adewale's (2023) study on AI applications in fraud detection in Nigeria provided valuable insights but lacked a focus on regional disparities, particularly in states like Taraba. Similarly, the work of Abubakar (2023) on biometric systems in public service did not address the unique challenges faced by less technologically advanced states. Most studies do not provide an in-depth analysis of fraud prevention and detection in specific states like Taraba, which have distinct socio-economic and infrastructural challenges.

1.2 Objectives of the Study

The main objective of this study is assessed the effect of information and communication technology (ICT) on fraud prevention and detection in Taraba State, Nigeria. Other objectives include to:

i. Evaluates the effect of Artificial Intelligence (AI) on fraud prevention and detection in MDAs in Taraba State.

ii. Assessed the effect of Biometric Authentication on fraud prevention and detection in MDAs in Taraba State.

iii. Examined the effect of Interactive Data Extractive Analysis on preventing and detecting fraud in MDAs in Taraba State.

iv. Determined the effectiveness of Continuous Online Auditing in fraud prevention and detection in MDAs in Taraba State.

1.3 Significance of the Study

This section present significance of the study to various stakeholders, the significance includes the practical significance and theoretical significance.

2.0 Conceptual framework

The key concepts of the study are briefly discussed in this section. It covers both the concepts and components of the dependent and independent variables used in this study. Specifically, the concept of information technology, it measures concept of fraud together with the justification for the proxies.

2.1 Concept Fraud

Fraud refers to the intentional deception or misrepresentation of facts to obtain an unfair advantage or benefit (Association of Certified Fraud Examiners, 2017). It involves a range of activities, including false pretences, concealment, and misstatement of facts, with the intention of deceiving or misleading individuals or organizations (Federal Bureau of Investigation, 2016). Fraud can take many forms, including financial statement fraud, asset misappropriation, corruption, and cyber fraud (ACFE, 2017). Financial statement fraud involves the misrepresentation of financial information to investors, auditors, and other stakeholders (SEC, 2017). Asset misappropriation involves the theft or misuse of company assets, such as cash, inventory, or equipment (ACFE, 2017). Corruption includes bribery, embezzlement, and other forms of corruption
(Transparency International, 2017). Cyber fraud involves the use of technology to commit fraud, such as phishing, hacking, and identity theft (FBI, 2016).

Fraud can have significant consequences, including financial losses, reputation damage, and legal consequences (ACFE, 2017). It can also lead to a loss of public trust and confidence in institutions and systems (SEC, 2017). Fraud can be committed by individuals, groups, or organizations, and can be carried out through various means, including physical and digital channels (FBI, 2016). Preventing and detecting fraud requires a range of strategies, including establishing strong internal controls, conducting regular audits, and implementing whistle-blower protection policies (ACFE, 2017). It also requires awareness and education among individuals and organizations, as well as collaboration and information-sharing between law enforcement agencies and other stakeholders (FBI, 2016).

1.3 Fraud Prevention

Fraud prevention is a critical concern for individuals, businesses, and organizations worldwide. Fraudulent activities can result in significant financial losses, damage to reputation, and legal consequences (ACFE, 2017). Fraud can take many forms, including financial statement fraud, asset misappropriation, corruption, and cyber fraud (FBI, 2016). The importance of fraud prevention cannot be overstated. According to the Association of Certified Fraud Examiners (ACFE), fraud costs organizations an estimated 5% of their revenue each year (ACFE, 2017, p. 2). This translates to significant financial losses, which can have a devastating impact on businesses and individuals alike. To prevent fraud, it is essential to understand the techniques used by fraudsters. These techniques include phishing, hacking, and identity theft, among others (OWASP, 2017). Fraudsters often use sophisticated methods to deceive and manipulate individuals, making it essential to be aware of these techniques and to take steps to prevent them (SEC, 2017).

Effective fraud prevention requires a comprehensive approach that includes establishing a fraud prevention policy, conducting regular audits, implementing internal controls, and encouraging whistle-blower reporting (ACFE, 2017). It is also essential to educate employees and individuals on fraud prevention and to stay up to date with the latest fraud schemes and techniques (FBI, 2016). In addition to these measures, it is important to implement secure data storage and encryption, conduct thorough background checks on employees and vendors, and keep software up to date with regular updates and patching (OWASP, 2017). By taking these steps, individuals and organizations can significantly reduce the risk of fraud and protect themselves from financial loss and reputational damage. Fraud prevention is a critical concern that requires a comprehensive and proactive approach. By understanding the techniques used by fraudsters and taking steps to prevent fraud, individuals and organizations can significantly reduce the risk of fraud and protect themselves from financial loss and reputational damage.

2.3.1 Fraud Detection

Fraud detection is a critical process for identifying and preventing fraudulent activities. Fraudulent activities can result in significant financial losses, damage to reputation, and legal consequences (ACFE, 2017). Fraud detection involves monitoring and analysing data to identify potential fraud, investigating suspicious activity, and taking action to prevent further fraud (FBI, 2016). The importance of fraud detection cannot be overstated. According to the Association of Certified Fraud Examiners (ACFE), fraud costs organizations an estimated 5% of their revenue each year (ACFE, 2017). Effective fraud detection can help prevent significant financial losses and protect organizations from reputational damage (SEC, 2017).

There are various techniques used in fraud detection, including data analytics, machine learning, and predictive modelling (OWASP, 2017). These techniques help identify potential fraud by analysing patterns and anomalies in data (FBI, 2016). Additionally, fraud detection often involves investigating suspicious activity, such as unusual transactions or login attempts (ACFE, 2017). Effective fraud detection requires a comprehensive approach that includes implementing fraud detection systems, monitoring data regularly, and investigating suspicious activity (ACFE, 2017). It is also essential to stay up to date with the latest fraud schemes and techniques (FBI, 2016).

In addition to these measures, it is important to implement secure data storage and encryption, conduct thorough background checks on employees and vendors, and keep software up to date with regular updates and patching (OWASP, 2017). By taking these steps, individuals and organizations can significantly reduce the risk of fraud and protect themselves from financial loss and reputational damage.

Fraud detection is a critical process that requires a comprehensive and proactive approach. By understanding the techniques used in fraud detection and taking steps to implement effective fraud detection systems, individuals and organizations can significantly reduce the risk of fraud and protect themselves from financial loss and reputational damage.

2.3.1 Techniques for Fraud Prevention

Techniques for fraud prevention are essential for individuals and organizations to protect themselves from financial loss and reputational damage. Fraudulent activities can result in significant financial losses, damage to reputation, and legal consequences (ACFE, 2017). Techniques for fraud prevention involve proactive measures to prevent fraudulent activities from occurring. One technique for fraud prevention is background checks and screening. Conducting thorough background checks on employees and vendors can help prevent fraud by identifying potential risks (ACFE, 2017). Another technique is secure data storage and encryption. Protecting sensitive data with secure storage and encryption can prevent cyber fraud (OWASP, 2017). Regular software updates and patching are also essential techniques for fraud prevention. Keeping software up to date with regular updates and patching can prevent cyber fraud (OWASP, 2017). Additionally, employee training and awareness programs can help prevent fraud by educating employees on fraud prevention techniques (ACFE, 2017).

Implementing internal controls is another technique for fraud prevention. Establishing strong internal controls can help prevent fraudulent activities from occurring (ACFE, 2017). Monitoring transactions and analysing data can also help detect and prevent fraud (FBI, 2016). Finally, whistle-blower reporting is an essential technique for fraud prevention. Encouraging employees to report fraudulent activities anonymously can help identify and prevent fraud (ACFE, 2017). In conclusion, techniques for fraud prevention are essential for individuals and organizations to protect themselves from financial loss and reputational damage. By implementing these techniques, individuals and organizations can significantly reduce the risk of fraud and protect themselves from financial loss and reputational damage.

2.3.2 Techniques for Fraud Detection

Techniques for fraud detection are essential for individuals and organizations to identify and prevent fraudulent activities. Fraudulent activities can result in significant financial losses, damage to reputation, and legal consequences (ACFE, 2017). Techniques for fraud detection involve monitoring and analysing data to identify potential fraud, investigating suspicious activity, and taking action to prevent further fraud (FBI, 2016). One technique for fraud detection is data analytics. Data analytics involves analysing data to identify patterns and anomalies that may indicate fraud (OWASP, 2017). This can include analysing transaction data, login data, and other data to identify potential fraud (FBI, 2016).

Another technique for fraud detection is machine learning. Machine learning involves using algorithms to analyse data and identify potential fraud (OWASP, 2017). This can include using machine learning algorithms to analyse transaction data and identify potential fraud (FBI, 2016). Predictive modelling is also a technique used in fraud detection. Predictive modelling involves using data and statistical models to predict the likelihood of fraud (OWASP, 2017). This can include using predictive modelling to identify high-risk transactions and prevent fraud (FBI, 2016). Anomaly detection is another technique used in fraud detection. Anomaly detection involves identifying transactions or activity that is outside the norm (OWASP, 2017). This can include identifying transactions that are significantly larger or smaller than usual, or transactions that occur in unusual locations (FBI, 2016). Social network analysis can be used in

fraud detection. Social network analysis involves analysing relationships between individuals and entities to identify potential fraud (OWASP, 2017). This can include analysing relationships between employees, vendors, and customers to identify potential fraud (FBI, 2016).

Finally, whistle-blower reporting is an essential technique for fraud detection. Encouraging employees to report fraudulent activities anonymously can help identify and prevent fraud (ACFE, 2017). In conclusion, techniques for fraud detection are essential for individuals and organizations to identify and prevent fraudulent activities.

By implementing these techniques, individuals and organizations can significantly reduce the risk of fraud and protect themselves from financial loss and reputational damage. Fraud detection is a critical process that requires a comprehensive and proactive approach. By understanding the techniques used in fraud detection and taking steps to implement effective fraud detection systems, individuals and organizations can significantly reduce the risk of fraud and protect themselves from financial loss and reputational damage.

2.3.3 Concept of Information and Communication Technology

Information and communication technology (ICT) refers to the technologies used to manage, process, and communicate information (UNESCO, 2017). ICT includes a range of technologies such as computers, software, networks, and telecommunication equipment (ITU, 2020). The concept of ICT has revolutionized the way people live, work, and communicates (Castells, 2017). One of the key aspects of ICT is its ability to facilitate communication and collaboration across distances (Hiltz & Goldman, 2017). ICT enables people to communicate through various channels such as email, social media, and video conferencing (Katz & Rice, 2018). This has transformed the way people work and collaborate, enabling remote work and global teamwork (Davenport, 2020). ICT also plays a critical role in accessing and managing information (Rowley, 2018).

The internet has made it possible for people to access vast amounts of information from anywhere in the world (DiMaggio et al., 2019). ICT has also enabled the development of digital libraries, online databases, and other information management systems (Borgman, 2020). Furthermore, ICT has transformed the way people learn and access education (Picciano, 2019). Online learning platforms, digital resources, and virtual classrooms have made education more accessible and convenient (Moore & Kearsley, 2020). In addition, ICT has had a significant impact on businesses and economies (Porter & Heppelmann, 2017). E-commerce, digital marketing, and online transactions have transformed the way businesses operate and interact with customers
(Kalakota & Whinston, 2020).

The impact of ICT on healthcare has also been significant (Bodenheimer & Sinsky, 2017). Telemedicine, electronic health records, and other ICT-enabled technologies have improved access to healthcare services and patient outcomes (Terry & Bates, 2017). ICT has transformed the way people interact with each other and with technology (Turkle, 2017). Social media, virtual reality, and other ICT-enabled technologies have changed the way people communicate, socialize, and spend their leisure time (Gackenbach, 2017). However, the impact of ICT on society has not been without its challenges (Brynjolfsson & McAfee, 2017). The digital divide, cyberbullying, and online harassment are some of the negative consequences of ICT (Kirschner & Karpinski, 2010). Despite these challenges, the benefits of ICT far outweigh the drawbacks (Brynjolfsson & McAfee, 2017). ICT has the potential to solve some of the world's most pressing problems, such as poverty, inequality, and climate change (UNESCO, 2017). The concept of ICT

has had a profound impact on various aspects of society, including communication, information management, education, business, healthcare, and leisure activities. As technology continues to evolve, the role of ICT in shaping our lives and societies will only continue to grow.

2.3.4 Artificial Intelligence

Artificial intelligence (AI) refers to the development of computer systems that can perform tasks that typically require human intelligence, such as learning, problemsolving, and decision-making (Russell & Norvig, 2017). AI has the potential to transform various aspects of society, including healthcare, education, economy, and governance (Manyika et al., 2017). One of the key applications of AI is in healthcare, where it can be used for diagnosis, drug discovery, and personalized medicine (Bodenheimer & Sinsky, 2017). AI-powered systems can analyse medical images, identify patterns, and make predictions, reducing errors and improving patient outcomes (Liu et al., 2019). AI can also transform the education sector, where it can be used for personalized learning, grading, and content creation (Dziuban et al., 2018). AI-powered systems can analyse student data, identify learning gaps, and provide tailored recommendations, improving student outcomes and teacher effectiveness (Raca et al., 2019).

In the economy, AI can be used for automation, optimization, and innovation, improving productivity and efficiency (Brynjolfsson & McAfee, 2017). AI-powered systems can analyse data, identify patterns, and make predictions, reducing costs and improving decision-making (Manyika et al., 2017). However, AI also raises ethical and societal concerns, such as bias, privacy, and job displacement (Eubanks, 2018). AI systems can perpetuate existing biases, discriminate against certain groups, and compromise individual privacy (Cath, 2020). Moreover, AI has the potential to displace human workers, exacerbating income inequality and social unrest (Ford, 2019).

To address these concerns, it is essential to develop AI systems that are transparent, explainable, and fair (Arrieta et al., 2020). Moreover, policymakers and regulators must develop frameworks and guidelines that ensure AI is developed and deployed responsibly (Cath, 2020). AI has the potential to transform various aspects of society, but it also raises ethical and societal concerns. By developing AI systems that are transparent, explainable, and fair, and by ensuring responsible AI development and deployment, we can harness the benefits of AI while minimizing its risks.

2.3.5 Theoretical Framework

Different theories have been used by previous researchers to underpin studies in area of information and communication technology and fraud detection and prevention. However, the fraud triangle, fraud diamond theory and technology acceptance model theory have been found to be the most appropriate theories that underpin the current study

The Fraud Triangle (FT)The Fraud Triangle Theory, proposed by Donald Cressey in 1953, suggests that three essential elements must be present for fraud to occur: pressure, opportunity, and rationalization. Pressure refers to the financial or personal difficulties that motivate an individual to commit fraud. Opportunity refers to the access to funds or assets, lack of oversight or controls, or position of trust that enables fraud.
Rationalization refers to the individual's ability to justify their actions as necessary or harmless (Cressey, 1953). This theory is widely used in accounting and auditing to understand the factors that contribute to fraudulent behaviour and design controls to prevent it (ACFE, 2017). However, it has been criticized for oversimplifying the complex factors that contribute to fraud, neglecting organizational culture and environmental factors, and focusing too narrowly on individual motivations (Free et al., 2017).

The theory has been applied in various fields, including criminology and sociology, to understand the motivations and behaviours of individuals who commit fraud (Barnett & Muller, 2017). Despite its limitations, the Fraud Triangle Theory remains a fundamental concept in understanding the dynamics of fraud and developing strategies for prevention and detection (Ramaley, 2017). In writing about theories, it is essential to clearly explain the theory's principles, discuss its applications and limitations, and critique its weaknesses. Proper citation and referencing are also crucial to credit the original author and sources. By following this approach, one can effectively convey the essence of a theory and its relevance to the study or field of interest.

2.3.6 The Fraud Diamond Theory (FDT)

The Fraud Diamond Theory, an extension of the Fraud Triangle Theory, was introduced by David Wolfe and Dana Hermanson in 2004. This theory proposes that four essential elements must be present for fraud to occur: pressure, opportunity, rationalization, and capability. The Fraud Diamond Theory builds upon the Fraud Triangle Theory by adding the element of capability, which refers to the individual's skills and abilities to commit fraud. The Fraud Diamond Theory suggests that pressure, opportunity, and rationalization are still essential elements for fraud to occur, but they must be combined with the individual's capability to execute the fraud. Capability includes factors such as intelligence, charisma, and technical skills, which enable the individual to exploit opportunities and rationalize their actions. This theory is widely used in accounting and auditing to understand the factors that contribute to fraudulent behaviour and design controls to prevent it. The Fraud Diamond Theory provides a more comprehensive framework for understanding fraud by recognizing the importance of an individual's capabilities in committing fraud.

However, the Fraud Diamond Theory has been criticized for being too broad and encompassing too many factors. Some argue that the theory is too complex and difficult to apply in practice. Additionally, the theory has been criticized for neglecting the role of organizational culture and environmental factors in contributing to fraud.

Despite its limitations, the Fraud Diamond Theory remains a fundamental concept in understanding the dynamics of fraud and developing strategies for prevention and detection. By recognizing the importance of capability in committing fraud, organizations can design controls that address the specific skills and abilities of individuals who may be tempted to commit fraud.

2.3.7 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) theory, developed by Fred Davis in 1989, is a widely used framework for understanding and predicting users' acceptance and adoption of new technologies. The TAM theory posits that two primary factors, Perceived Usefulness (PU) and Perceived Ease of Use (PEU), influence an individual's intention to use a technology.

Perceived Usefulness refers to the degree to which an individual believes that using the technology will improve their performance or achieve their goals. Perceived Ease of Use refers to the degree to which an individual believes that using the technology will be free from effort. The TAM theory suggests that PU and PEU are influenced by various external factors, such as system design, training, and user support. The theory also proposes that PU and PEU are positively related to Attitude towards Using (ATU), which in turn influences Behavioural Intention to Use (BIU). The TAM theory has been extensively applied and

validated in various contexts, including information systems, ecommerce, and healthcare, it has been found to be a robust and reliable model for predicting technology adoption.

However, the TAM theory has also been criticized for its limitations. Some argue that the theory oversimplifies the complex factors that influence technology adoption. Others argue that the theory neglects the role of social and cultural factors in shaping users' attitudes and behaviours. Despite its limitations, the TAM theory remains a fundamental concept in understanding technology adoption and acceptance. Its simplicity and elegance make it a widely used framework for researchers and practitioners alike.

The Fraud Diamond Theory serves as the underpinning theory for examining the impact of ICT on fraud prevention and detection in Taraba State. The Fraud Diamond provides a more comprehensive framework than the Fraud Triangle by including the capability element, which is crucial for understanding and mitigating fraud in an ICT context. The capability dimension directly relates to the technological skills and competencies of individuals. In the context of ICT, this is critical because advanced technology can be both a tool for preventing fraud and a potential avenue for sophisticated fraud if not properly managed. The theory focusing on reducing opportunities and capabilities, ICT implementations can provide more robust fraud prevention measures. Training and continuous monitoring through ICT can significantly reduce the likelihood of fraud.

2.3.7 Empirical Review

The following empirical studies reviewed to understand better the impact of Information

Technology on fraud prevention and detection.

3.1 Research Design

This study employed both survey research design and correlational research design. The survey design was used to collect primary data from respondents through questionnaires, enabling the gathering of a broad range of information from a large population. It is chosen for its effectiveness in obtaining self-reported data on perceptions, attitudes, and behaviours related to ICT usage in fraud prevention and detection (Creswell & Creswell, 2017). The correlational design is used to examine the relationships between different ICT tools (independent variables) and fraud prevention and detection (dependent variable). This design is appropriate for understanding the strength and direction of associations between variables, providing insights into how ICT impacts fraud-related outcomes (Cohen et al., 2018).

3.2 Population of the Study

The population of the study includes all employees of the Taraba State Ministry of

Finance (Budget and Planning Department, Debt Management Office (DMO), Internal Revenue Service, State Treasury, Pension Board, Procurement and Revenue Department and Fiscal Reports Division), the Taraba State Ministry of Information and Orientation (Taraba State Broadcasting Services (TSBS) Taraba Television (TTV) Taraba State Government Printing Press) and Ministry of Digital Economy and Innovation {Taraba

State ICT Agency, E-Government Service Agency and Taraba State Information Technology Development Agency (TSITDA)}. The Ministry of Finance has a population of 59 employees, while the Ministry of Information and Communication has 31 employees while Ministry of Digital Economy and

Innovation has 23 employees. The total population is 113 these ministries are selected due to their critical roles in managing financial resources and implementing ICT policies, respectively.

3.3 Sampling Technique and Sample Size

The entire population of 113 employees from both ministries was used as the sample size. The study employed the census sampling techniques to adopt the entire population. This census approach ensures comprehensive coverage and representation of all relevant perspectives within the study area. Using the entire population eliminates sampling error and provides a complete dataset for analysis (Bryman, 2016).

3.4 Data Collection Methods

Data was collected using questionnaires, a primary data collection method.

Questionnaires were chosen for its efficiency in gathering large amounts of data within a short time frame. It allows for standardized responses, making data analysis straightforward and reliable (Kothari, 2004).

3.5 Research Instrument

The instrument for data collection was structured questionnaire. Questionnaires are advantageous due to their ability to collect quantitative data systematically. They were administered in person to ensure a high response rate and to clarify any queries respondents might have.

Conclusion

The study's findings lead to several conclusions:

The positive and significant relationship between AI and FDP suggests that AI is a valuable tool for enhancing fraud detection capabilities. AI's ability to analyse data in real time and detect anomalies makes it an effective resource for reducing fraud risks.

This finding confirms the role of AI in aligning with FT and FDT by mitigating opportunity and improving detection.

Also, the negative and significant effect of BA on FDP indicates that BA systems may face implementation challenges that limit their effectiveness. Factors such as high costs, technical limitations, and user resistance might reduce BA's potential impact. This finding suggests that BA may require further adaptation or support to overcome these obstacles and align better with fraud theories.

In addition, IDEA's negative and insignificant effect on FDP implies it may not be as impactful in this context. Potential reasons include limited usage or lack of technical expertise in the agencies. This finding points to a need for either improved IDEA training or alternative data analysis tools to support fraud detection efforts effectively.

Similarly, the positive but insignificant relationship between COA and FDP suggests that continuous auditing may have a promising role in fraud detection, though it currently lacks sufficient influence. This result implies that while COA aligns with fraud theories by enhancing oversight, practical challenges may prevent it from fully achieving its potential.

Recommendations

Based on the findings the following recommendations are offered based on each finding:

Taraba State government should increase AI adoption in MDAs by investing in AI tools and providing regular training sessions for staff on AI-based fraud detection. The Taraba State government and relevant agencies should implement this immediately to stay ahead of evolving fraud techniques. The Ministry of Finance and anti-fraud units should spearhead training programmes, involving both policymakers and operational staff, to foster acceptance and effective use of AI tools.

Also, the government should address the challenges associated with BA by simplifying its integration, reducing implementation costs, and ensuring proper training. Policy adjustments could include implementing simplified biometric checks to encourage user acceptance. The Taraba State government, working with technology providers, should launch pilot programmes within six months, gradually scaling BA implementation as feedback is incorporated. Agency directors and policymakers should work with IT teams to modify BA to suit the organizational environment better.

In addition, MDAs should improve training and support for IDEA usage to ensure it is effectively utilized for fraud detection. Alternatively, consider implementing more userfriendly data analysis tools. This should be done within the next fiscal year; MDAs should establish regular training workshops on IDEA software, led by IT experts. The Ministry of Finance and government IT departments should collaborate to provide resources and ensure data analysis capabilities are widely accessible and understandable.

Government should invest in COA infrastructure to enhance real-time auditing capabilities and support continuous fraud detection. This may involve upgrading software systems and improving the agencies' digital infrastructure. This should be within the next two years; Taraba State government should budget for COA infrastructure improvements and partner with digital security firms. Heads of MDAs should manage the COA setup, ensuring it aligns with the overall fraud prevention strategies.

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