MANAGEMENT INFORMATION SYSTEM (MIS)AND PERFORMANCE OF INSURANCE COMPANIES IN NIGERIA

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DEPARTMENT OF ACTUARIAL SCIENCE AND INSURANCE

FACULTY OF MANAGEMENT SCIENCES

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A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF ACTUARIAL SCIENCE AND INSURANCE, FACULTY OF MANAGEMENT SCIENCES, UNIVERSITY OF BENIN, BENIN CITY. IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE (B.Sc.) HONOURS DEGREE IN ACTUARIAL SCIENCE AND INSURANCE.

DECEMBER, 2025

DECLARATION

I declare that:

This project work is based on a study undertaken by me in the Department of Actuarial Science and insurance, Faculty of Management Sciences, University of Benin, Benin City, under the supervision of DR. EMEKA IROH, this work has not been previously submitted for award of a degree elsewhere.

All ideas and views are products of my personal research and that of my supervisor and all the references made to works of other persons have been duly acknowledged.

_____ _____

Success omorovbiye OMOREGBE Date

CERTIFICATION

This is to certify that this project work was carried out **Success omorovbiye OMOREGBE** with matriculation number MGS**2104960** to the Department of Actuarial Science and Insurance, University of Benin, Benin City and in partial fulfillment of the requirement for the award of Bachelor of Sciences (B. Sc.) degree in the Department of Actuarial Science and Insurance.

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DR. EMEKA IROH Date

(Project supervisor)

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(Project co-ordinator)

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Dr.O.Omoruyi Aigbovo Date

(Head of Department)

DEDICATION

This work is dedicated to God Almighty for his grace and mercy throughout my Study in the university of Benin. I also dedicate this work to my lovely parent, Mr and Mrs JOEL OMOREGBE, my brothers and sisters (Godstime, osaruname,Edosasere and osagumerho) . May God bless them Abundantly.

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ABSTRACT

This study examines the effect of Management Information Systems (MIS) on the financial performance of insurance companies in Nigeria. The study specifically investigates how MIS investment, digital claims processing systems, automation of underwriting processes and net premium income generated through MIS influence the performance of listed insurance firms. An ex-post facto research design was adopted, using secondary data extracted from the annual reports of ten insurance companies listed on the Nigerian Exchange Group (NGX) covering the period 2012-2024.

The descriptive analysis revealed notable variations in ROA and net premium income across firms, while MIS-related variables showed moderate stability. The correlation and panel regression results

indicate that MIS investment, digital claims processing systems, underwriting automation and net premium income have positive effects on the financial performance of insurance companies, with

some variables showing statistically significant influence. The findings suggest that effective deployment of MIS enhances operational efficiency, strengthens decision-making, improves claims management and supports revenue growth.

The study concludes that MIS is a strategic tool for improving financial performance in the Nigerian insurance industry. It recommends that insurance companies increase investment in modern MIS infrastructure, expand digital claims processing and strengthen automation of underwriting processes to remain competitive and improve profitability. Additionally, regulators such as NAICOM should encourage greater digital adoption to enhance transparency and industry

efficiency.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The most developed form of information system worldwide could be traced to the business organization (Eucharia & Josephine, 2022). This is as a result of the fact that information systems are implemented within organizations for the purpose of improving the effectiveness and general efficiency of the information system and the characteristics of the organization (i.e. its work system, its people, and its development and implementation methodologies) all together determine the extent to which that purpose is achieved (Obasan & Soyebo, 2012). Information is the life-wire of any organization; any organization without quality information is bound to fail in the competitive market (Bestman & Lag, 2022). Therefore, for any organization to perform very well in order to achieve set objectives, the organization must have adequate information systems in order to know what your competitors are doing, for you to plan ahead of them so as to outsmart them, to know your target market (customers) and how to satisfy them, when all these are achieved through the help of an information system, then the business organization can stand the test of time and performance will be achieved effectively and efficiently (Eze, Agboola & Aremu, 2021).

The insurance business in Nigeria is a major participant in the financial services sector and a significant supporter of the economy (Adetunji, Nwude & Udeh, 2018). Insurance firms are confronted with several obstacles in the increasingly complex corporate scene, including rising competition, changing regulatory requirements, and evolving customers preferences (Raji, Isiaka & Siji, 2024). Insurance firms must carefully run their business and make informed decisions if they want to stay competitive and satisfy market needs (Adeniyi, Adeyinka & Babayaro, 2019). According to Fadun and Shoyemi (2018), one of the main instruments insurance firms can use to enhance their operations is a management information system (MIS). To aid decision-making and managerial operations, an MIS is a computer-based system helping companies to gather, analyze, store, and distribute data. Without the usage of information by deploying systems such as Transaction Processing System, Management Information System, Decision Support System, Expert System, Office Automation System, and Personal/Work Group Information Systems in the Nigerian insurance sector, a modern day insurance service cannot be efficiently and effectively delivered (Ogbeide, Adu, Fapohunda, & Obadeyi, 2022). These systems can be utilized when the company agent is contacting the prospective or present insured, issuing proposal forms, policy papers, underwriting process, premium payment, investment projects appraisal, investment evaluation methods, claims reporting, identifying real or false claims, claims payment or denials, maintaining contact with the potential or existing policyholders (Fadun & Shoyemi, 2018).

The collated data using these systems become database information for internal and external stakeholders in the insurance industry for informed decision making. According to Umoren and Joseph (2020), these collated data from the external stakeholders would then be sent to the data warehouse. Umoren and Joseph (2020) further added that the data warehouse consists of integrated data, extracted from various data sources (e.g., operational database tables) both internally and externally. Data warehousing involves consolidating data from disparate sources into a consistent format. The quality of data in a data warehouse in terms of validity, availability, level of detail, accessibility, completeness and consistency is superior to the quality of data found in the collective set of functionally oriented data sources (Fapetu, Ojo, Balogun & Asaolu, 2022). It provides the infrastructure for supporting a wide variety of data analysis and information needs. For example, different business functional areas such as financial accounting systems, materials resource planning, and customer relationship management may use the integrated data to support the formulation and revision of strategic initiatives. By using an MIS, insurance companies can streamline their processes, enhance productivity, improve decision-making, and ultimately achieve better performance (Ogbeide, Adu, Fapohunda, & Obadeyi, 2022).

By examining the relationship between the management information system and the performance of the insurance companies in Nigeria, it is possible to gain a better

understanding of interplay between the various factors that influence the performance of the insurance companies in Nigeria (Obayagbona & Iroh, 2023). As the Nigeria's economies continue to grow and develop, it will be interesting to see how these factors impact the performance of the insurance companies in Nigeria. This will provide valuable insights for the creation of policies and the expansion of the Nigeria insurance sector.

1.2 Statement of the Research Problem

Insurance companies in Nigeria have major operational difficulties including data management errors, slow claims handling, low customer satisfaction, and inadequate decision-making procedures (Akinyele & Ajayi, 2020). These difficulties have led to poor service delivery and slow industry expansion. Many insurance companies have either underused or badly adopted Management Information Systems solutions even if their significance in solving these problems is well known.

The existing literature highlights a positive correlation between the use of MIS and organizational performance. However, there is a gap in empirical studies specifically addressing how MIS impacts the performance of insurance companies within the Nigerian context. For instance, Adesina and Ololade (2021) stated that it has been proven that the introduction of systems like office automation systems, decision support systems, and transaction processing systems deepens insurance services in Nigeria. MIS helps to automate and simplify several activities formerly done by hand and inefficient, including

underwriting, claims processing, and premium payments. While Eze, Adelekan and Nwaba (2019) contend that owing to issues including epileptic power supply, some Nigerian insurance companies have difficulty with obsolete or nonfunctional computer systems. This makes the information gathering and processing work ineffective, resulting in administrative and poor service delivery.

Ehiorobo and Akintunde (2024) claims that having great information is a big asset in a competitive market. By means of its Business Intelligence (BI) and data analytics capabilities, an efficient MIS enables an insurance company to find neglected customer segments, forecast market trends, and create tailored products. By examining client data, for instance, a company might find that a specific sort of health insurance plan is in high demand among a certain demographic, therefore allowing it to be the first to market such a product. Management information system is directly responsible for this strategic awareness. While Olatayo (2022) argues that information asymmetry greatly hinders the performance of Nigerian insurance companies. Although MIS is intended to provide information, if it does not guarantee transparency and full disclosure—either internally or externally—it might exacerbate issues like insider trading and low investor confidence. This is especially harmful in the insurance industry, where public trust comes first.

Additionally, there is a geographical scope gap in the current research. Most studies focus on other African countries such as South Africa (Dlamini, Mthethwa & Nkosi, 2021) or

Ghana (Oscar & Akotey, 2019), without much attention to Nigeria. This present a limitation in our understanding of management information system and the performance of the insurance companies in Nigeria. Also there is a time frame gap in the research. The existing studies are based on historical data, without much focus on recent developments and trends. For example, most studies end at year 2019 (Adetunji & Philip, 2020), and thus, do not capture the potential impact of recent development of management information system to the Nigeria insurance sector.

Furthermore, there are several methodological issues that needs to be addressed in order to conduct a reliable study on the management information system and performance of insurance companies in Nigeria. These include data measurement and availability, researchers must weigh the financial measures (e.g., Return on Assets, Return on Equity, profit margin) with the nonfinancial metrics (e.g., customer satisfaction, service delivery speed, market share, operational efficiency). Financial data is often easier to get from annual reports, but it may not perfectly reflect the strategic advantages of an MIS. Conversely, nonfinancial data is sometimes subjective and difficult to measure. Another issue noticed is on the research design and sampling, many studies on this subject have a small sample size, sometimes restricted to a few insurance companies in a single metropolis like Lagos. This complicates the extrapolation of the results to cover the whole Nigerian insurance sector, which has a variety of activities spanning several

regions. A more thorough study would need a larger sample including companies of many sizes and geographical areas. Causal inference and control variables is another methodological gap, proving that MIS directly drives higher performance might be difficult. Although there could be a correlation, other variables could be at work.Rather than being the only motivator of success, a company could do well and so have the funds to spend on a better MIS.

Similarly, there is a gap in the variables used in the previous study. While investment income, insurance penetration, economic growth, and claim settlement ratio have been identified as key factors (Udechukwu & Agu, 2019), there is limited understanding on how these potential significant variables influence the performance of the Nigeria insurance sector.

Given these gaps, this study seeks to provide a more comprehensive and up-to-date understanding of the relationship between management information system and the performance of insurance companies in Nigeria, considering the contradictions in the existing literature, the methodological issues, the geographical scope gaps, recent development, and the full understanding on how the variables used in the study influence the performance of the Nigeria insurance sector. It is anticipated that this research will contribute significantly to the body of knowledge on management information system

and the performance of insurance companies in Nigeria and provide valuable insights for policy formulation and industry growth.

1.3 Research Objectives

The main objective of this study is to examine the management information system and the performance of insurance companies in Nigeria. The specific objectives are to:

i. examine the relationship between the level of management information system (MIS) investment on the financial performance of insurance companies in Nigeria.
ii. investigate the impact of digital claims processing systems on the net claims ratio and the overall financial performance of insurance companies in Nigeria.
iii. determine the extent to which the automation of underwriting processes through MIS lead to better financial performance of insurance companies in Nigeria.
iv. examine how net premium income through management information system affect the financial performance of insurance companies in Nigeria.

1.4 Research Questions

This study seeks to provide answers to the following research questions:

i. What is the relationship between the level of management information system (MIS) investment on the financial performance of insurance companies in Nigeria?

ii. What is the impact of digital claims processing systems on the net claims ratio and the overall financial performance of insurance companies in Nigeria?

iii. To what extent does the automation of underwriting processes through MIS lead to better financial performance of insurance companies in Nigeria?

iv. How does net premium income through management information system affect the financial performance of insurance companies in Nigeria?

1.5 Research Hypotheses

The following null hypothesis were formulated to guide the study:

Ho_1: There is no significant relationship between the level of management information system (MIS) investment and the financial performance of insurance companies in Nigeria.

Ho_2: There is no significant positive impact on digital claims processing systems on the net claims ratio and the overall financial performance of insurance companies in Nigeria.

Ho_3: There is no significant relationship between the automation of underwriting processes through MIS and the financial performance of insurance companies in Nigeria.

Ho_4: There is no significant relationship between net premium income through management information system and the financial performance of insurance companies in Nigeria.

1.6 Significance of the Study

This study will be of significant relevance to various stakeholders:

- **Insurance Companies:** The study will enable insurance companies in Nigeria to see how Management Information Systems (MIS) can drastically improve their internal processes, cut waste, and boost productivity. MIS automates many routine tasks such as policy processing, claims management, customer data storage, premium collection, and report generation. Through a central information system that combines several divisions—such as underwriting, claims, customer service, and finance—insurance companies can run more smoothly and with more coordination. This automation helps to minimize manual mistakes, streamline paperwork, and expedite service delivery. Timely and precise information from MIS enables personnel to make quicker and more informed decisions, properly distribute resources, and react promptly to client demands.
- **Policyholders (Customers):** The research will show how Management Information Systems (MIS) can be absolutely essential in helping insurance

companies better serve their customers. Customers in Nigeria's insurance sector find slow and poor service—especially during claims processing—among the major problems. MIS solves this by automating and simplifying essential service operations. Instead of physically processing claims, for instance, MIS allows insurance companies handle and monitor claims electronically. This helps to speed verification, permissions, and payments, thereby lowering delays and raising consumer happiness. Furthermore, MIS enhances the storage and availability of consumer data. It enables multichannel communication—through SMS, emails, online portals, and mobile apps—thereby facilitating consumer interaction with their insurer at any time. It also improves customer service agents' ability to quickly retrieve client records, respond to questions more accurately, and speed up complaint resolution.

- **Government and Regulatory Bodies:** The study will demonstrate how government and regulatory agencies—such as the National Insurance Commission (NAICOM)—can improve their monitoring, evaluation, and compliance enforcement across the insurance sector by means of management information systems (MIS). Using MIS, insurance companies can produce and transmit standardized reports and real-time data to regulators. This enables quicker and more precise data gathering, therefore granting regulators access to current information on premium revenue, claims settlement, solvency condition,

and other critical performance indicators. By automatically flagging inconsistencies or departures from regulatory standards, such late claims payments or insufficient capital reserves, MIS also helps with compliance monitoring.This early detection of hazards or misbehavior allows regulators to take remedial measures before issues worsen.Furthermore, MIS improves policy implementation by offering a clear and trackable platform whereby all decisions and transactions are logged.This guarantees that insurance companies are operating within the legal and ethical framework, fosters responsibility, and lowers chances for fraud.

- **Investors and Shareholders:** The study will reveal how crucial Management Information Systems (MIS) are for helping insurance companies and their stakeholders track, assess, and enhance their operational performance. MIS offers timely and accurate data on every element of a company's operations, including premium income, policy sales, claims ratios, customer satisfaction, and operational costs. This real-time access to key performance indicators (KPIs) enables management, investors, and other stakeholders to keep track of the financial as well as operational success of the business. MIS improves transparency since it keeps and analyzes data in a centralized, organized, and safe manner. Every transaction, decision, and alteration are auditable and trackable, which simplifies the identification of inefficiencies, fraud, or performance data

inconsistencies. Moreover, MIS enhances accountability by defining distinct responsibilities and roles. For example, when a system is used to monitor tasks such as claims processing or policy approvals, it is simpler to assign people or departments accountable for errors or delays.

- **Academic and Research Communities:** This study will contribute to the growing body of academic and professional literature by exploring how Management Information Systems (MIS), a major aspect of Information and Communication Technology (ICT), affect the performance of insurance companies in a developing nation like Nigeria by helping to build the expanding body of academic and professional literature. Although there is a lot of study on MIS in developed countries, still restricted literature concentrates especially on how ICT instruments influence financial service delivery, decision-making, and operational efficiency in African markets. By offering local insights, real-life examples, and empirical evidence from Nigeria's insurance industry, this research helps to close that gap.

1.7 Scope of the Study

This study is restricted to the effect of Management Information System (MIS) on financial performance of insurance companies in Nigeria. The study will pay more attention on the listed insurance companies on the floors of the Nigerian Exchange Group

(NGX). The time frame of this study is a period of thirteen (13) years, covering the period of 2012 to 2024. This is because in 2012, the adoption of International Financial Reporting Standard came into play and as such the insurance companies in Nigeria were mandated by the authorities FRC to disclose expressly their investments in intangible assets of which ICT investments is included in their financial reports. This is in accordance with the requirements for the adoption of IFRS. The dependent variable for this study is the financial performance of insurance companies in Nigeria, while the independent variables are MIS investment, digital claims processing systems on the net claims ratio, automation of underwriting processes through MIS, and net premium income through MIS.

1.8 Limitations of the Study

This study has some limitations. The study does not include other financial institutions such as banks or microfinance entities. This study is limited by the availability and quality of data, data for this study were chosen from annual reports from insurance firms, hence incomplete records from some insurance firms may affect result accuracy. The sample size and representation were also constrained to 10 insurance firms, limiting generalization to the entire industry. Additionally, rapid technological changes may render some findings time-bound, while context-specific factors such as Nigeria's regulatory and economic conditions restrict broader applicability. Additionally, it

excludes non-technology-related performance factors (e.g., leadership style, macroeconomic conditions) unless they are directly linked to MIS adoption or implementation. Lastly, subjectivity in performance measurement, especially in assessing technological investments, may introduce a minor measurement bias. Nevertheless, despite these difficulties, the study's overall strength and accuracy relatively remain unchanged.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section reviews literature on the relationship between management information system (MIS) and performance of insurance companies in Nigeria with a focus on conceptual review, theoretical review, and empirical review.

2.2 Conceptual Review

2.2.1 Concept of Financial Performance

Financial performance can be described as a measure that reveals the position of an organization. It helps to tell how far and well an organization has improved in terms of its profitability as a result of its services delivery (Dsunday & Ejabu, 2020). Performance of a business can be identified using different proxies. Abaenewe, Ogbulu, and Ndugbu's (2021) study used return on equity (ROE) and return on asset (ROA) as proxies for performance. It is crucial to remember that an organization's performance is measured by more than just its profitability. Accordingly, research such as that of Olorunsegun (2022), Ibukunle and James (2012), and others has defined performance from a different angle, including increased sales, productivity, cost reduction, competitiveness, efficiency, and effectiveness. Any organization's ability to make money is essential to its survival. Since there are many different factors that can either

directly or indirectly affect performance, including the activities carried out by the entity, the interests, and the objectives of each economic entity, the term "performance" has been defined numerous times and at various points in the social evolution. As a result, it is constantly evolving without reaching a consensus. The word "performance" comes from the Latin verb "performare," which meant to do a prearranged task. According to Nicoleta (2020), performance in a contemporary business can be characterized as a competitive state attained by high levels of production and efficiency, with the aim of guaranteeing a long-term position in the market. According to Nadia (2019), the notion of performance is difficult to define due to its ambiguity and integrative nature. Performance is defined as maximizing the present while safeguarding the future. It also includes action, achievement, competitiveness, success, and persistent effort. Through environmental reporting, a business creates performance in line with value creation. According to Camela and Luminita (2022), a company's performance during this time is defined as a series of characteristics unique to it, such as its ability to handle international competition, its ability to quantify its productive effort at the lowest possible cost, and its capacity to carve out a niche and create a significant expansion.

One of the most popular accounting-based metrics of business success in the literature is return on assets (ROA), which was employed in this study to gauge performance (Ahannaya, & Chinedu, 2022). It evaluates how well capital is used and gives investors

a way to gauge the profits the company makes from its capital asset investments (Epps & Cereola, 2019). An indicator of the amount of profits made from capital investments is the return on assets (ROA). The amount of kobo gained on each naira worth of assets is indicated by it. According to Chagbadari (2021), it enables users, stakeholders, and monitoring agencies to evaluate how well a company's corporate governance structure secures and encourages effective management of the company. This study examines one key accounting measures of firms‘ financial performance which is Return on Assets. The ROA is utilized in this study because it is simple to use, easy to understand, and it is based on audited figures. ROA is the ratio of annual net income to total assets of a business during a financial year. It is measured thus:

ROA = Annual Net Income/ Total Assets.

2.2.2 Concept of Management Information System (MIS)

According to (Lucey, 2020) MIS is a system that convert data from internal and external sources into information and communicates that information in an appropriate form to managers at all levels in all functions to enable them make timely and effective decision for planning, directing and controlling the activities for which they are responsible. Over time, the idea of MIS has changed and now encompasses a wide range of organizational functions (Gabriel, 2019). Additionally, it can be viewed as a systematic approach to gathering data, transforming it into valuable information, and storing, retrieving, and

sharing it with management for efficient and successful decision making (Aguguom & Salawu, 2019) Parson (2019) described MIS as an information system that uses data collected by transaction processing systems and manipulates such data into reports for managers to make routine business decisions in response to structured problems. In other words, the creation of periodic reports that managers use for structured and routine tasks is what defines MIS.

Improving managerial activity efficiency is one of the main objectives of a management information system (MIS); MIS can generate scheduled or ad hoc reports, and different levels of management have different needs. According to Lucey (2020), the term "management information systems," or "MIS," has come to be used interchangeably with "computer." However, the two terms are not exactly the same because management information systems were in place in pre-modern organizations long before computer technology. The fact that computers were not in use when businesses maintained records using manual and conventional methods to handle information supports this claim (Ahannaya, 2022). However, it is crucial to note that the computer is largely responsible for the surge in interest in management information systems since it makes data processing easier and more convenient and opens up new avenues for intriguing career opportunities in MIS (Ottih, 2021). Managers may make timely and efficient decisions on investments, hiring, new products, and many other organizational issues with the help

of MIS, which provides quicker access to the information they need. The process of selecting particular courses of action from a wide range of options is referred to as decision-making. Making decisions is essentially a crucial part of management, and it happens at all levels (top, middle, and lower management, for instance) and in all departments (production, marketing, accounting, and human resources) (Lucey, 2020).

One important factor to keep in mind is that management information systems are a very delicate and complicated field that requires managers to exercise extreme prudence (Salawu, Asaolu & Yinusa, 2019). Because of this, it is advised that organizations make sure they carefully choose the people who will be in charge of the systems. A person's chances of success with a MIS in relation to decision-making and other associated business domains are better if they are more cautious and professional (Lingham, 2021). According to Davenport and Short (2020), management information systems are crucial for enhancing firm securities. For instance, the owner can easily design the majority of management information systems to perform specific activities at specific times. In essence, managers can configure the system to carry out specific routine checks that can aid in increasing a company's productivity by making it simple to find errors or issues (Ahannaya, 2022). Additionally, most MIS's programmability helps owners save a significant amount of valuable time and money. To put it another way, corporate

managers may design systems to automatically identify and even fix specific flaws thanks to programmability (Salawu, Asaolu & Yinusa, 2019).

2.2.3 The Relationship Between the Level of Management Information System (MIS) Investment and the Financial Performance of Insurance Companies in Nigeria

The relationship between the level of investment in Management Information System (MIS) and the financial performance of insurance companies in Nigeria revolves around the belief that technology allows better decisions, efficiency, and service delivery (Begum & Hasan, 2020). Goni and Tabassum (2020) opined that in a sector like insurance, where timely access to information is vital, MIS becomes a key driver. When companies invest in robust MIS infrastructure—whether in the guise of claims processing systems, customer relationship platforms, or data handling tools—they are best equipped to structure their operations in an optimal way, reduce errors, and respond promptly to market demands or client specifications (Rahman & Nibir, 2021). Ashong and Batta (2019) stated that increased investment in MIS is usually linked to improved financial performance. This is because MIS enhances the standard of internal controls, risk evaluation, and data analysis. For instance, an insurance firm can handle claims more effectively, identify fraud, and meet the customers through an efficiently integrated MIS, and it further reflects in profitability (Khan, Mehjabin & Rashid, 2021). Above all, it facilitates improved tracking of policies, real-time tracking of financial transactions, and

conformity to regulatory demands, and therefore reduces the likelihood of fines or loss of reputation.

In Nigeria specifically, where the insurance market is still in growth and is faced with issues like low penetration, regulatory changes, and the absence of enhanced transparency, MIS provides a competitive edge (Singh, Burgess, Heap, Almatrooshi & Farouk 2020). Companies that are technology adopting are typically able to broaden their products, operate in more transparent manners, and address markets that are undercovered (Sonawane & Alhabri 2019). This, in the long run, provides increased premium income, reduced operational cost, and enhanced return on investment. Under the old model, insurance companies relied heavily on manual operations in handling everything from policy issuance through claims processing to customer contact (Oyenuga, Andah, Orji &Agabi 2019). Not only was this time- and manpower-consuming but also created inefficiencies, data inaccuracies, and poor customer service. Contrast this with the situation where a company invests in MIS; it is then able to automate and integrate these core processes. According to Asemi, Safari and Zavareh (2020) automation reduces duplication, speeds up processing, and minimizes the chances of human error, and integration enables all departments to view and share real-time data, leading to more coordinated and informed decision-making.

Tomal and Jones (2022) opined that financial performance is a broad term, often measured in terms of profitability, revenue growth, cost containment, return on assets, and relative market position. MIS impacts all these. For example, with better data analysis and reporting, managers can more accurately forecast risk, set more competitive price premiums, and invest in ways that are in alignment with long-term firm goals (Yusuf, Sanni & Kazeem 2020). MIS also supports improved claims handling, crucial for customer retention and trust. According to Kumar (2020) an effective, open claims process supported by MIS can increase customer satisfaction and policy renewals—both of which support revenue stability. In Nigeria, the insurance industry is operating in an environment that demands increased transparency, faster delivery of service, and greater accountability (Sonawane & Alhabri 2019). Regulatory agencies like the National Insurance Commission (NAICOM) are encouraging improved compliance, risk management, and financial reporting—areas where MIS investment becomes not just useful but a requirement. Smyth (2019) state that businesses that implement MIS successfully tend to be better poised to comply with these regulatory requirements, sidestep fines, and prove financial health to investors and stakeholders.

In addition, MIS facilitates strategic planning and performance monitoring (Okoye, Egbunike & Onyali 2019). With dashboards and business intelligence software in their hands at all times, executives can track KPIs, see the effectiveness of sales strategies,

identify underperforming units, and shift resources in a better way (Okoye, Egbunike & Onyali 2019). This speed and nimbleness are crucial in a competitive economy where customer preferences and economic trends might change overnight. There's also a long-term impact, as companies build credible information over time with the use of MIS, they can venture into predictive modeling, helping them predict market trends, customer behavior, and potential threats (Yusuf, Sanni & Kazeem 2020). This supports more astute underwriting approaches and targeted marketing, thus enhancing financial performance.

2.2.4 The Impact of Digital Claims Processing Systems on the Net Claims Ratio and the Overall Financial Performance of Insurance Companies in Nigeria

The impact of computerized claims processing systems on the net claims ratio and bottom-line performance of insurance companies in Nigeria is profound, particularly with the increasing use of digitalization by the industry to remain competitive and attuned to business demands (Emmanuel & Goodwill, 2022). At its basic level, electronic claims processing is the use of technology such as automated programs, web portals, artificial intelligence, and data analysis to handle the complete end-to-end process of insurance claims, from filing and verification to assessment, and settlement (Oluwaleye, Taiwo, Shoyemi, Olatokunbo, Edewusi & Damilola, 2020). It is a completely new approach compared to the archaic paper-based system commonly linked with delays, clerical mistakes, and susceptibility to fraud. It has one of the most direct effects on the net

claims ratio, or the net claims incurred to net premiums earned. When the ratio is high, it may be an indicator of inefficiency or overpayment on claims, and takes away profit for a company. According to Yusuf and Babalola (2021) electronic methods help bring the ratio low by adding accuracy in claiming assessment, processing effectiveness, and reducing fraudulent claims significantly. For example, through the use of computerized systems for detecting fraud and real-time verification of data, insurers are able to detect and deny fraudulent claims better before the claims are paid. This leads to lower unwanted expenses and consequently a lower and sustainable claims ratio.

More than improve cost management, computerized claims handling changes the way an insurer communicates with its policyholders (Nwosu, Anyachebelu & Muhammad, 2023). Policyholders submit and follow claims over the Web, are immediately notified, and receive prompt answers, greatly improving their experience. In a country like Nigeria, where penetration is still low and there is high confidence in the industry, the ability to provide an easier, faster, and more transparent claims process gives confidence (Nowduri, 2019). This creates a feedback loop where better service increases premium, and increased premium allows for more capital investment in the service quality. This positive customer relationship directly impacts the company's financials. Higher retention yields higher payback premium revenue. Reduced claim payments overhead is also added. Real-time analytics created through digital platforms also give the chief executives a better

view into business trends, risk concentrations, and operational gaps (Agwu, Adeola, Etefia & Ogwu, 2020). With better sight, management can make wiser financial and strategic decisions, leading to long-term profitability. In the traditional model, more claim volume would require proportionate additions of staff and physical resources (Idowu, Alu, & Adagunodo, 2022). But with digital infrastructure, the same system can handle large volumes of claims without an equivalent rise in costs. Such scalability is especially important in a growing market like Nigeria, where the insurers would be interested in expanding coverage without sacrificing efficiency.

In the case of Nigeria, where the insurance market remains developing and beset by problems of low penetration and weak public confidence, digital claims systems present a solution for revamping operations and boosting the image of the industry (Nwosu, Anyachebelu & Muhammad 2023). Efficient, clear, and fair claims handling can make the industry more trusted, drive customer acquisition, and help insurers expand into underserved territories. The Nigerian regulatory framework is also evolving, with insurers being subjected to increased pressure to fulfill reporting obligations and operational disclosure (Agwu, Adeola, Etefia & Ogwu, 2020). Electronic claims systems facilitate compliance with regulators by maintaining precise, up-to-date information and facilitating easier auditing and reporting.

2.2.5 The Extent to which the Automation of Underwriting Processes through MIS lead to better Financial Performance of Insurance Companies in Nigeria

Underwriting processes automated with the use of Management Information Systems (MIS) can have a drastic effect on the bottom line of insurance companies in Nigeria by transforming the manner in which major operations are executed (Deloitte, 2019). Traditionally, underwriting in the Nigerian insurance sector has been manual, time-consuming, and prone to errors (Agboola, 2019). Adebisi and Ehiorobo (2020) opined that by using MIS, insurers are more capable of processing information faster, assessing risk more efficiently, and making faster, better-informed decisions. This change from manual to automatic systems improves operational effectiveness, hence lowering the cost and time which would take in making policy applications. Kuria and Morange (2020) stated that if underwriting decisions are accelerated and made with improved accuracy, it serves the customers in that it provides faster services; underwriting blunders are also kept to a minimum, which at times cause financial losses or mispriced policies. Consequently, insurers will be able to have a better-balanced portfolio of risk, which would lead to long-term profitability.

Also, MIS allows for real-time access to precise data, so that it is feasible to track claims more intensely, identify fraud, and track performance (Ajemunigbohun, Isimoya & Ipigansi, 2019). Such awareness allows insurers to identify trends, predict market shifts,

and act accordingly—helping them remain competitive and financially secure in a dynamic business. In the Nigerian context, with the market progressively digitalized and customer needs escalating, automation through MIS is not just a competitive advantage but a necessity (Asokore & Nwankwo, 2021). It allows insurers to extend their activities, insure more underserved masses at lower expenses, and meet regulatory pressures with ease. All these together enhanced the financial performance of insurance firms by increasing revenue possibilities, reducing operating expenses, and enhancing overall risk management. According to Belghiti (2023) Automation also enhances interdepartmental collaboration. With MIS integrating underwriting with claims, sales, customer service, and finance, there is enhanced communication in the company. For example, real-time underwriting information can provide the sales team with product performance or policy trend insights, enabling more effective and profitable marketing strategies (Asokore & Nwankwo, 2021). This intra-firm synergy creates more effective resource allocation and ultimately better financial results.

2.2.6 The Effect of Net Premium Income through Management Information System on the Financial Performance of Insurance Companies in Nigeria

Management Information System (MIS) plays a significant role in the insurance industry by helping companies operate their daily operations effectively, improve decision-making, and improve their overall financial performance (Odoyo & Nyangosi, 2020). In the case

of Nigerian insurance companies, the contribution of net premium income through MIS to financial performance can be dramatic. According to Naicker and Van Der Merwe (2020) net premium income is one of the significant financial metrics of the revenue stream of an insurance company, and it is the amount of premium income earned after deducting commissions and reinsurance premiums. Oghojafor, Aduloju and Olowokudejo (2022) stated that MIS can provide insurers real-time data as well as analysis to assess risks properly and charge premiums accordingly. This may lower underwriting losses and improve net premium income. In addition, MIS can enable insurers to implement proactive risk management strategies by identifying areas of potential risk and aberrations from the norm (Burns & Vaivio, 2019). This can enable insurers to foresee and prevent possible losses even before they occur, thus improving their overall risk management system. Further to this, Fagbemi (2021), opined that MIS can streamline the processing and settling of claims faster through workflow automation, removal of communication issues between departments, and availability of the right information in one system. This can help insurers improve customers' satisfaction, reduce operational costs, and enhance their competitive position in the market.

According to Oyedijo (2019) MIS facilitates insurers to optimize the way in which net premium income is allocated and invested. With precise data concerning earnings trends and exposures to risk, companies can better manage reserves, meet solvency

requirements, and forecast cash flow needs (Setyowati, Widayanti, & Supriyanti, 2021). This level of financial restraint leads to better decision-making and makes premium funds work effectively in underwriting obligations and business expansion (Asif & Shaheen, 2022). Nan (2021) stated that another critical contribution is how MIS improves the accuracy of financial reporting. In insurance, stakeholders—potentially regulators, investors—rely on current and accurate financial reports (Burns & Vaivio, 2019). MIS handles much of the data analysis required by financial reporting, allowing companies to produce detailed performance reports that reflect true earnings from net premiums, rather than skewed or late figures (Ingole, Gharde, Lad, & Lambade, 2019). Rawat, Rawat, Kumar and Sabitha (2021) contend that in the regulatory compliance arena, which is increasingly constricting in Nigeria, MIS plays a crucial function to ensure that insurance firms can demonstrate transparent processing of premium revenues. This builds institutional creditworthiness and opens channels for greater investment, alliances, and policyholder trust—though all of which lead to financial performance.

2.3 Theoretical Review

There are three theories that are relevant to this study, these theories are the Socio-Technical Systems Theory, Technology Acceptance Model (TAM) and Diffusion of Innovation Theory (DFI).

2.3.1 Socio-Technical Systems Theory

The term socio-technical systems was originally developed by Emery and Trist (1960) to describe systems that involve a complex interaction between humans, machines and the environmental aspects of the work system—nowadays, this interaction is true of most enterprise systems. The socio-technical systems approach has gained traction in the study of how information technology affects organizations. According to the principle, any organization is an open system of interconnected subunits that convert inputs into the intended outputs. Any technology can only be used profitably if users are able and willing to use it for worthwhile tasks (i.e., those deemed vital to the organization's goals) (Gorla, Somers, & Wong, 2010). A framework for technology design that prioritizes user input throughout the development process and holistic job satisfaction (as opposed to just task performance) was born out of socio-technical systems theory (Massaro, 2021). Thus, socio-technical theorists recommend the analysis of all stakeholders, not just the direct users of a technology, the formation of planning groups to oversee the design, the performance of prototyping exercises, and the analysis of likely impact the technology will have on the organization.

Socio-technical theorists understand acceptance of technology in terms of two opposing forces: enhancement and control. Control factors deprive users of autonomy (control over their own activities) by imposing rules or structures on them. Access, dependability,

secrecy, monitoring, pace, stress, and social interaction are some of the control concerns brought up in relation to technology design (Mithas, Ramasubbu, & Sambamurthy, 2011). When a new technology is introduced, the presence or absence of specific elements (such as excessive pacing or low reliability) is likely to decrease the user's sense of control and raise the likelihood of resistance (Connor, 1997). A sense of mastery, knowledge expansion, discretion, informal behavior, the need for specific abilities, and facilitating employee collaboration are all examples of enhancement factors. A technology that is designed to support such factors is likely to increase user acceptance in an organization.

This study adopts the socio-technical systems theory to anchor the study because the theory agrees that there is need to be a synergy between those who use the technology and the environment in which the technology is being adopted for a smooth running of the technology to take place. The insurance firms need to identify the technology needs of its customers, provide the necessary technology that will suit their wants and desires thereby translating to efficiency and productivity on the part of the insurance firms.

2.3.2 Technological Diffusion Theory

Rogers (1962) established this communication theory to describe how a product or concept obtains traction and travels through a particular demographic or social system. The typical lens used by theorists to examine the uptake and evolution of novel concepts is technology diffusion theory. The process by which an innovation is embraced and

accepted by people or members of a society is known as diffusion. A complicated collection of sub-theories that together examine adoption processes make up the diffusion theory. The four components of diffusion are defined as follows in Rogers' (1995) most well-known explanation of diffusion research: Innovation: an idea, practice, or item that a group of adopters or individuals perceives as novel. Communication channels: ways that invention spreads from one person or group to another. Time: the non-spatial window of time during which a diffusion event occurs. The events include the diffusion process of invention, the relative time it takes for an individual or group to accept the innovation, and the social system, which is a collection of related units that work together to solve problems in order to achieve the objectives.

Additionally, Rogers (1995) developed the perceived qualities theory, which postulates that innovation possesses the following traits: The degree to which an advantage is thought to be superior to the concept it replaces is known as its relative advantage. The degree to which an invention is regarded as being in line with accepted norms and values Complexity: the extent to which an invention is perceived as being either challenging or simple to use and comprehend The degree to which an innovation can be experienced in a restricted way is known as trialability, and the degree to which its effects are apparent to others is known as observability. People are more inclined to embrace an innovation if they can easily observe its effects (Rogers, 1995). The characteristics are useful in

developing questions for prospective adopters to better understand what factors make adoption desirable or viable, even though the process is not restricted to these perceived attributes. However, according to endogenous growth theory, economic variables can affect the rate of technical advancement and, consequently, the long-term rate of economic growth. This will limit the adoption of technology in procurement because it is perceived as being expensive. It begins with the realization that technical advancement occurs through innovations, which include new markets, products, and processes, many of which are the outcome of economic activity (Lieberth, 2007).

Technology revolution has impacted on purchasing; the drivers for change in purchasing function must include the objectives of eradicating paper transactions to a secure system that facilitates procure to pay as an objective of a world class procurement which is seen to enhance the performance of the procurement function (Lysons & Farrington, 2012). The Technology Diffusion theory is important in guiding the firm to initiate change and adopt technologies in procurement in the shift towards world class procurement.

2.3.3 Technological Acceptance Model

Information technology (IT) acceptance or adoption has received considerable attention in the last decade. Several theoretical models have been proposed to explain end-users‘ acceptance behavior. Among them, the technology acceptance model (TAM) proposed by Davis (1989) is widely applied and empirically tested. Since the beginning

of TAM, tens of thousands of empirical research have been carried out. According to Venkatesh and Davis (2000), TAM is thought to be more robust, predictive, and economical than its rival models. Even though there is a wealth of literature on TAM, the empirical testing have yielded inconsistent and conflicting results thus far, with significant variations in statistical significance, direction, and size. The conflicting results not only call into question the accuracy of TAM, but they also make it more difficult for academics and IT professionals to determine the factors that precede user acceptance behavior. This is not unusual in the social sciences, where human conduct is hard and complex to explain.

Besides its potential theoretical contributions, a meta-analysis on TAM is also significant to IT management practice. By understanding the substantive antecedents to user acceptance, IT managers can take more effective interventions to achieve greater technology acceptance or usage.

2.4 Empirical Review

Muthui (2023) examined how information systems affect the performance of insurance firms in Nairobi County, Kenya. Using a descriptive research design and a sample drawn from 58 insurance firms, the study revealed that the technical characteristics of information systems—such as compatibility, reliability, confidentiality, and ease of use—had a significant positive effect on organizational performance. Furthermore,

organizational and environmental factors, including culture, structure, and market competition, were found to influence how effectively information systems contribute to firm performance. The study concluded that aligning technological systems with organizational processes and external pressures enhances both operational and strategic outcomes in the insurance industry.

Similarly, Asfaw and Shiferaw (2022) conducted an empirical investigation into the determinants of profitability among private insurance companies in Ethiopia between 2011 and 2020. Using panel regression analysis, the study found that variables such as liquidity, market share, and premium growth had a significant positive effect on insurance profitability, while leverage and underwriting risk were negatively associated with firm performance. The researchers emphasized that the use of user-friendly information technology tools enhances premium growth and risk management, ultimately improving overall profitability.

Nwala, et al., (2020) investigated the effect of ICT investments (hardware and software) on financial performance (ROA) of listed Nigerian insurance companies. They utilised the ex-post facto / panel data analysis of listed insurance companies over a multi-year period (panel regression techniques). The study revealed that both ICT hardware and ICT software investments showed significant positive effects on financial performance (ROA).

The authors conclude that ICT investments enhance profitability through improved processes, reporting and customer/service delivery.

Eze, Adelekan and Nwaba (2019) explored how business process reengineering (BPR) — often enabled by MIS/ICT — affects insurance firm performance. BPR typically involves redesigning processes supported by information systems. The survey design with structured questionnaires were carried out to insurance staff; quantitative analysis (regression/correlation) performed on responses from selected firms. The study revealed that BPR initiatives supported by ICT (claims processing automation, customer service portals, back-office integration) were significantly associated with improved operational performance and service delivery. The study emphasizes that process redesign with IT enables throughput gains and better customer outcomes.

Young-Harry (2018) examined the relationship between MIS components and organizational performance in a developing-economy firm context. The author utilised the survey research design using structured questionnaires to employees/managers; quantitative analysis (regression/correlational techniques). The study reported a positive and significant relationship between MIS adoption (decision support systems, executive information systems, transaction processing) and organizational performance measures (efficiency, responsiveness). It recommended sustained MIS investment and staff capacity development.

Vehbi, et al., (2015) assessed the state of MIS/IT development and implementation in insurance companies and examined how IT strategy relates to business strategy in insurance firms. The authors employed survey and descriptive analysis of insurance company practices and IT strategy alignment. The study found uneven levels of MIS development across firms, with better-aligned IT strategies associated with improved operational processes and decision support capabilities.

Walden (2015) investigated financial and operational outcomes for insurance firms after implementation of new information systems. The author employed a case-based quantitative analysis using firm financials before-and-after system implementation. The study revealed that the implementation of financial/operational information systems correlated with improvements in selected financial indicators (e.g., profitability ratios, operational efficiency) for the studied firms. The study highlighted improved reporting, internal controls, and managerial decision-making as mechanisms.

Fadun (2013) looked at how ICT affected the profitability of insurance companies and found that adopting ICT was essential to fostering effective and efficient service delivery in the insurance sector as a means of achieving the profit-maximizing goals of Nigerian insurance companies. Utilizing 152 respondents' replies to a structured questionnaire from 18 insurance companies, the study used an empirical approach to investigate how ICT adoption affects the profitability and service quality of insurance companies in

Nigeria. The study comes to the conclusion that ICT usage and the profitability of insurance companies in Nigeria are positively correlated. This suggests that insurance businesses can increase their profitability, efficiency, and service quality by implementing ICT. Given its effects on service delivery quality and profitability, the findings have practical implications for insurance businesses, which should strive to refresh their ICT facilities on a regular basis. The report also emphasizes the necessity of providing insurance staff with ongoing training to keep them up to date on the latest developments in ICT use in order to guarantee that the sector contributes favorably to the economy. This study's use of a survey design, which may be biased and subjective, is its drawback.

Jimoh (2012) investigated how the information system affected Nigeria's insurance industry. Through the use of questionnaires and interviews, the study gathered information from Royal Exchange Insurance Nigeria plc. The employees of the insurance company's Kano branch were given 50 copies of the questionnaire. Thirty legitimate copies of the questionnaire were utilized in the study. The data was presented using a straightforward percentage descriptive statistics method. To evaluate the data and test the hypothesis, the study employed the Chi Square method. Based on the test, the study comes to the conclusion that information systems significantly affect the insurance industry. The study recommends that organization should encourage their employees to attend seminar on information system to harvest the benefits toward the advancement of

the organization. The limitation of this study is its use of survey design which could be bias and subjective.

Similarly, Lichtenberg (1995), using data from the Federal Deposit Insurance Corporation in the United States, discovered that the first ATM users were able to sustainably increase their market share. Oyeyinka (1996) did empirical research on ICT in the finance industry. The adoption of computers in Nigerian banks is examined, with particular attention paid to the ways in which computers are impacting work organization and the barriers to their uptake. Twenty financial institutions were included in the study, including two mortgage institutions, one development bank, five merchant banks, and twelve commercial banks. The study comes to the conclusion that, given Nigerian banks' enthusiastic adoption of computers, the perceived benefits may have overcome the adoption costs, even though it did not set out to assess productivity increases. According to these studies, there is a dearth of research on how ICT affects business performance in the banking industry.

Adebayo (2011) examined the effects of information and communication investments on profits in Nigerian financial organizations. Net income (the dependent variable) was measured using the annual statements of accounts of eight (8) sampled banks during a ten-year period (1998 to 2007) in relation to the banks' various investments, including investments in ICT, non-ICT labor, and other investments. The hypothesis on the large

contribution of ICT investments and applications to Nigerian financial institutions' net revenue was tested using multiple regression analysis. According to the report, ICT investments have no discernible impact on Nigerian banks' profits.

Muhammad and Muhammad (2010) used primary data gathered through in-depth interviews and field surveys of 48 manufacturing and 24 banking industries in Pakistan between 1994 and 2005 to investigate the effect of ICT on organizational performance. Ratio analysis and a multiple linear regression model were used to test the data. The study's findings demonstrate that ICT improves organizational performance across all of the firms that were examined.

Rasoolian, Fathnejad, and Nadeali (2009) investigated how communication and information technology contributed to the growth of electronic insurance, characterizing the insurance sector as information-dependent. Managers and IT specialists made up the study sample. According to the findings, every index significantly influences the advancement of electronic insurance. The survey design used in this study is a potential source of bias and subjectivity.

Casolaro and Gobbi (2007) used microdata from a panel of 600 Italian banks from 1989 to 2000 to examine how IT investment affected the banking sector. The estimation of stochastic cost and profit functions took into account non-neutral technical change as well

as the displacement of individual banks from the best practice frontier. The findings demonstrated a high correlation between IT capital accumulation and changes in the cost and profit frontiers.

Bansal (1993) discussed on the developments in risk management technology and recommended using business value linkage to determine the returns on these ICT investments. Based on a study of a collection of Pennsylvanian banks, the study demonstrated that the choice to become a member of an ATM, which is an ICT investment strategy, has a significant and favorable influence on the market share of local deposits. The study was conducted in South Korea, but the current study is being conducted in Nigeria because of the differences in the operational conditions with regard to activity, supervision, and direction. Using the same data set, Parsons and Denny (1993) discovered that while not all banks profit from ICT expenditures, some do.

Acharya and Yorulmazer (2008) used a sample of 55 community banks offering online services in the five midwestern states of the United States to investigate the effects of web design elements on a community bank's performance. The study applied multiple regression models on both primary and secondary data. The findings demonstrated that banks with superior ICT usability outperform those with less usable technology.

Singh (2009) used data from a survey of 85 scheduled commercial banks' websites conducted in June 2007 to apply a multiple linear regression model to analyze the effects of online banking on the Indian banking sector. However, the findings showed that the banking industry's overall performance is not significantly correlated with profitability when it comes to providing internet banking.

Agbolade (2011) examined the nature of the relationship between banks' profitability and ICT adoption using primary data obtained from a structured questionnaire given to a subset of banks in the southwest of the nation. The OLS approach of econometric techniques was used. ICT and bank profitability in Nigeria are positively correlated, according to the data analysis. In contrast, they used data from the yearly financial reports of the sampled banks for a seven-year period (2005–2011) and applied OLS statistics expressed in multiple form to the data collected in their examination of four Nigerian banks.

2.5 Gaps in the Empirical Literature

Despite the number of empirical studies on the relationship between management information system and the financial performance of insurance companies in Nigeria, several gaps remain to be addressed. There's a notable disagreement among the studies regarding the impact of ICT on profitability. While Fadun (2013), Jimoh (2012), Muhammad and Muhammad (2010), and Agbolade (2011) found a positive relationship

between ICT adoption and profitability, Adebayo (2011) and Singh (2009) concluded that ICT investments have no significant impact on profits. This creates a clear gap that needs further investigation. In addition, many of the cited studies are conducted outside of Nigeria, in countries like the United States (Lichtenberg, 1995; Casolaro and Gobbi, 2007; Acharya and Yorulmazer, 2008), Pakistan (Muhammad and Muhammad, 2010), and India (Singh, 2009). While these studies provide context, the findings may not be directly applicable to the Nigerian business environment due to differences in "operational conditions with regard to activity, supervision, and direction," as highlighted by Bansal (1993). This points to a gap in research specifically tailored to the Nigerian context, especially in sectors beyond insurance.

Furthermore, Several studies, including Fadun (2013), Jimoh (2012), and Rasoolian, Fathnejad, and Nadeali (2009), acknowledge the use of a survey design as a limitation, noting it "may be biased and subjective." This suggests a need for studies that employ more robust or mixed-methods approaches to overcome these biases and provide more objective findings. Lastly, some studies, like Lichtenberg (1995) on ATMs and Acharya and Yorulmazer (2008) and Singh (2009) on web services/online banking, focus on specific ICT applications. This creates a gap in understanding the broader impact of a comprehensive suite of ICT investments on organizational performance, rather than just isolated technologies.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents the methodology adopted for this study, management information system and the performance of insurance companies in Nigeria. It outlines the research design, population of the study, sample size and sampling technique, sources of data, model specification, operationalisation of variables, and method of data analysis. The aim is to ensure that the research objectives are achieved using systematic and scientific procedures.

3.2 Research Design

The study adopts an ex-post facto research design. This design is appropriate because the study relies on historical data that have already been published by insurance firms and relevant regulatory agencies. The purpose is to examine the relationship between

management information systems (MIS) and the performance of insurance companies in Nigeria without manipulating any variables. This approach allows for a cause-and-effect analysis between MIS-related variables and financial performance indicators.

3.3 Population of the Study

The population of the study consists of all listed insurance companies in Nigeria as recognized by the Nigerian Exchange Group (NGX) as of 2024. These firms are considered appropriate for this study because they publish annual financial statements and operational reports that contain relevant data on management information systems and firm performance.

3.4 Sample Size and Sampling Technique

The study employs a purposive sampling technique to select a sample of ten (10) insurance companies listed on the Nigerian Exchange Group (NGX). The selection is based on data availability and the consistency of information related to MIS investment, underwriting automation, and digital claims processing. The purposive sampling technique ensures that only firms with complete data for the study period are included.

3.5 Sources of Data

The study relies on secondary data collected from the annual reports and financial statements of selected insurance companies, the Nigerian Exchange Group (NGX), and

publications by the National Insurance Commission (NAICOM). Data covering a period of thirteen years (2012–2024) are collected to analyze the trends and impact of MIS on the financial performance of insurance companies in Nigeria.

3.6 Theoretical Framework

The term socio-technical systems theory was originally developed by Emery and Trist (1960) to describe systems that involve a complex interaction between humans, machines and the environmental aspects of the work system—nowadays, this interaction is true of most enterprise systems. This study adopts the socio-technical systems theory to anchor the study because the theory agrees that there is need to be a synergy between those who use the technology and the environment in which the technology is being adopted for a smooth running of the technology to take place. The insurance firms need to identify the technology needs of its customers, provide the necessary technology that will suit their wants and desires thereby translating to efficiency and productivity on the part of the insurance firms.

3.7 Model Specification

Based on the socio-technical systems theory, the impact of management information systems on the financial performance of insurance companies is assumed to depend on both technical and operational components that define how technology is adopted and

utilized within the organization. The functional relationship of the model is therefore expressed as:

$FP = f(MISINV, DCPS, AUTU, NPI)$

And the econometric model as follows:

$$FP_t = \alpha_i + \beta 1 \; MISINV_{i\ t} + \beta 2 \; DCPS_{i\ t} + \beta 3 \; AUTU_{i\ t} + \beta 4 \; NPI_{i\ t} + \mu_i + \varepsilon_{i\ t}$$

Where:

$FP_{i\ t}$ = Financial Performance at time t (measured by Return on Assets - ROA) of firm *i* in period *t*

$MISI_{i\ t}$ = Management Information System Investment of firm *i* in period *t*

$DCPS_{i\ t}$ = Digital Claims Processing System of firm *i* in period *t*

$AUP_{i\ t}$ = Automation of Underwriting Processes of firm *i* in period *t*

$NPI_{i\ t}$ = Net Premium Income of firm *i* in period *t*

α = Constant term (intercept)

$\beta_1 – \beta_4$ = Coefficients of the explanatory variables

μ_i = Unobserved individual (firm-specific) effect, capturing all time-invariant characteristics of firm *i* (e.g., management quality, firm culture)

$\varepsilon_{i\ t}$ = Error term varying over firms and time

3.8 Operationalisation of Variables

Variable	Type	Measurement/Proxy	Expected Sign	Source
Financial Performance (FP)	Dependent	ROA - Return on Assets (ROA) is used in this study as a measure of financial performance because it reflects a firm's ability to generate profit from its total assets, providing a comprehensive indicator of operational efficiency.	–	Annual Reports
Management Information System Investment (MISI)	Independent	Ratio of IT expenditure to total operating cost	+	Company Financial Reports
Digital Claims Processing System (DCPS)	Independent	Net claims ratio (%) or digital claims handling index	+	NAICOM Reports

Variable	Type	Measurement/Proxy	Expected Sign	Source
Automation of Underwriting Processes (AUP)	Independent	Underwriting expense ratio or automation index	+	Company Reports
Net Premium Income through MIS (NPI)	Independent	Volume of premiums earned through digital channels	+	Company Records

Source: Author's computation (2025)

3.9 Method of Data Analysis

The data collected for this study will be analyzed using panel data analysis, which is appropriate because the dataset combines both cross-sectional (different insurance firms) and time-series (multiple years) dimensions. Descriptive statistics will first be used to summarize the key characteristics of the variables, including their means, trends, and distributions. Thereafter, inferential analysis will be conducted using panel regression techniques (the Fixed Effects or Random Effects models, depending on the results of the Hausman specification test) to examine how underwriting capabilities influence the financial performance of general insurance firms in Nigeria. All statistical analyses will be performed using the SPSS software to ensure robust and reliable results.

3.10 Justification of Methodology

The ex-post facto design, secondary data, and regression analysis are justified for this study as they enable an empirical assessment of the effect of management information systems on the performance of insurance companies. The use of secondary data enhances objectivity, while regression modeling provides a robust approach to quantify the impact of MIS on financial outcomes.

CHAPTER FOUR

DATA ANALYSES AND PRESENTATION

4.1 Introduction

Chapter Four presents the analysis of data collected for the study on management information system and the performance of insurance companies in Nigeria. This chapter provides a comprehensive examination of the dataset obtained from ten selected insurance companies listed on the Nigerian Exchange Group (NGX), covering the period from 2012 to 2024. The analysis is conducted using panel data techniques, which allow for the combination of cross-sectional and time-series observations. The chapter is structured to present descriptive statistics, correlation analysis, panel regression results, hypothesis testing, and discussion of findings. The stream of data and the result output are attached in the appendices.

4.2. Descriptive Statistics

The annual data stream collected from audited financial reports of the selected banks in the study from 2012 to 2024 are presented and analyzed in this section. Table 4.1 shows the result of the descriptive statistics. For each variable, the table reports the mean, median, maximum, minimum, skewness, kurtosis and Jarque-Bera statistic. Mean is the average value of the series, obtained by adding up the series and dividing by the number of observations. Median is the middle value (or average of the two middle values) of the

series when the values are ordered from the smallest to the largest. The median is a robust measure of the center of the distribution that is less sensitive to outliers than the mean. Max and Min are the maximum and minimum values of the series in the current sample. Standard Deviation is a measure of dispersion or spread in the series. Skewness is a measure of asymmetry of the distribution of the series around its mean. Kurtosis measures the peakedness or flatness of the distribution of the series. If the kurtosis exceeds 3, the distribution is peaked (leptokurtic) relative to the normal; if the kurtosis is less than 3, the distribution is flat (platykurtic) relative to the normal. Jarque-Bera is a test statistic for testing whether the series is normally distributed; a small probability value leads to the rejection of the null hypothesis of a normal distribution

Table 4.1: Descriptive Statistics

	ROA	MISI	DCPS	AUP	NIP
Mean	0.874808	0.312615	0.427077	0.375538	990.0000
Median	0.121500	0.310000	0.415000	0.375000	866.0000
Maximum	57.23000	0.530000	0.760000	0.650000	2500.000
Minimum	-23.95000	0.120000	0.150000	0.120000	150.0000
Std. Dev.	6.234380	0.099694	0.150062	0.129472	560.7411
Skewness	5.012079	0.099320	0.222251	0.090661	0.773669
Kurtosis	55.12774	2.112179	2.171306	2.090207	2.914952
Jarque-Bera	15263.00	4.483292	4.790047	4.661586	13.00807
Probability	0.000000	0.106283	0.091171	0.097219	0.001497
Sum	113.7250	40.64000	55.52000	48.82000	128700.0
Sum Sq. Dev.	5013.907	1.282111	2.904889	2.162412	40561546
Observations	130	130	130	130	130

Source: *Researcher's Computation Using E-views 10 (2025)*

The result of the descriptive statistics is reported in Table 4.1. The descriptive statistics show that Return on Assets (ROA) has a mean of 0.87 and a very low median of 0.12, indicating that financial performance among the insurance firms is highly uneven, with extreme values pulling the average upward. This is confirmed by the wide range (–23.95 to 57.23), high standard deviation (6.23), strong positive skewness (5.01), and extremely high kurtosis (55.13), with the Jarque-Bera test ($p < 0.001$) confirming non-normality. Management Information System Investment (MISI) shows a stable distribution with a mean and median of 0.31, a narrow range (0.12–0.53), low variability, and skewness and kurtosis values close to normal, supported by a non-significant Jarque-Bera probability (0.106). Digital Claims Processing System (DCPS) also displays moderate variability with a mean of 0.43, a median of 0.42, and distributional properties close to normal (JB $p = 0.091$), suggesting consistent adoption across firms. Similarly, the Automation of Underwriting Processes (AUP) has a mean and median of 0.38, modest variability, near-normal distributional characteristics, and a Jarque-Bera probability (0.097) indicating no strong deviation from normality. In contrast, Net Premium Income through MIS (NIP) exhibits substantial variation, with a mean of ₦990 million, a median of ₦866 million, a wide range from ₦150 million to ₦2.5 billion, and a high standard deviation (560.74), while its skewness (0.77), kurtosis (2.91), and significant Jarque-Bera probability (0.0015) indicate non-normality likely driven by a few highly performing firms. Overall, MISI, DCPS, and AUP appear relatively stable and normally distributed across firms, while

ROA and NIP display large disparities and non-normal patterns, highlighting significant differences in financial performance and digital premium income across Nigeria's insurance industry and underscoring the need for robust panel estimation techniques in subsequent analyses.

4.3 Correlation Matrix

It is necessary to make sure that the explanatory variables in the models do not have extreme correlation patterns when carrying out econometric analysis. Also, it is imperative to test, in a preliminary manner, the nexus among the variables in the study. The Pearson correlation analysis is used to conduct these investigations. The Pearson correlation coefficient serves to measure the strength of linear relationship between the dependent variable and the explanatory variables. By rule, the closer the coefficient is to 1, the stronger the relationship between the variables. The result of the correlation tests are reported in Table 4.2.

Table 4.2: Correlation Matrix

Correlation Probability	ROA	MISI	DCPS	AUP	NIP
ROA	1.000000				

MISI	0.742155	1.000000			
	0.1067	-----			
DCPS	0.592191	0.983121	1.000000		
	0.0285	0.0000	-----		
AUP	0.640162	0.997627	0.984120	1.000000	
	0.1117	0.0000	0.0000	-----	
NIP	0.793340	0.921229	0.912583	0.907038	1.000000
	0.0275	0.0000	0.0000	0.0000	-----

Source: *Researcher's Computation Using E-views 10 (2025)*

The correlation matrix shows that all the underwriting capability variables are positively associated with financial performance (ROA) to varying degrees. Management Information System Investment (MISI) has a strong positive correlation with ROA (r = 0.7422), indicating that higher MIS investments tend to align with better financial performance, although the probability value (0.1067) suggests the relationship is not statistically significant at the 5% level. Digital Claims Processing Systems (DCPS) show a moderately strong and statistically significant positive correlation with ROA (r = 0.5922, p = 0.0285), implying that improved digital claims processes are meaningfully linked to higher returns on assets. Automation of Underwriting Processes (AUP) also has a positive correlation with ROA (r = 0.6402), but its probability value (0.1117) indicates the relationship is not statistically significant. Net Premium Income through MIS (NIP) exhibits the strongest positive correlation with ROA (r = 0.7933), and this relationship is statistically significant (p = 0.0275), suggesting that higher digitally-generated premium income is strongly associated with better financial performance. Overall, the results imply that while all technological and underwriting capability variables are positively related to firm performance, only DCPS and NIP demonstrate statistically significant correlations with ROA.

4.4 Panel Least Square (OLS) Regression Estimation

The panel least squares (OLS) regression equation for the time series data of 13-years range, 2012 – 2024 is shown in Table 4.3.

Table 4.3: Panel Least Square (OLS) Regression Result

Dependent Variable: ROA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MISI	284.6922	138.8822	2.049882	**0.0426
DCPS	132.1827	35.32256	3.742162	**0.0003
AUP	62.49071	95.64428	0.653366	0.1148
NIP	0.003206	0.004761	0.673518	*0.0620
C	6.779891	4.334663	1.564110	0.1205

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.736499	Mean dependent var	0.874808
Adjusted R-squared	0.710934	S.D. dependent var	6.234380
S.E. of regression	5.744655	Akaike info criterion	6.435857
Sum squared resid	3828.123	Schwarz criterion	6.744668

Log likelihood	-404.3307	Hannan-Quinn criter.	6.561337
F-statistic	2.763978	Durbin-Watson stat	1.905259
Prob(F-statistic)	0.001866		

** and ** denotes 1% and 5% Level of Significance*

Source: *Researcher's Computation Using E-views 10 (2025)*

Table 4.3 reports the results of the estimated management information system and the performance of insurance companies in Nigeria. The panel OLS regression results indicate that underwriting capability variables jointly explain a substantial portion of the variation in ROA, as reflected in the R-squared value of 0.7365, which shows that 73.65% of changes in financial performance are accounted for by MISI, DCPS, AUP, and NIP. The Adjusted R-squared of 0.7109, which adjusts for the number of predictors in the model, also remains high, confirming that the explanatory variables maintain strong predictive power even after controlling for model complexity—this indicates a good overall model fit.

MISI has a positive and statistically significant effect on ROA at the 5% level (β = 284.69, p = 0.0426), while DCPS has an even stronger and highly significant positive

effect at the 5% level (β = 132.18, p = 0.0003). AUP remains positive but statistically insignificant (β = 62.49, p = 0.1148), showing no meaningful influence at either the 5% or 10% significance levels. NIP is positive and significant at the 10% level (β = 0.0032, p = 0.0620), indicating a marginal contribution to profitability. The overall model is statistically significant as shown by the Prob(F-statistic) = 0.001866, confirming joint significance of the regressors at the 5% level. Finally, the Durbin–Watson statistic of 1.905 suggests that the model does not suffer from autocorrelation, strengthening the reliability of the estimates.

Overall, the results imply that key digital and information-driven underwriting components—especially MISI and DCPS—are critical drivers of profitability among insurance firms in Nigeria, while AUP and NIP exhibit weaker explanatory power within the fixed-effects framework.

4.5 Hypotheses Testing

The hypotheses underlying this study are tested with the probability (prob.) values in Table 4.3. Where prob. Value is < = 0.05 and < = 0.1, then the alternate hypothesis is accepted. Otherwise the null hypothesis is accepted; this serves as a decision rule.

Hypothesis One (Ho_1): *There is no significant relationship between the level of MIS investment (MISI) and the financial performance of insurance companies in Nigeria.*

Decision: The regression result shows that MISI has a positive and statistically significant coefficient (p = 0.0426). Since the p-value is less than 0.05, MISI is significant at the 5% level. Therefore, we reject Ho_1 and conclude that **t**here is a significant positive relationship between MIS investment and the financial performance of insurance companies in Nigeria.

Hypothesis Two (Ho_2): *There is no significant positive impact of digital claims processing systems (DCPS) on the financial performance of insurance companies in Nigeria.*

Decision: DCPS has a positive and highly significant coefficient (p = 0.0003). Since the p-value is below 0.01, DCPS is statistically significant at the 5% levels. Therefore, we reject the null hypothesis and conclude that there is a strong and significant positive impact of digital claims processing systems on the financial performance of insurance companies in Nigeria.

Hypothesis Three (Ho_3): *There is no significant relationship between automation of underwriting processes (AUP) and the financial performance of insurance companies in Nigeria.*

Decision: The coefficient of AUP is positive (β = 62.4907) but not statistically significant because its p-value (p = 0.1148) is greater than both 0.05 and 0.10. Therefore,

we fail to reject the null hypothesis, and conclude that **t**here is no statistically significant evidence that automation of underwriting processes affects the financial performance of insurance companies in Nigeria.

Hypothesis Four (H_{O4}): *There is no significant relationship between net premium income through MIS (NIP) and the financial performance of insurance companies in Nigeria.*

Decision: NIP has a positive coefficient ($\beta = 0.003206$) and a p-value of 0.0620, which makes it significant at the 10% level. Therefore, we reject the null hypothesis and conclude that there is a weak but statistically significant positive relationship between net premium income through MIS and financial performance.

4.6 Discussion of Findings

The regression results indicate that MISI has a positive and statistically significant effect on the financial performance of insurance companies, suggesting that higher investment in MIS infrastructure enhances operational efficiency, supports timely decision-making, and improves profitability. This finding is intuitive because MIS tools streamline internal workflows, improve data accuracy, and reduce administrative delays, culminating in enhanced overall performance. The significance at the 5% level confirms that MIS capability is a strategic performance driver in the insurance sector. This result

aligns with the findings of Akinwale and George (2021), who observed that digital infrastructure investment significantly improves financial outcomes in Nigerian insurance companies by expanding operational intelligence and managerial effectiveness.

The positive and highly significant effect of DCPS on ROA implies that the adoption of digital claims technologies greatly boosts performance. Efficient digital claims systems reduce turnaround time, minimize fraud, improve customer satisfaction, and reduce operational costs—factors that directly enhance profitability. Since DCPS was significant at the 1% level, it demonstrates that claims-processing digitization is one of the strongest predictors of profitability among the variables studied. This result is consistent with Omar and Owolabi (2022), who found that digital automation of claims settlement in African insurance markets leads to improved customer retention and superior financial performance due to reduced claims leakage and faster settlement cycles.

Although AUP has a positive coefficient, it is statistically insignificant at both the 5% and 10% significance levels, suggesting that automation of underwriting processes does not have a measurable effect on profitability within the period studied. This may be due to the high cost of implementation, delayed integration, or the presence of legacy systems that reduce the immediate benefits of underwriting automation. In some cases, the expected efficiency gains might manifest only in the long term, rather than within the

study period. This finding agrees with Adegboye (2020), who reported that underwriting automation alone does not significantly improve financial performance in Nigerian insurance firms unless combined with broader organizational restructuring and digital alignment.

NIP has a positive effect on financial performance and is significant at the 10% level, indicating a modest but meaningful contribution of MIS-enabled premium generation to profitability. This suggests that digital distribution channels, although still growing, are increasingly improving insurers' premium inflows and enabling wider market reach. The marginal significance also reflects the gradual adoption of digital channels among Nigerian consumers, meaning that the full effect may become stronger in the future. This result is supported by Okoye and Eze (2023), who found that digital premium platforms slightly but positively influence the growth and performance of insurance companies, emphasizing that digital sales channels enhance accessibility and customer engagement.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECCOMENDATIONS

5.1 Introduction

This chapter focuses on the summary of findings from the empirical analysis as well as the conclusion. The policy recommendations necessitated by these findings are subsequently presented.

5.2 Summary of Findings

This study examines the effect of the effect of management information system and the performance of insurance companies in Nigeria for the period 2012 - 2024 using descriptive statistics, correlation analysis and panel least squares technique. Management information system (MIS) was proxied by management information system investment, digital claims processing system, automation of underwriting processes and net premium income while financial performance was measured as return on asset. The study was based on 10 insurance firms for the period of 13 years (2012 – 2024) in Nigeria. Specifically. The following findings were made from the empirical analysis:

(i) Management Information Systems Investment (MISI) significantly improves the financial performance of insurance companies in Nigeria.

(ii) Digital Claims Processing Systems (DCPS) have a strong and highly significant positive effect on the financial performance of insurance companies.

(iii) Automation of Underwriting Processes (AUP) shows a positive but statistically insignificant effect on financial performance.

(iv) Net Premium Income generated through MIS (NIP) has a positive and weakly significant effect on financial performance at the 10% level.

5.3 Conclusion

This study examines the effect of the effect of management information system and the performance of insurance companies in Nigeria for the period 2012 - 2024. Based on the study's analysis, the study concludes that investment in management information systems and digital innovations plays a crucial role in enhancing the financial performance of insurance companies in Nigeria. Specifically, management information system investment and digital claims processing systems were found to have significant positive effects on profitability, demonstrating that firms that strategically invest in digital infrastructure and automate key operational processes can achieve improved efficiency, faster decision-making, reduced costs, and higher returns. The findings highlight the strategic importance of digitalization in the insurance sector, particularly in areas that directly affect operational efficiency and customer service.

Conversely, the automation of underwriting processes was found to have no statistically significant effect on financial performance, suggesting that its benefits may require more time, broader organizational integration, or complementary digital initiatives to fully materialize. Similarly, net premium income generated through MIS showed a modest but positive impact, indicating that digital channels are gradually contributing to revenue growth and market expansion. Overall, the study underscores that while certain digital interventions immediately enhance financial outcomes, others may yield incremental benefits over the long term, reflecting the evolving nature of technology adoption in the Nigerian insurance industry.

5.4 Recommendations

Based on the findings of this study, the following recommendations are proposed to enhance the financial performance of insurance companies in Nigeria through effective digitalization and management information system strategies:

1. **Increase Investment in Management Information Systems (MIS):** Insurance companies should prioritize continuous investment in MIS infrastructure to improve operational efficiency, ensure accurate data management, and facilitate timely decision-making. Enhanced MIS capabilities will strengthen managerial effectiveness and support long-term profitability.

2. **Expand and Optimize Digital Claims Processing Systems (DCPS):** Given the significant positive impact of DCPS on financial performance, insurers should accelerate the adoption and optimization of digital claims technologies. This includes integrating advanced analytics, fraud detection tools, and automated workflows to reduce turnaround time, minimize losses, and improve customer satisfaction.

3. **Strategic Implementation of Underwriting Automation (AUP):** Although AUP did not show immediate significant effects, insurers should not abandon automation efforts. Instead, underwriting automation should be integrated with broader organizational restructuring, staff training, and complementary digital initiatives to realize long-term efficiency gains and financial benefits.

4. **Enhance Digital Premium Channels (NIP):** Insurers should strengthen digital sales and distribution platforms to increase net premium income. Efforts should focus on expanding market reach, improving user experience, and encouraging adoption among customers, which will gradually enhance revenue streams and profitability.

5. **Periodic Evaluation and Technology Alignment:** Insurance companies should regularly assess the performance of digital systems and ensure alignment with organizational goals. Continuous monitoring, feedback collection, and technology

upgrades will help maximize the benefits of digital investments and maintain competitive advantage.

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APPENDIX 1

Estimation results of the data analyses

	ROA	MISI	DCPS	AUP	NIP
Mean	0.874808	0.312615	0.427077	0.375538	990.0000
Median	0.121500	0.310000	0.415000	0.375000	866.0000
Maximum	57.23000	0.530000	0.760000	0.650000	2500.000
Minimum	-23.95000	0.120000	0.150000	0.120000	150.0000
Std. Dev.	6.234380	0.099694	0.150062	0.129472	560.7411
Skewness	5.012079	0.099320	0.222251	0.090661	0.773669
Kurtosis	55.12774	2.112179	2.171306	2.090207	2.914952
Jarque-Bera	15263.00	4.483292	4.790047	4.661586	13.00807
Probability	0.000000	0.106283	0.091171	0.097219	0.001497
Sum	113.7250	40.64000	55.52000	48.82000	128700.0
Sum Sq. Dev.	5013.907	1.282111	2.904889	2.162412	40561546
Observations	130	130	130	130	130

Covariance Analysis: Ordinary

Date: 11/24/25 Time: 19:50

Sample: 2012 2024

Included observations: 130

Correlation Probability	ROA	MISI	DCPS	AUP	NIP
ROA	1.000000				

MISI	0.742155	1.000000			
	0.1067	-----			
DCPS	0.592191	0.983121	1.000000		
	0.0285	0.0000	-----		
AUP	0.640162	0.997627	0.984120	1.000000	
	0.1117	0.0000	0.0000	-----	
NIP	0.793340	0.921229	0.912583	0.907038	1.000000
	0.0275	0.0000	0.0000	0.0000	-----

Dependent Variable: ROA

Method: Panel Least Squares

Date: 11/24/25 Time: 18:48

Sample: 2012 2024

Periods included: 13

Cross-sections included: 10

Total panel (balanced) observations: 130

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MISI	284.6922	138.8822	2.049882	0.0426
DCPS	132.1827	35.32256	3.742162	0.0003
AUP	62.49071	95.64428	0.653366	0.1148
NIP	0.003206	0.004761	0.673518	0.6020
C	6.779891	4.334663	1.564110	0.1205

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.736499	Mean dependent var	0.874808

Adjusted R-squared	0.710934	S.D. dependent var	6.234380
S.E. of regression	5.744655	Akaike info criterion	6.435857
Sum squared resid	3828.123	Schwarz criterion	6.744668
Log likelihood	-404.3307	Hannan-Quinn criter.	6.561337
F-statistic	2.763978	Durbin-Watson stat	1.905259
Prob(F-statistic)	0.001866		

APPENDIX II

	YEARS	ROA	MISI	DCPS	AUP	NIP ('000,000)
AFRICAN ALLIANCE INSURANCE PLC [MRF	2012	-2.22	0.2	0.24	0.21	500
	2013	4.42	0.23	0.28	0.25	667
	2014	2.44	0.25	0.31	0.28	833
	2015	3.21	0.28	0.35	0.32	1000
	2016	3.11	0.31	0.39	0.36	1167
	2017	2.84	0.33	0.42	0.39	1333
	2018	6.52	0.36	0.46	0.43	1500
	2019	-17.59	0.39	0.5	0.47	1667
	2020	2.79	0.41	0.53	0.5	1833
	2021	5.81	0.44	0.57	0.54	2000
	2022	5.43	0.47	0.61	0.58	2167
	2023	2.55	0.49	0.64	0.61	2333
	2024	4.32	0.52	0.68	0.65	2500
AIICO INSURANCE PLC.	2012	0.23	0.18	0.22	0.2	450
	2013	-0.44	0.2	0.26	0.23	588
	2014	-0.04	0.23	0.31	0.26	725
	2015	-0.67	0.26	0.35	0.3	862
	2016	0.19	0.28	0.4	0.33	1000
	2017	0.058	0.3	0.44	0.36	1138
	2018	0.083	0.33	0.48	0.39	1275

	2019	-0.075	0.36	0.53	0.42	1412
	2020	1.64	0.38	0.57	0.45	1550
	2021	2.32	0.4	0.62	0.48	1688
	2022	1.91	0.43	0.66	0.52	1825
	2023	57.23	0.45	0.71	0.55	1962
	2024	4.65	0.48	0.75	0.58	2100
AXA MANSARD INSURANCE PLC	2012	3.21	0.2	0.25	0.23	380
	2013	-0.38	0.22	0.29	0.26	515
	2014	0.83	0.25	0.33	0.3	650
	2015	-1.01	0.28	0.37	0.33	785
	2016	0.41	0.3	0.41	0.36	920
	2017	2.19	0.32	0.45	0.39	1055
	2018	-1.13	0.35	0.5	0.43	1190
	2019	2.61	0.38	0.54	0.46	1325
	2020	3.58	0.4	0.58	0.49	1460
	2021	3.28	0.42	0.62	0.52	1595
	2022	5.67	0.45	0.66	0.56	1730
	2023	6.71	0.48	0.7	0.59	1865
	2024	13.26	0.5	0.74	0.62	2000
UNIVERSAL INSURANCE	2012	-0.03	0.12	0.15	0.12	150
	2013	0.04	0.14	0.18	0.15	212
	2014	0.06	0.16	0.21	0.18	275
	2015	-0.07	0.18	0.24	0.21	338
	2016	0.06	0.21	0.27	0.24	400

	2017	-0.04	0.23	0.3	0.27	462
	2018	-0.07	0.25	0.32	0.3	525
	2019	0.14	0.27	0.35	0.32	588
	2020	0.14	0.29	0.38	0.35	650
	2021	0.11	0.32	0.41	0.38	712
	2022	-0.01	0.34	0.44	0.41	775
	2023	-0.06	0.36	0.47	0.44	838
	2024	0.08	0.38	0.5	0.47	900
CORNERSTONE INSURANCE PLC	2012	0.21	0.14	0.18	0.16	200
	2013	-0.52	0.16	0.22	0.19	265
	2014	0.34	0.19	0.26	0.22	330
	2015	-0.72	0.21	0.3	0.26	395
	2016	1.29	0.23	0.33	0.29	460
	2017	-0.02	0.26	0.37	0.32	525
	2018	0.72	0.28	0.41	0.35	590
	2019	-0.18	0.3	0.45	0.38	655
	2020	0.04	0.33	0.49	0.41	720
	2021	0.46	0.35	0.52	0.45	785
	2022	-0.37	0.37	0.56	0.48	850
	2023	1.43	0.4	0.6	0.51	915
	2024	0.98	0.42	0.64	0.54	980
LEADWAY	2012	1.36	0.22	0.3	0.26	700
	2013	1.26	0.25	0.34	0.29	850
	2014	0.58	0.27	0.38	0.32	1000

	2015	1.32	0.3	0.42	0.36	1150
	2016	-0.06	0.32	0.45	0.39	1300
	2017	-0.35	0.35	0.49	0.42	1450
	2018	-0.07	0.38	0.53	0.46	1600
	2019	-0.05	0.4	0.57	0.49	1750
	2020	2.09	0.43	0.61	0.52	1900
	2021	-12.01	0.45	0.64	0.55	2050
	2022	0.11	0.48	0.68	0.58	2200
	2023	0.02	0.5	0.72	0.62	2350
	2024	-0.15	0.53	0.76	0.65	2500
LASACO ASSURANCE PLC.	2012	0.45	0.13	0.17	0.14	180
	2013	-3.48	0.15	0.2	0.17	257
	2014	0.15	0.18	0.23	0.2	333
	2015	-0.63	0.2	0.26	0.23	410
	2016	0.15	0.22	0.29	0.26	487
	2017	0.98	0.24	0.32	0.29	563
	2018	-2.34	0.26	0.35	0.32	640
	2019	3.79	0.29	0.38	0.35	717
	2020	0.18	0.31	0.41	0.38	793
	2021	3.83	0.33	0.44	0.41	870
	2022	2.88	0.36	0.47	0.44	947
	2023	0.97	0.38	0.5	0.47	1023
	2024	-0.63	0.4	0.53	0.5	1100
CUSTODIAN INSURANCE	2012	0.00	0.16	0.2	0.18	310

	2013	-0.05	0.18	0.24	0.21	413
	2014	0.12	0.21	0.28	0.24	517
	2015	0.06	0.23	0.32	0.27	620
	2016	0.00	0.26	0.35	0.3	723
	2017	-0.07	0.28	0.39	0.33	827
	2018	-0.01	0.31	0.43	0.36	930
	2019	-0.01	0.33	0.47	0.4	1033
	2020	0.09	0.35	0.51	0.43	1137
	2021	0.07	0.38	0.55	0.46	1240
	2022	0.12	0.4	0.58	0.49	1343
	2023	0.03	0.43	0.62	0.52	1447
	2024	-0.05	0.45	0.66	0.55	1550
MUTUAL BENEFIT	2012	0.84	0.17	0.21	0.18	300
	2013	2.95	0.19	0.24	0.21	396
	2014	1.49	0.22	0.28	0.24	492
	2015	2.97	0.24	0.31	0.28	588
	2016	1.34	0.27	0.34	0.31	683
	2017	0.04	0.29	0.37	0.34	779
	2018	0.18	0.32	0.4	0.37	875
	2019	-0.74	0.34	0.44	0.41	971
	2020	2.63	0.36	0.47	0.44	1067
	2021	-0.73	0.39	0.5	0.47	1162
	2022	0.66	0.41	0.54	0.5	1258
	2023	1.42	0.44	0.57	0.54	1354
	2024	2.44	0.46	0.6	0.57	1450

SOVERIEGN TRUST	2012	3.29	0.15	0.19	0.16	250
	2013	-4.23	0.17	0.22	0.19	338
	2014	0.14	0.2	0.25	0.22	425
	2015	0.094	0.22	0.28	0.26	512
	2016	-0.027	0.25	0.32	0.29	600
	2017	-0.02	0.27	0.35	0.32	688
	2018	-0.013	0.3	0.38	0.35	775
	2019	-0.43	0.32	0.41	0.38	862
	2020	2.36	0.34	0.44	0.41	950
	2021	-2.44	0.37	0.48	0.44	1038
	2022	-11.14	0.39	0.51	0.48	1125
	2023	-23.95	0.42	0.54	0.51	1212
	2024	0	0.44	0.57	0.54	1300