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Asset Quality and Operational Efficiency of Non-Life Insurance Companies Listed in Nigeria

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Abstract

This study assessed the effect of asset quality on the operational efficiency of 11 non-life insurance companies listed in Nigeria from 2010 to 2024. The real estate-to-total-assets ratio, investment in unquoted equities-to-total-assets ratio, and accounts receivable-to-total-assets ratio proxied asset quality, while the expense ratio proxied operational efficiency. Panel data obtained from the annual reports and accounts of the studied companies were analyzed using random-effects regression. The findings revealed that real estate to total assets ratio has a positive and significant effect on expense ratio, implying that excessive investment in real estate increased operational costs and reduced operational efficiency; investment in unquoted equities to total assets ratio has a positive but insignificant effect on expense ratio, while accounts receivable to total assets ratio has a negative and insignificant effect on expense ratio. However, the Wald chi-square showed that the joint effect of the independent variables on the dependent variable is significant. The study concluded that asset quality significantly influenced the operational efficiency of listed non-life insurance companies in Nigeria during the study period, with real estate investment emerging as the major determinant of expense ratio. The study, therefore, recommended that insurance companies should adopt prudent asset allocation strategies, avoid excessive concentration in real estate investments, strengthen investment monitoring systems, and improve receivables management practices in order to enhance operational efficiency and sustain financial soundness.

Keywords: ***Asset quality; expense ratio; real estate to total assets ratio; investment in unquoted equities; accounts receivable to total assets ratio***

1. Introduction

Financial performance is a critical indicator of the stability, efficiency, and sustainability of insurance companies, particularly non-life insurers that are exposed to underwriting risks, claims volatility, liquidity challenges, and investment uncertainties. Insurance companies play an important role in risk transfer, financial intermediation, and economic stability; consequently, their financial performance has attracted considerable attention from regulators, investors, and other stakeholders (Kaufmann et al., 2025). Non-life insurance companies provide protection against risks arising from fire, motor accidents, marine and aviation losses, oil and gas operations, and other liabilities associated with business and personal activities (National Insurance Commission [NAICOM], 2025; ThisDay, 2026). Weak financial performance might impair insurers' ability to settle claims promptly, thereby reducing public confidence in the industry.

One important measure of operational efficiency is the expense ratio, which measures underwriting and operating expenses relative to premium income. A high expense ratio reflects poor cost management and operational inefficiency, whereas a low ratio indicates prudent management of resources (Agboola & Obalola, 2024). In Nigeria, increasing administrative costs, claims management expenses, inflationary pressures, and technological adaptation costs have intensified concerns regarding rising expense ratios among insurance companies (Central Bank of Nigeria [CBN], 2024). Persistent increases in expense ratios might weaken profitability, reduce competitiveness, and threaten the financial sustainability of insurers (Ipigansi & Dim, 2026; Ogunwale et al., 2024).

Asset quality is closely linked to expense ratio because the quality and composition of assets influence operational efficiency and cost structure. Asset quality refers to the extent to which insurers maintain productive, liquid, and low-risk assets capable of supporting business operations and meeting policyholder obligations (OECD, 2025; World Bank, 2025). Poor asset quality resulting from excessive investment in illiquid assets, risky investments, and inefficient receivables management might increase monitoring, administrative, and recovery costs, thereby increasing operating expenses and worsening expense ratios (Florig & Gossner, 2024). Conversely, prudent asset allocation might improve efficiency and enhance financial performance (Ogunwale et al., 2024).

Prior studies have assessed asset quality using composite indicators like real estate, unquoted equities, and accounts receivables to total assets ratio; and accounts receivables to gross premium and reinsurance recoveries ratio (Ahmed & Sarkar, 2019; Chellasamy & Valarmathi, 2017; Ghimire & Kumar, 2014; Gitonga et al., 2024; Kwon & Wolfrom, 2016; Rani & Shankar, 2014; Smajla, 2014; Stevanovic et al., 2022). However, this broad approach obscures the individual effects of specific asset categories. Thus, this study focuses on three distinct asset quality indicators, namely real estate to total assets ratio (RETA), investment in unquoted equities to total assets ratio (IUETA), and accounts receivable to total assets ratio (ARTA).

Real estate and unquoted equities constitute significant portions of insurers' investment portfolios in Nigeria, but are often associated with liquidity and valuation challenges (Okafor & Akinlo, 2022). Real estate investments are difficult to convert into cash quickly and involve maintenance, valuation, and management costs that might increase operating expenses (Okafor & Arowoshegbe, 2020; Oladipo & Oni, 2021). To prevent excessive concentration, NAICOM established investment limits and prudential guidelines for insurers' real estate investments (NAICOM, 2023). Similarly, unquoted equities lack active secondary markets and observable market prices, making valuation difficult and increasing liquidity risk. In recognition of these challenges, NAICOM (2015) imposed restrictions on investments in unquoted equities and other illiquid assets.

Accounts receivable represents another important dimension of asset quality. Investigations by NAICOM revealed widespread violations of the "No Premium, No Cover" provision of the Insurance Act 2004, resulting in substantial premium receivables, bad debt provisions, and reconciliation discrepancies between insurers and brokers (NAICOM, 2013). High receivables might weaken cash flows, reduce investment capacity, increase recovery costs, and compromise insurers' ability to settle claims promptly (Adenuga & Oyetayo, 2021).

These concerns underscore the need to evaluate how specific asset quality indicators affect the financial performance of insurance companies. Against this background, this study assesses the financial performance of listed non-life insurance companies in Nigeria using expense ratio as the dependent variable, while RETA, IUETA and ARTA serve as measures of asset quality.

The study provides empirical evidence on how these asset quality indicators influence operational efficiency and financial performance in the Nigerian non-life insurance companies.

1.1 Statement of the Problem

NAICOM (2024) and CBN (2024) reported that the Nigerian insurance industry recorded improved performance in terms of assets and premium income. According to NAICOM (2024), assets in the non-life or general insurance business grew from ₦851 billion in 2020 to ₦2.396 trillion in 2024, an 181.55% growth rate, while net premium grew from ₦157 billion to ₦614 billion, a 291.08% growth rate during the same period. Despite these improvements, the sector still faces operational and financial efficiency challenges, and concerns about the quality of assets in the sector have continued to attract attention due to recurring issues, such as delayed claims settlement, weak underwriting capacity, rising operational expenses, and poor investment decisions. Growth in revenue has, therefore, not consistently translated into lower expense ratios or stronger underwriting efficiency.

According to Deloitte (2024), NAICOM (2024) and Ogunwale et al. (2024), some insurers continue to face challenges relating to cost control, operational duplication, branch maintenance costs, and inefficient resource allocation. Despite reforms, such as the implementation of the "No Premium, No Cover" policy, the transition to risk-based supervision, adoption of IFRS 17 insurance contract reporting standards, which were intended to improve solvency, strengthen underwriting practices, enhance transparency, and promote financial stability, and the proposed insurance recapitalisation programme aimed at increasing minimum capital requirements, there is still uncertainty regarding whether many companies are operating at optimal cost levels. Persistent high expense ratios might, therefore, indicate internal inefficiencies rather than unavoidable industry conditions.

Additionally, there is still no consensus regarding whether investment concentration in illiquid assets and weak accounts receivable management significantly increase operating costs. Some studies argue that certain asset investments improve performance through diversification, while others suggest that risky or illiquid assets increase monitoring and administrative costs (Florig & Gossner, 2024; Ipigansi & Dumbor, 2023; Ogunwale et al., 2024). While diversified asset allocation might enhance financial stability, excessive exposure to illiquid and high-risk assets might increase operational burdens and weaken efficiency.

This study, therefore, sought to establish the extent to which the asset quality variables under study influence the operational efficiency of the studied insurance companies. This would help to identify areas that need the urgent attention of the insurance companies themselves, existing and potential investors and regulatory agencies like NAICOM, the Securities and Exchange Commission (SEC), and the Nigerian Insurance Association (NIA)

1.2 Objectives of the Study

In view of the problem which this study intends to solve, the main objective of this study is to assess the effect of asset quality on the operational efficiency of listed non-life insurance companies in Nigeria. The specific objectives are to:

(i) Evaluate the effect of real estate-to-total-assets ratio on the expense ratio of listed non-life insurance companies in Nigeria.
(ii) Investigate the effect of investment in unquoted equities-to-total-assets ratio on the expense ratio of listed non-life insurance companies in Nigeria.
(iii) Explore the effect of accounts receivable-to-total assets ratio on the expense ratio of listed non-life insurance companies in Nigeria.

1.3 Research Hypotheses

Based on the objectives of the study, the following null hypotheses were formulated to guide the study:

H_{01}: Real estate to total assets ratio has no significant effect on the expense ratio of listed non-life insurance companies in Nigeria.

H_{02}: Investment in unquoted equities to total assets ratio has no significant effect on the expense ratio of listed non-life insurance companies in Nigeria.

H_{03}: Accounts receivable to total assets ratio has no significant effect on the expense ratio of listed non-life insurance companies in Nigeria.

2. Literature Review

2.1 Conceptual Review

2.1.1 Operational Efficiency

Operational efficiency refers to the ability of an organisation to utilise its available resources, such as labour, capital, technology, time and financial resources, to produce the desired level of output at the lowest possible cost and with minimal waste (Farrell, 1957). It is concerned principally with how well an organisation transforms inputs into outputs. The concept, therefore, emphasises cost control, resource utilisation, process optimisation, productivity and the elimination of unnecessary activities or expenditures. The foundation of the modern efficiency concept is associated with Farrell (1957), who distinguished between technical and allocative efficiency. Technical efficiency reflects an organisation's ability to obtain the maximum possible output from a given set of inputs, or to produce a given level of output using the minimum quantity of inputs. Allocative efficiency, on the other hand, concerns the organisation's ability to use inputs in proportions that reflect their relative prices. Together, these dimensions provide a basis for assessing overall economic efficiency.

Operational efficiency is, therefore, closely related to productivity and cost efficiency. The OECD (2018) described productivity as the efficiency with which production inputs are used to generate outputs. In this sense, an organisation is operationally efficient when it is able to increase its output without a corresponding increase in inputs, or maintain its output while reducing the resources required to produce it.

For the insurance industry, operational efficiency is the ability of an insurance company to minimise the resources and operating costs required to generate its insurance outputs, particularly premium income and related underwriting services, while maintaining effective service delivery and claims management (World Bank, 2025). Operational efficiency is particularly important in the insurance industry because insurers operate by collecting premiums, underwriting risks, processing claims, managing investments and providing policyholder services. These activities generate substantial administrative, acquisition, underwriting and claims-related costs. Consequently, the ability of an insurer to control operating costs while maintaining adequate underwriting and service quality is an important determinant of its efficiency and sustainability. For insurance companies, operational efficiency might, therefore, be reflected in how effectively management deploys financial, human and technological resources in underwriting, premium collection, claims settlement, investment management, distribution and administrative activities. An insurer that generates substantial premium income, but incurs disproportionately high operating expenses might be

considered operationally inefficient because excessive resources are being consumed to generate its insurance outputs.

This relationship is particularly relevant to the expense ratio, which is commonly used as an indicator of the cost efficiency of insurance operations. The expense ratio generally relates underwriting or operating expenses to premiums earned or written. A relatively high expense ratio indicates that a larger proportion of premium resources is being consumed by operating expenses, whereas a lower ratio generally suggests stronger cost control and more efficient utilisation of resources. In the Nigerian insurance context, Ujunwa and Modebe (2011) specifically evaluated operational efficiency and argued that the industry's efficiency had historically remained sub-optimal. They associated this condition with factors including an unfavourable macroeconomic environment, weaknesses in regulation and public perceptions of insurance. This suggests that operational efficiency is not determined solely by internal cost management; it might also be influenced by regulatory, technological, macroeconomic and market conditions.

2.1.1.1 Expense ratio

Supriyaa (2018) averred that expense ratio is a measure of operational efficiency which expresses the relationship between expenses of management and net premium written. Such expenses include net claims insured, acquisition expenses, maintenance cost, management expenses, underwriting expenses, advertisement, employee wages and salesforce commissions, and reinsurance. The greater the expenditure, the lesser would be the profit margin and vice versa. According to Ansari and Fola (2014), it is the ratio of underwriting (costs of obtaining new policies from insurance carriers, which technically includes all expenses other than claims) or operating expenses to net premium. Shrestha (2018) defined the ratio as the measure of profitability calculated by dividing the expenses associated with acquiring, underwriting and servicing premiums (processing claims made by insurance clients) by the net premiums earned by the company, and it signifies an insurance company's efficiency before factoring in claims on its policies and investment gains or losses.

For Coronation Merchant Bank (CMB, 2019), the expense ratio measures administrative, underwriting and management expenses as a percentage of net premium income, and the bank advised that insurance companies in Nigeria should keep this ratio below 40% if the industry is to run sustainable businesses. In the same vein, the Insurance Regulation 1993 of Nepal as cited in Ghimire and Kumar (2014), advised that insurers in the country should keep management expenditure less than 30% of net premium. Similarly, Mahmud and Ravi (2024) asserted that maintaining an expense ratio below 20% is essential for insurers to demonstrate financial prudence and deliver superior returns to investors. The Organisation for Economic Cooperation and Development (OECD, 2023) also stated that global benchmarks for efficient insurers' expense ratio are between 25% and 35%.

The expense ratio is important to policyholders because it affects the amount of money available to pay claims. A high expense ratio means that less money is available to pay claims, while a low expense ratio means that enough money is available to pay claims. The expense ratio is also important to insurers because it is a key metric that investors use to assess the financial health of an insurer. A high expense ratio indicates that an insurer is less efficient and less profitable, which could make it more difficult to obtain funding and attract investors. Since the profitability of an insurer has an inverse correlation with the expense ratio, insurers strive to minimise underwriting expense in order to maximise profitability. Hafeman (2019) asserted that from a market perspective, a high expense ratio raises the possibility that insurance companies' products do not provide reasonable value to the policyholders, or that insurers are

competing for business through the payment of high commissions to intermediaries. Thus, the lower the expense ratio, the better because it means more profits to the insurer.

Sebastian (2023) stated that there are two ways to calculate expense ratio namely statutory accounting method and the Generally Accepted Accounting Principles (GAAP) method. The statutory accounting method uses the net premiums written during the period in the denominator to get the expense ratio, while GAAP uses the net premiums earned in the denominator during the period. Net premiums written represent the new business brought in by insurers during an accounting period, while the net premiums earned include both new business and recurring business from existing policies. Sabastine (2023) further asserted that insurers often use the statutory accounting method, and this is because the method yields more conservative ratios than the GAAP method. For this study, expense ratio is computed as total operating expenses before claims divided by net premiums written.

2.1.2 Asset quality

Asset quality is a crucial factor in determining the financial health of an insurer. It assesses the security and value of an insurer's assets, crucial for ensuring long-term stability and portfolio reliability (Nishmitha & Ramesh, 2024). The Federal Deposit Insurance Corporation (2018) defined asset quality as the description of the level of financial power as well as risk that could be associated with a firm's assets, such as the loans, investments and other items that appear on its statement of financial position. To Rani and Shankar (2014), asset quality refers to the marketability of an asset, meaning the quickness with which an asset could be sold at a fair price, devoid of any major fluctuation and without suffering any major loss in value.

Asset quality for insurers determines their robustness against loss of value in their assets and their capacity to pay their liabilities as and when due. It also indicates the total risk attached to the various assets held by an insurer, and depicts its capacity to earn returns in the future (Abdeljawad et al., 2020). According to Vigneswara (2020), asset quality is gauged by the level and severity of non-performing assets, adequacy of provisions, recoveries, and distribution of assets. The quality of assets, particularly insurance products and investments, depends largely on the risk management system of the insurers and its ability to cater for its short-term actuarial liabilities (Kitaka et al., 2020; Muchie & Sun, 2021).

Khalid (2012) documented that insurers that have better credit management practices and ensure that their investments are well managed, and that risk mitigation is a priority are considered to have better asset quality, whereas insurers that have deficiencies in credit management practices and have poor risk management are considered to have poor asset quality. Therefore, the quality of assets an insurer maintains relies entirely on the ability of the insurer to manage credit risk, and the quality of assets rather than total assets held by insurers determines their financial health. Rani and Shankar (2014) averred that asset backing becomes essential when claims need to be met, since assets should be sufficiently liquid to meet the liabilities. At the same time, the available assets should also be judiciously invested in such forms so as to earn returns to the company, which would determine the profitability. Asset quality is, therefore, a decision involving a trade-off between liquidity and profitability.

Hafeman (2009) enumerated the types of investments in assets most commonly available to insurers to include cash in hand and at bank; short-term deposits; bonds, usually issued by government; equities (shares), representing ownership in a company; property investments; premiums receivable from policyholders; derivative securities (which should be used only for hedging purposes); and goodwill (from the acquisition of another insurer). Based on these assets, the measures of asset quality for insurance companies are real estate, investment in unquoted equities and accounts receivable to total assets; accounts receivable to gross premium

and reinsurance recoveries; equities to total assets ratio; and non-performing loans to total gross loans (Ansari & Fola, 2014; Chakraborty, 2016; Ghimire & Kumar, 2014; Smajla, 2014). For this study, asset quality is measured by RETA, IUETA, and ARTA.

2.1.2.1 Real estate to total assets ratio

Real estate, also known as investment property, refers to properties that comprise land and its tangible attachments or resources on it. The land includes the actual surface of the earth and any permanent natural objects, such as water, dirt, or rock and any minerals of particular value under the surface, while the tangible attachments include buildings, which could be used for residential, commercial or industrial purposes (Beck, 2024). Underdeveloped land could be held vacant for future development or used to generate income through grazing, timber, agricultural or other uses. Even separate from other functional uses, land continues to increase in value over time, making it a consistently strategic investment.

Hafeman (2019) asserted that the real estate to total assets ratio is interested in the liquidity of the assets of an insurance company compared to the needs of the insurer to meet its obligations to policyholders as they fall due, and that this asset has the largest probability of being decreased. Real estate is an illiquid asset, and it is difficult to value in many jurisdictions. The implication of the illiquidity of this asset is that, where it constitutes a high proportion of the total assets, insurance companies would find it difficult to convert it to cash easily so as to be able to settle their obligations to their clients as and when due. This could discourage the clients from either renewing their existing policies or taking up new policies, and this would reduce premium collection, which would in turn increase expense ratio.

In view of this challenge, Section 25(3) of the Nigerian Insurance Act (2004) and Section 3.4.2(a)(viii) of the Prudential Guidelines for Insurers and Reinsurers in Nigeria issued by NAICOM in 2015 provide that non-life insurance businesses are not to invest more than 25% of their total assets in real estate (S.25(3)(a)), while life insurance businesses should not invest more than 35% of total assets in real estate (S.25(3)(b)). Similarly, Section 5(2) of the National Housing Fund Act of 1992, Cap 45 of 2004, provides that every insurer in Nigeria shall invest at least 20% of its non-life funds and 40% of its life funds in real estate. Darzi (2011) suggested that the investment in real estate should be at least 10% of total assets of the insurers in Bangladesh, while Hafeman (2019) asserted that some insurance supervisors would consider a ratio of 20% or more to be of concern. However, in countries where investment markets are not well developed, supervisors might accept a larger share of investment in real estate.

From the perspective of risk–return theory, insurers invest in real estate to achieve portfolio diversification (Merton & Bodie, 1995). However, such assets often involve high operating and maintenance costs, such as property management fees, depreciation, repairs, insurance, taxes, security, valuation expenses, and regulatory compliance costs. Such costs could severely build up the expenses of an insurer and adversely affect its expense ratio if they are not matched by proportional increases in premium income. It is, therefore, important for insurers to consider these costs as they plan their investments in real estate.

2.1.2.2 Investment in unquoted equities to total assets ratio

Investment in unquoted equities refers to shares which are not listed in the official list of a recognised stock exchange, or shares that are not traded on traditional or regulated stock exchanges because they do not meet listing requirements (De Groen & Oliinyk, 2022). The shares are usually issued by smaller or new companies that could not or do not wish to comply with the requirements of an official exchange, and are traded on the over-the-counter market, which is not a proper physical market or location. The trade of stocks and securities takes place

electronically without the interference of the stock exchange. These shares have a higher risk as they are less liquid than listed shares, and their valuations are less transparent as they do not have an actual price set on them.

By the provision of Section 24(13) of the Nigerian Insurance Act 2004, investments in unquoted equities at cost are regarded as one of the admissible assets that are used to ascertain statutory solvency. Also, Section 3.4.2(a)(iii) of the Prudential Guidelines for Insurers and Reinsurers in Nigeria issued by NAICOM in 2015 requires that not more than 10% of insurance fund in any insurance company should be invested in unquoted equities. In Nigeria, investment in unquoted equities represents the fair value of financial assets through other comprehensive income and/or available-for-sale financial assets, and these were used in the study to compute investment in unquoted equities. Unquoted equities require intensive due diligence, periodic valuation by external experts, legal oversight, and continuous monitoring due to information asymmetry and weak disclosure standards. These additional administrative and compliance costs directly raise management and operating expenses, thereby increasing expense ratio.

2.1.2.3 Accounts receivable to total assets ratio

Accounts receivable is created when a company lets a buyer purchase its goods or services on credit. Asein (2007) averred that, like in all businesses, receivables are income earned by an insurance company, but for which cash has not been received. In the insurance industry, receivables arise mainly from unpaid premium by policyholders or unremitted premiums collected by insurance brokers and agents. In the Nigerian insurance industry, accounts receivable comprise amounts due from contract holders (outstanding premiums), due from brokers and agents, due from insurance and reinsurance companies, and due from direct insured.

Ghimire and Kumar (2014) advised that premium amounts should not be receivable, as they are always accounted for on a cash basis. This position agrees with Section 50(1) of the Nigerian Insurance Act (2004) and the NAICOM Guidelines on Insurance Premium Collection and Remittance (2013), which expressly require that premium must be paid in full before insurance cover can be given to the insured. These guidelines were issued following the discovery by the Commission that insurance companies in Nigeria had consistently reported huge amounts of outstanding premium in their financial statements while, at the time, making equally large amounts of provision for bad debts without significant recoveries of the debts thereafter.

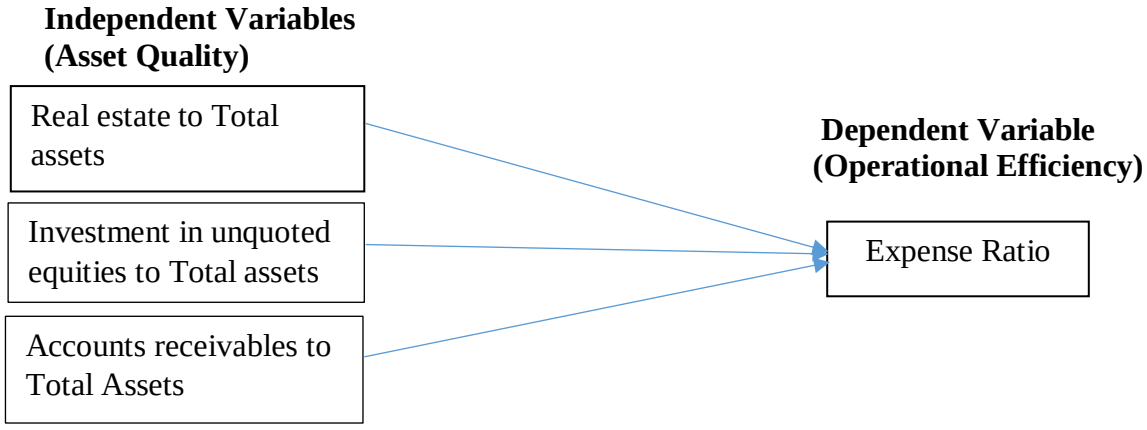
High amount of accounts receivable means that an insurer has weak credit policy, and this could threaten the insurer's solvency position and might lead to liquidity crises. Hafeman (2019) asserted that the accounts receivable to total assets ratio is interested in the liquidity of the asset compared to the needs of the insurer to meet its obligations to policyholders as they fall due. High receivables might expose the insurer to a considerable credit risk and overstate assets if there are insufficient provisions for uncollectible debts. Similarly, where huge provisions are made for uncollected premiums, such provisions increase the expenses of the insurer, and where there is no matching rise in premium, this could raise expense ratio.

2.1.3 Conceptual Framework

The relationship among this study's variables is depicted in Figure 1. The diagram shows that asset quality is assessed through diverse risk proxies, each capturing different forms of exposure, namely illiquidity (real estate, investment in unquoted equities) and credit risk (accounts receivable). These risks directly influence financial performance, represented by expense ratio (cost efficiency). The arrows illustrate a causal flow: poor-quality assets increase

operational and investment risks, which might inflate expense ratios. Conversely, well-managed asset portfolios enhance liquidity, reduce costs, and strengthen profitability.

Figure 1: Conceptual framework of asset quality and operational efficiency



Source: Adapted from Ngunguni et al. (2020)

2.2 Theoretical Review

The theory underpinning this study is the risk-return theory. This section discusses the principle of the theory and gives reason it is the most suitable theory for the study.

2.2.1 Risk-Return theory

Harry Markowitz promulgated the risk-return optimisation theory in 1952. The model of portfolio selection mainly focuses on portfolio diversification, and states that stocks in a portfolio could either be of low risk and low returns or high risk and high returns. Optimising both risk and return could help maximise an investor's total portfolio return because invested money could render higher profits only if the investor would accept a higher possibility of losses. Investors use risk-return theory as one of the essential components of each investment decision, as well as to assess the portfolio as a whole. At the portfolio level, risk-return trade-off could include assessments of the concentration or the diversity of holdings, and whether the mix represents too much risk or a lower-than-desired potential for returns.

This theory is relevant to this study because insurers act as risk bearers, making asset allocation decisions that directly impact both their risk exposure and profitability. The proxies for asset quality in this study reflect varying levels of risk and return. For instance, investments in unquoted equities carry high risk due to illiquidity, valuation uncertainty, and weak governance structures, but might also provide high returns if the companies perform well; real estate investments provide relatively stable returns, but expose insurers to market cycles and liquidity risk; and accounts receivable pose credit risk; high receivables relative to assets or premiums increase default exposure and strain liquidity. On the financial performance side, expense ratio reflects the efficiency with which insurers manage operational risks and costs. Excessive expenses reduce profitability and limit insurers' ability to bear risks effectively.

Applied to this study, this theory is relevant because insurers' financial performance, measured by expense ratio, is significantly influenced by their ability to innovate in asset management, product offerings, and operational efficiency. The asset quality proxies for this study reflect areas where innovative strategies could enhance both risk management and profitability. Investing in underexplored but high-return assets, such as real estate and unquoted equities, could generate above-average profits if risks are effectively managed; innovative use of

technology and data analytics could help insurers reduce accounts receivable, thus improving liquidity; process automation, digital underwriting, and claims processing innovations could reduce operating costs, thereby lowering the expense ratio and freeing up resources for claims settlement; and diversifying services offered, such as microinsurance, digital policies, and usage-based products, could strengthen revenue streams.

This theory is most suited for this study because insurance companies are both risk-taking and profit-making businesses, and their operations deal with earning of profits in proportion to the risks attached to them. By doing their core business, insurance companies are exposed to different types of risk (underwriting risks, investment risks, and non-technical risks such as management risk, business risk and legal risk). The greater the risk, the higher the profit of insurance businesses and vice versa. This notion is true when the insurers' risk appetite is lower than their risk tolerance.

2.3 Empirical Studies

Chellasamy and Valarmathi (2017) assessed the financial soundness of five Indian insurers for the period of 10 years covering 2006/07 to 2015/16 using the capital adequacy, asset quality, reinsurance and actuarial issues, management soundness, earnings and profitability and liquidity (CARAMEL) model. Asset quality was measured by real estate (RE), unquoted equities (UE), and debtors to total assets (D/TA) ratio (RE+UE+D/TA), accounts receivable (R) to gross premium (GP) and reinsurance recoveries (RR) (R/(GP+RR), and equities to total assets (E/TA), and earnings and profitability were measured by EXPR and return on equity (ROE). Ratios were used for data analysis. Results demonstrated that Industrial Credit and Investment Corporation of India (ICICI) Lombard had the highest RE+UE+D/TA (1.31%) and R/(GP+RR) (0.50%), while New India Assurance had the lowest RE+UE+D/TA ratio of 0.25%, and Bajaj Alliance recorded the lowest R/(GP+RR) ratio of 0.12%. For E/TA, TATA AIG recorded the highest ratio of 0.81%, while the lowest ratio of 0.01% was recorded by New India Assurance, which also recorded the highest ROE of 4.58%. TATA American International Group (AIG) had the lowest ROE (0.17%) despite having the highest E/TA. The study concluded that all companies performed well, with New India Assurance leading in several areas.

Ahmed and Sarkar (2019) assessed the financial soundness of 10 private life insurance companies in Bangladesh for the period of 10 years spanning 2008 to 2017 using the capital adequacy, asset quality, reinsurance and actuarial issues, management soundness, earnings and profitability, liquidity and sensitivity to market risk (CARAMELS) model, with asset quality measured by real estate, unquoted equities, and accounts receivable to total assets (RURTA), accounts receivable to gross premium and reinsurance recoveries (RGPRR), and equities to total assets (EQUTA), and earnings/profitability measured by EXPR. Descriptive statistics and Analysis of Variance (ANOVA) were used to analyse data. Results showed low RURTA and RGPRR ratios, while EQUTA varied widely from negative to above 40%, and ANOVA revealed significant differences across companies, but mixed results across years. EXPR ranged from 13.20% to 345.86%. The highest mean was 277.08%, while the lowest mean was 25.17%. The EXPR values were alarmingly high, far exceeding the Insurance Development and Regulatory Authority (IDRA) of Bangladesh benchmark of 20%, indicating inefficiency. The study concluded that the insurers did not comply with International Monetary Fund (IMF) and IDRA standards, and recommended revising investment portfolios, reducing expenses, and expanding premium collection.

Jansirani and Muthusamy (2019) analysed the financial efficiency of four Indian public sector non-life insurers for a period of five years from 2012/13 to 2016/17 using the CARAMEL

model. EQUTA proxied asset quality, while EXPR and ROE proxied profitability. Analysis was done using financial ratios. The results showed that the minimum EQUTA ratio was 0.29%, while the highest ratio was 0.78%. The results further showed fluctuations in the EQUTA ratio, but there was an overall decrease in the ratio at the beginning and at the end of the study period, which implied that all the companies financed their assets more from other sources than from equity contribution. For EXPR, the minimum ratio was 63.97%, while the maximum was 91.62%. With regard to ROE, the minimum was -1275.69%, while the maximum was 970.11%. Apart from New India Assurance Company Limited, all the other companies witnessed a decrease in the ratio at the end of the study period. EXPR experienced high ratios, suggesting poor cost efficiency, while ROE witnessed high volatile values ranging from extreme negatives to extreme positives, with most companies ending the period with declining profitability. The study concluded that asset quality was high, EXPR poor, and ROE unstable.

Sumesara (2020) compared the financial soundness and efficiency of the General Insurance Company of India (GICI) with Bajaj Allianz (BAJAJ) for 10 years between 2009/2010 and 2018/2019 using the CARAMEL framework. EQUTA proxied asset quality, while ROA measured profitability. Data were analysed using descriptive statistics and independent samples t-tests. Descriptive statistics for EQUTA showed that GICI had a minimum value of 31.06%, and a maximum value of 105%. BAJAJ had a minimum of 98.48% and a maximum of 100.15%. GICI had a mean of 44.14% with a standard deviation of 21.78%, indicating moderate variability, while BAJAJ had a mean of 99.75% with a standard deviation of 0.53%, indicating low variability. For ROA, the result showed that GICI had a minimum of -9.97% and a maximum of 8.61%, while BAJAJ had a minimum of 5.17% and a maximum of 25.27%. For GICI, the mean ROA was 4.65% with a standard deviation of 5.34%, indicating a wide variation in the data. BAJAJ had a mean value of 18.32% with a standard deviation of 6.24%, indicating a low variation in the data. The independent samples t-test result also showed that there was a significant difference between both companies in both variables of the study.

Harwani (2021) undertook a CARAMEL model analysis of four public sector non-life insurance companies in India for five years from 2014/15 to 2018/19. EQUTA (equity share capital) measured asset quality, while ROE measured earnings. Comparative ratios were used for data analysis. The results showed that EQUTA rose from 0.79% to 2.72%, but the ratio fluctuated marginally among the sampled companies. For ROE, the minimum ratio was -2170.77%, while the maximum ratio was 970.1%. National Insurance Company Ltd experienced a decline in the ratio in the second to fourth years. New India Insurance Company Ltd experienced a decline in the second and third years, recorded a marginal increase in the fourth year, and witnessed a drastic drop in the fifth year. Oriental Insurance Company Ltd. and United Insurance Company Ltd. recorded a fall in the second and third years, a significant increase in the fourth year, and a significant drop in the fifth year. Sreeshailam and Reddy (2021) assessed the asset quality and financial performance of four private health insurers in India over 11 years from 2010/2011 to 2020/2021 using the CARAMEL model, with EQUTA and real estate and accounts receivable to total assets (REARTA) as proxies for asset quality, whereas EXPR and ROE proxied financial performance. Data were analysed through descriptive statistics and ANOVA. Results showed wide variability in EQUTA, REARTA, EXPR, and ROE, with extreme values such as EQUTA exceeding 100% and REARTA reaching 281.24%, raising concerns about data reliability. ANOVA indicated significant differences among companies for EQUTA, REARTA, and ROE, but not EXPR. Companies were ranked based on mean values, with Reliance Health Insurance Company Limited (RHICL) leading in EXPR and ROE, and APOLLO leading in EQUTA and REARTA.

Shweta and Tejbahadur (2023) assessed the financial performance and soundness of four health insurers in India on the basis of CARAMEL parameters for 11 years from 2010/2011 to 2020/2021. For asset quality, EQUTA and real debtors to total assets ratio (RDTA) were employed, while EXPR was used to proxy earnings and profitability. Descriptive statistics and ANOVA were utilised to analyse the data. The results showed that the minimum and maximum values for EQUTA were 1.63% and 116.71%, respectively. Equities accounted for 44.83% of the insurers' total assets, and there was a moderate variability of the data from the mean by 25.87%. For RDTA, the minimum and maximum values were 15.21% and 281.24%, respectively. The mean RDTA indicated that accounts receivable accounted for 87.31% of the total assets, but there was low variability of 11%. EXPR has a minimum value of 0.29%, while the maximum value was 334.47%. The mean value showed that the insurers used 43.52% of premium collected to pay for operating expenses, and there was high variability of 48.35% in the data, as the standard deviation is above the mean. The ANOVA result showed that there was no significant difference among the companies' asset quality, but there was a significant difference in expense ratio. The study recommended that the insurance companies should raise premium collection and keep costs under control in order to improve performance. Gitonga et al. (2024) assessed the effect of asset quality on the financial performance of 41 Kenyan insurance companies over 15 years from 2008–2022, measuring asset quality through direct property, unlisted equities, and accounts receivable to total assets ratio, and financial performance by ROE, using fixed effects regression underpinned by efficiency structure theory. The results showed a negative but significant effect of asset quality on ROE, suggesting inefficient asset allocation. The study concluded that asset quality reflects diversification, liquidity, risk, and liability profiles, and recommended regulatory targets for its components.

Srinivasa and Venkidasamy (2024) determined the financial soundness and efficiency of four Indian general insurers (National Insurance Company Limited (NICL), New India Assurance Company Limited (NIACL), Oriental Insurance Company Limited (OICL), and United India Insurance Company Limited (UIICL) over 15 years from 2006/07 to 2020/21, using the CARAMELS model, with equity share capital to total assets (ESC/TA) as a measure of asset quality and ROE as measure for profitability. Data were analysed through simple ratios. Results showed fluctuating ESC/TA, with notable increases in 2018/19 and 2020/21, while ROE rose sharply, particularly for NICL, often exceeding 100% and suggesting strong earnings performance. The study concluded that asset quality was unstable but profitability trends were positive, recommending portfolio optimisation and higher share capital ratios to strengthen stability.

Jyothilinga and Gautam (2025) assessed the financial performance and soundness of The New India Assurance Company Ltd. for the year ending March 31, 2025, using the CARAMEL framework. Asset quality was measured through ARTA, ARGP, and EQUTA, while financial performance was captured by EXPR and ROE. Simple ratio was used for analysis of data. Findings showed strong asset quality with low ARTA (0.57%) and ARGP (3.12%), reflecting effective credit and premium collection, though EQUTA (8.21%) suggested a conservative investment stance limiting growth potential. Financial performance indicated efficient cost control (EXPR 10.00%) and healthy profitability (ROE 11.06%). The study concluded that the company maintained robust asset quality and efficient operations, recommending strengthening asset structure while sustaining prudent expense management. However, its focus on a single firm and year, lack of theoretical grounding, and reliance on simple percentage analysis limited its generalisability and methodological rigour. Fernando and Buddhika (2025) evaluated the financial stability of Sri Lanka's 13 life insurance companies for eight years during the 2016–2023 period using the CARAMELS model. Asset quality was measured by real estate, Investment in unquoted equities and debtors-to-total-assets ratio (X3);

and debtors-to-gross-premium and Reinsurance recoveries ratio (X4), while financial performance was measured by ROA, which was computed as net profit before tax divided by average total assets. Ordinary Least Squares (OLS) regression was used for analysis of data. The results showed that X3 had a negative and insignificant effect on ROA, while X4 had a positive but insignificant effect on ROA.

Notable gaps emerge from the reviewed studies. First, a methodological gap exists because most studies employed descriptive statistics, ANOVA and simple ratio analyses without robust inferential techniques capable of establishing causal relationships. Additionally, a variable gap exists because many studies used broad or composite asset quality indicators with limited consideration of specific asset quality measures, such as real estate-to-total assets ratio, investment in unquoted equities-to-total assets ratio, and accounts receivable-to-total assets ratio. Furthermore, a geographical gap exists because the majority of studies were conducted outside Nigeria, particularly in India, Kenya, Nepal, and Sri Lanka, thereby limiting direct applicability to the Nigerian insurance environment. These gaps justify the need for this study, which focuses on listed non-life insurance companies in Nigeria using specific asset quality indicators and expense ratio as a measure of operational efficiency.

3. Methodology

This study evaluated the effect of asset quality on the operational efficiency of 11 non-life insurance companies listed in Nigeria for the period of 15 years from 2010 to 2024. The 11 companies represent 100% of the population of non-life insurance companies listed on the Nigerian Exchange Group (NGX) as at 31 December, 2024. Hence, the census sampling technique was employed. The use of the census technique helped to provide more comprehensive, accurate and reliable results (Isanya & Atieno, 2023; Ngangi et al., 2023). The list of the companies is shown in Table 1. An ex post facto research design was used for the study, and this was because the events being investigated had already taken place and data were readily available. The composite variable, real estate, unquoted equities and accounts receivable to total assets ratio, was decomposed into three separate variables for distinct analysis. The variables are real estate to total assets ratio, investment in unquoted equities to total assets ratio and accounts receivable to total assets ratio. Only one measure of operational efficiency (OE), expense ratio, was used. This was because the ratio is a strong determinant of other profitability ratios. The measurement of these variables is shown in Table 2.

Table 1: Names of listed Non-Life/General Insurance Companies in Nigeria

S/N	Name of insurance company	Reg. Cert. Number	Year of incorporation	Year of listing on the NGX
1.	Consolidated Hallmark Insurance Plc	168762	1991	2005
2.	Guinea Insurance Plc	1808	1958	1991
3.	International Energy Insurance Plc	6126	1969	2007
4.	Linkage Assurance Plc	162306	1991	2003
5.	NEM Insurance Plc	6971	1970	1989
6.	Prestige Assurance Plc	6753	1970	1990
7.	Regency Alliance Insurance Plc	223946	1993	2008
8.	Sovereign Trust Insurance Plc	31962	1980	2006
9.	Sunu Assurances Nigeria Plc	65443	1984	1988
10.	Universal Insurance Plc	2460	1961	2009
11.	Veritas Capital Assurance Plc	11785	1973	2009

Source: NGX (2024)

The model specified for this study is as follows:

OE = fRETA, IUETA, ARTA…… (1)
The model is further expanded as follows:

$EXPR_{it} = \beta_0 + \beta_1 RETA_{it} + \beta_2 IUETA_{it} + \beta_3 ARTA_{it} + e_{it}$ .....(2)

Where:

EXPR = Expense ratio
RETA = Real estate to Total assets ratio
IUETA = Investment in unquoted equities to total assets ratio
ARTA = Accounts receivable to total assets ratio
e = Error term or residuals in the model (used to capture all other variables not included in the model)
i = Firm dimension or cross-sectional units of the variables (1-11)
t = Time dimension of the variables (2010-2024)
β_0 = Constant or Intercept
β_{1-3} = Coefficients of the independent variables to be estimated

Random-effects multiple regression was employed to analyse the data. The choice of this method was informed by the result of the Hausman test, which showed a chi^2 value of 1.00 and a probability chi^2 of 0.8001. A significant p-value supports the use of fixed-effect model, while an insignificant p-value shows that the random-effect model should be used.

Table 2: Operationalisation/Description of Variables

Variable	Type of Variable	Symbol	Formula	Source	Apriori Expectation
Expense ratio	Dependent	EXPR	Total expenses excluding claims paid/Net premium written	Chellasamy and Valarmathi (2017); Supriyaa (2018); Ahmed and Sarkar (2019); Mahmud and Ravi (2024)	None
Real Estate to Total Assets ratio	Independent	RETA	Real Estate/Total Assets	Chellasamy and Valarmathi (2017); Ahmed and Sarkar (2019); Stevanonic et al. 2020; Gitonga et al. (2024); Mahmud and Ravi (2024)	Negative
Investment in Unquoted Equities to Total Assets ratio	Independent	IUETA	Investment in Unquoted Equities/Total Assets	Chellasamy and Valarmathi (2017); Ahmed and Sarkar (2019); Stevanonic et al. 2020; Gitonga et al. (2024); Mahmud and Ravi (2024)	Negative
Accounts Receivable to Total Assets ratio	Independent	ARTA	Accounts Receivable/Total Assets	Chellasamy and Valarmathi (2017); Ahmed and Sarkar (2019); Stevanonic et al. 2020; Gitonga et al. (2024); Mahmud and Ravi (2024)	Negative

Source: Authors' compilation (2026)

4. Results

4.1 Descriptive Statistics

Table 3 presents the descriptive statistics of the variables of the study. The results show that, on average, expense ratio was 112.97%, suggesting that underwriting and operating expenses exceeded the premiums collected during the study period. The standard deviation of 82.33% indicates high variation in expense ratios. The minimum and maximum values of 32.29% and 872.88%, respectively, reveal the existence of wide disparities in operational efficiency.

Table 3: Descriptive Statistics

Variables	Obs.	Mean	Standard Dev.	Minimum	Maximum
EXPR (%)	165	1.1297	0.8233	0.3229	8.7288
RETA (%)	165	0.1025	0.1113	0.0000	0.4910
IUETA (%)	165	0.0871	0.1496	0.0000	0.6459
ARTA (%)	165	0.0327	0.0620	0.0000	0.3505

Source: STATA 16 Output

The result for RETA shows that, on average, 10.25% of the total assets of the studied insurance companies were invested in real estate assets. This average is far lower than the maximum 25% threshold stipulated by the Insurance Act (2004) and NAICOM in 2015. The high standard deviation of 11.13% suggests wide variability in real estate investments. The minimum value of 0.0000 and maximum value of 0.4910 indicate that, while some companies had no investment in real estate in some years during the study period, others invested as much as 49.10% of their total assets in real estate properties, thereby contravening the provisions of the Insurance Act (2004) and the NAICOM prudential guidelines issued in 2015, which require that not more than 25% of the non-life insurance fund should be invested in real estate.

Similarly, the result for IUETA shows that, on average, the studied companies invested 8.7% of their total assets in unquoted equities. This average is slightly below the 10% benchmark set by the NAICOM in 2015. The high standard deviation of approximately 15% suggests substantial variation in the extent of investment. The minimum and maximum values of 0.0000 and 0.6459, respectively, indicate that, while some companies did not invest in unquoted equities in some years, others allocated up to 64.59% of their total assets to such investments, thereby going beyond the standard set by NAICOM.

Furthermore, results for ARTA demonstrate that, on average, accounts receivable constituted only 3.24% of the total assets of the studied companies. Even though this mean is low, it is against the 'no premium no policy' guideline set out in the Insurance Act (2004) and NAICOM guidelines of 2013. The high standard deviation of 6.21% indicates wide variability in receivable management. The minimum value of 0.0000 and maximum value of 0.3505 show that some companies had no accounts receivable in some years during the period, while others had receivables amounting to as much as 35.05% of their total assets.

4.2 Correlation Analysis

Table 4: Correlation matrix of Asset Quality and Expense Ratio

	EXPR	RETA	IUETA	ARTA
EXPR	1.0000			
RETA	0.3243*	1.0000		
Sig.	**0.0000**			
IUETA	0.0244	-0.1965*	1.0000	
Sig.	**0.7555**	**0.0114**		
ARTA	-0.1672*	-0.0986	-0.1169	1.0000
Sig.	**0.0318**	**0.2077**	**0.1347**	

Source: STATA 16 Output

Table 4 presents the correlation matrix showing the degree and direction of association between the explained variable and the explanatory variables. The result indicates that RETA has a positive and significant relationship with EXPR with a coefficient of 0.3243 and a p-value of 0.0000. This implies that RETA and EXPR move in the same direction. Hence, an increase in

RETA is associated with an increase in EXPR. The positive relationship suggests that high investment in real estate is associated with an increase in operational and maintenance costs, thereby worsening operational efficiency. In the same vein, the relationship between IUETA and EXPR is positive but insignificant, with a coefficient of 0.0244 and a p-value of 0.7555. This indicates that IUETA also moves in the same direction as EXPR.

However, IUETA has a weak association with EXPR, although the relationship is not statistically meaningful. The result further reveals that ARTA has a negative but significant relationship with EXPR, with a coefficient of -0.1672 and a probability value of 0.0318. This implies that an increase in ARTA is associated with a decrease in EXPR. The result suggests that companies with better receivables management might experience improved operational efficiency. Since all the correlation coefficients between the predictor and the outcome variables are below the threshold of 0.80, the result provides an initial indication of the absence of harmful multicollinearity in the model.

Table 5: Multicollinearity Diagnostics Result

	COLLINEARITY STATISTICS	
VARIABLE	**VIF**	**TOLERANCE (1/VIF)**
RETA	1.06	0.9464
IUETA	1.06	0.9426
ARTA	1.03	0.9709
Mean VIF	**1.05**	

Source: STATA 16 Output

4.3 Multicollinearity

Table 5 presents the multicollinearity test using Variance Inflation Factor (VIF) and tolerance values. The test was conducted to determine whether high intercorrelations exist among the independent variables in the regression model. The result shows that RETA has a VIF value of 1.06 and a tolerance value of 0.9464; IUETA recorded a VIF value of 1.06 and a tolerance value of 0.9426; while ARTA has a VIF value of 1.03 and a tolerance value of 0.9709. The mean VIF value of 1.05 indicates that the explanatory variables are not highly correlated with one another. Since all the VIF values are far below the benchmark value of 10 and the tolerance values are above the minimum threshold of 0.10, the result confirms the absence of multicollinearity among the explanatory variables. This implies that the independent variables are suitable for inclusion in the regression model and that the collinearity statistics are reliable.

4.4 Regression Analysis

Table 6: Regression Results

Variables	**RE**		
	Coeff.	**z**	**Sig.**
Constant	0.9558	7.59	0.0000
RETA	1.9795	3.03	0.0020
IUETA	0.1439	0.28	0.7780
ARTA	-1.2671	-1.29	0.1960
R^2	0.1268		
Wald Chi^2	12.0300		
Prob>Chi^2	0.0073		
Hettest	0.0000		
Hausman	0.8001		

Source: STATA 16 Output

Table 6 presents the random-effects regression results of the study. The table demonstrates that 12.68% of the variation in EXPR is jointly explained by RETA, IUETA, and ARTA, while the remaining 87.32% is explained by other factors not included in the model. The Wald Chi-square statistic of 12.03 with a probability value of 0.0073 suggests that the explanatory variables jointly have a significant effect on the expense ratio. The coefficient of the constant implies that when all the explanatory variables are held constant, the expense ratio of the studied insurance companies would be 95.58 Nigerian Naira.

The result of the heteroskedasticity test shows a p-value of 0.0000. Since the p-value is less than the 0.05 level of significance, the null hypothesis of homoskedasticity is rejected, indicating the presence of heteroskedasticity in the regression model. This implies that the variance of the error terms is not constant across the observations of the study, and so the OLS result cannot be used. Therefore, to address the problem of heteroskedasticity and ensure reliable estimation results, the study adopted the generalised least squares (GLS), which requires the choice between fixed-effect regression and random-effect regression. The Hausman test was used to decide between fixed-effect regression and random-effect regression. The test result shows a p-value of 0.8001, which indicates that the random-effect model is more appropriate because the p-value is greater than 0.05. Therefore, the random effect model was adopted for interpretation.

The regression result reveals that RETA has a positive effect on EXPR, with a coefficient of 1.9795. This implies that a one Nigerian Naira increase in RETA would lead to an increase of 197.95 Nigerian Naira in EXPR. The result suggests that excessive investment in real estate assets increases operational costs and reduces operational efficiency among listed non-life insurance companies in Nigeria. Similarly, IUETA has a positive effect on EXPR, with a coefficient value of 0.1439. This implies that a one Nigerian Naira increase in investment in unquoted equities would lead to an increase in EXPR of 14.39 Nigerian Naira. The positive relationship suggests that higher investment in unquoted equities might expose insurance companies to increased monitoring, valuation, and management costs because such investments are relatively illiquid and do not have readily available market prices. Consequently, increased investment in unquoted equities might raise operating expenses and reduce operational efficiency. On the other hand, ARTA hurts EXPR, with a coefficient value of -1.2671. This indicates that a rise in ARTA by one Nigerian Naira would cause EXPR to fall by 126.71 Nigerian Naira. The negative relationship suggests that efficient receivables management and improved premium collection processes might reduce operational costs and enhance cost efficiency. Lower expense ratios resulting from better receivables management might indicate improved financial soundness and operational effectiveness among insurance companies.

Joint significance test of the independent variables

The reported model is RE, and so STATA uses a Wald chi-square test rather than an F-test for the joint significance of the explanatory variables. Since $0.0073 < 0.05$, the null hypothesis that RETA, IUETA and ARTA jointly do not affect the dependent variable is rejected. The result indicates that RETA, IUETA and ARTA are jointly statistically significant determinants of the dependent variable at the 5% level. Although IUETA and ARTA are individually insignificant in this regression, the three independent variables collectively provide statistically significant explanatory power for the dependent variable.

4.5 Test of Hypotheses

Based on the random-effect regression result in Table 6, the hypotheses are tested using the decision rule: reject the null hypothesis (H_0) if the p-value is less than 0.05; otherwise, fail to reject the null hypothesis.

Hypothesis One

H_{01}: *Real estate to total assets ratio has no significant effect on the expense ratio of listed non-life insurance companies in Nigeria.*

The regression result shows that RETA has a p- value of 0.0020. Since the p-value of 0.0020 is less than the significance level of 0.05, the null hypothesis is rejected. Therefore, there is sufficient evidence to conclude that real estate-to-total-assets ratio has a significant effect on the expense ratio of listed non-life insurance companies in Nigeria during the study period.

Hypothesis Two

H_{02}: *Investment in unquoted equities to total assets ratio has no significant effect on the expense ratio of listed non-life insurance companies in Nigeria.*

The result indicates that IUETA has a p-value of 0.7780. Since the p-value of 0.7780 is greater than 0.05, the study fails to reject the null hypothesis. Therefore, there is sufficient evidence to conclude that investment in unquoted equities to total assets ratio has no significant effect on the expense ratio of listed non-life insurance companies in Nigeria during the study period

Hypothesis Three

H_{03}: *Accounts receivable to total assets ratio has no significant effect on the expense ratio of listed non-life insurance companies in Nigeria.*

The regression result reveals that ARTA has a p-value of 0.1960. Since this value is greater than 0.05, the study fails to reject the null hypothesis. Therefore, there is sufficient evidence to conclude that accounts receivable to total assets ratio has no significant effect on the expense ratio of listed non-life insurance companies in Nigeria during the study period.

5. Discussion

5.1 Real Estate to Total Assets Ratio and Expense Ratio

The study found that real estate to total assets ratio has a positive and significant effect on expense ratio among the studied listed non-life insurance companies in Nigeria. This implies that increased investment in real estate assets significantly increased the expense ratio. The result suggests that insurance companies with greater concentration of assets in real estate tend to incur higher operating costs. Since non-life insurance companies require adequate liquidity to meet claims obligations and support underwriting activities, excessive investment in real estate might tie down funds and increase operational burdens. Consequently, higher investment in real estate assets might increase operating costs and worsen the expense ratio. The result further implies that, while real estate investments might provide long-term capital appreciation and portfolio diversification benefits, excessive concentration in such assets might create operational inefficiencies and increase the cost burden of insurers.

This finding is inconsistent with the study of Fernando and Buddhika (2025), which found that asset quality indicators associated with real estate investments negatively influenced financial performance. The finding also disagrees with Ogunwale et al. (2024), who argued that inefficient investment concentration and poor asset allocation reduce organisational efficiency and financial performance. The finding supports the assumptions of the Risk-Return Theory, which emphasises the importance of maintaining an optimal asset mix that balances risk and

return. Although real estate contributes to diversification, excessive concentration in relatively illiquid assets might increase operational risk and reduce financial efficiency.

5.2 Investment in Unquoted Equities to Total Assets Ratio and Expense Ratio

The study revealed that investment in unquoted equities to total assets ratio has a positive but insignificant effect on expense ratio. This implies that an increase in investment in unquoted equities tends to increase expense ratio, although the effect is not strong enough to significantly influence operational efficiency. Since unquoted equities are not traded in organised financial markets, they often involve valuation difficulties, limited liquidity, and additional monitoring costs. Insurers investing in such assets might, therefore, incur additional administrative and management expenses. However, the insignificant result suggests that the proportion of unquoted equity investments among the studied companies might not be sufficiently large to significantly affect expense ratio. It might also imply that insurers have developed effective management strategies to minimise the operational costs associated with such investments.

This finding is consistent with Fernando and Buddhika (2025), who reported an insignificant effect of asset quality indicators on financial performance. The finding also supports Risk-Return Theory, which suggests that diversification across different asset classes might reduce portfolio risk. Hence, despite the risks associated with unquoted equities, their inclusion in insurers' investment portfolios might not necessarily create significant operational inefficiencies.

5.3 Accounts Receivable to Total Assets Ratio and Expense Ratio

The study further found that accounts receivable to total assets ratio has a negative and insignificant effect on expense ratio. This finding indicates that an increase in accounts receivable tends to reduce expense ratio, although the effect is not significant. The negative effect might suggest that efficient receivables management and improved premium collection practices could reduce operational costs and improve cost efficiency. Effective management of accounts receivable might increase liquidity, reduce debt recovery costs, and improve the availability of funds for business operations. However, the insignificant result indicates that receivables management alone might not constitute a major determinant of expense ratio. Other factors such as claims expenses, administrative costs, and broader economic conditions might have stronger influence on operational efficiency.

The finding agrees with Jyothilinga and Gautam (2025), who reported that lower receivables reflected stronger financial soundness and efficient premium collection practices. However, the present study differs by finding no statistically significant effect. The result might also be explained by the implementation of the "No Premium, No Cover" policy by the NAICOM, which requires policyholders to pay premiums before coverage becomes effective. The policy might have reduced excessive receivables and weakened their potential effect on expense ratio. The finding supports efficiency theory because it suggests that prudent management of receivables and organizational resources might contribute to improved operational efficiency and financial soundness, even though the effect was not statistically significant.

6. Conclusion and Recommendations

6.1 Conclusion

This study assessed the effect of asset quality on the financial performance of 11 listed non-life insurance companies in Nigeria for the period of 15 years spanning 2010 to 2024 using expense ratio as a proxy for operational efficiency, while real estate to total assets ratio, investment in unquoted equities to total assets ratio, and accounts receivable to total assets ratio served as the explanatory variables. The findings of the study demonstrated that asset quality remains an important determinant of operational efficiency and financial soundness in the Nigerian insurance industry. The significant joint effect of the explanatory variables on expense ratio indicates that the composition and structure of insurers' asset portfolios influence their cost efficiency and financial sustainability.

The study further concludes that among the asset quality indicators assessed, only real estate-to-total-assets ratio exerts significant influence on expense ratio. Excessive investment in real estate assets tends to increase operating costs and reduce operational efficiency due to the associated management, valuation, and liquidity challenges. Conversely, investment in unquoted equities and accounts receivable did not significantly influence expense ratio during the study period. Therefore, the financial soundness of listed non-life insurance companies in Nigeria depends largely on prudent asset allocation decisions, efficient resource management, and effective investment strategies capable of minimizing operational costs and improving long-term sustainability.

6.2 Recommendations

Based on the findings of the study, the following recommendations are made:

1. Listed non-life insurance companies in Nigeria should adopt prudent real estate investment policies and avoid excessive concentration of assets in real estate investments. Management should maintain an optimal balance between real estate investments and more liquid assets to reduce operational costs and improve efficiency.

2. Insurance companies listed in Nigeria should strengthen investment evaluation and portfolio monitoring mechanisms before committing substantial resources to unquoted equity investments. This would ensure that potential diversification benefits are achieved while minimizing risks and associated administrative costs.

3. Insurance companies should continue to strengthen premium collection systems and receivables management practices through improved credit control procedures and technology-based payment systems to sustain operational efficiency.

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