ENTERPRISE RISK MANAGEMENT (ERM) PRACTICES AND EFFICIENCY IN NON-LIFE INSURANCE FIRMS IN NIGERIA

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Abstract

This study examines the effect of enterprise risk management (erm) practices on the technical efficiency of non-life insurance firms in Nigeria. Using efficiency theory as a framework, the study examines the impact of three ERM dimensions on underwriting management and claims management, including strategy, operations, and compliance. The data from ten purposively selected non-life insurers were analysed using a pooled Ordinary Least Squares (OLS) regression, with post-estimation diagnostics, within a panel research design. Based on the study's results, ERM had a significant impact on claims management but a weak, statistically insignificant impact on underwriting management. Based on the study's results, Nigerian non-life insurers appear more operationally than strategically focused in their ERM practices. This study contributes to the ERM literature by linking ERM to technical efficiency rather than traditional profitability measures. The paper provides policy implications for regulators and managerial recommendations for integrating enterprise risk management into strategic decision-making processes.

Keywords: Enterprise risk management (ERM), insurance, non-insurance firms, underwriting, claims management

INTRODUCTION

In recent years, enterprise risk management (ERM) has gained increasing attention among corporate managers. In the global economy, ERM is crucial for the survival of every insurance company (Maduchie & Fadun, 2025). ERM is more important for insurance companies, as risk management is their primary task. The risk management aspect under study includes identifying, analysing, controlling, and monitoring the opportunities and risks a company faces (Onyeka, 2018). A firm's core function is risk management, so ERM is more important. Organisations use ERM to identify, assess, manage, and monitor opportunities and threats. Consequently, insurers are increasingly becoming more interested in ERM. Insurers are increasingly interested in ERM as both financial and non-financial risks are present in the industry (Baxter et al., 2019). For example, in Nigeria, NAICOM published Guidelines for the creation of risk management frameworks for insurers and reinsurers (Onyeka, 2019) to further embed ERM in the insurance sector. Systemic risks during the global financial crisis and technological advancements have aided the broad adoption of ERM. Risk management has traditionally been reactive rather than proactive (McShane, Nair & Rustambekov, 2019). The ultimate goal of ERM is to safeguard and improve stakeholder value. Anecdotal evidence suggests that ERM helped businesses better identify and prepare for complex and interconnected risks during the economic downturn (S&P, 2019). According to the 2013 RIMS Enterprise Risk Management Survey, 21% of respondents had fully integrated ERM across their companies, while 42% had partially integrated ERM (RIMS, 2013). It is still disputed whether the rise in ERM adoption is attributable to perceived value-enhancing impacts from company management or to a reaction to regulatory and rating agency requirements.

Reduced earnings and stock price volatility reduced external capital costs, increased capital efficiency, and enabled cost reductions achieved through more efficient capture of synergies in risk management activities (Eckles, Hoyt & Miller, 2019). However, empirical evidence on ERM practices in insurance is scarce. Though other research has been carried out on risk management practices in the Nigerian financial institutions context, these studies have focused on Traditional Risk Management practices (silos) in financial institutions. Nonetheless, some studies have been conducted on ERM practices in financial and non-financial institutions; all these studies have been concentrated in advanced countries, leaving Sub-Saharan African countries behind. Evidence Yu-Lun et al. (2020) have shown that ERM practices increase cost and revenue efficiency, stabilise earnings, decrease the expected cost of external capital, decrease stock price volatility, promote risk awareness, enable strategic and operational decision making, promote synergies between various risk management activities, and reduce financial distress within organisations. Although other research has been conducted on risk management practices in the Nigerian financial institutions' context, these studies have primarily focused on traditional risk management practices. Therefore, considering the problems, there is a research gap regarding how ERM practices influence the technical efficiency of non-life insurance companies.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Enterprise Risk Management

ERM aims to control all risks a firm faces, including supply chains, distribution systems, IT, human resources, corporate governance, and audits. ERM aims to systematically understand the relationships and interdependencies among risks, in contrast to TRM's silo-based approach to risk management (Onafalujo & Eke, 2012). The crux of ERM is to combine exposures into portfolios and address them

holistically. In ERM, specific risks are identified, evaluated, and controlled within a strategic and coordinated framework (Amaliah, Haliah & Rashid, 2022). ERM represents a significant departure from conventional risk management, which focuses on a single issue, towards an all-encompassing approach (Bailey, 2019). In every risky situation, there are opportunities to seize, which is why enterprise risk management is crucial to business growth and sustainability. An organisation's enterprise risk refers to its total exposure, regardless of its origins or characteristics. According to Bohnert (2018), enterprise risk is the possibility of achieving objectives but not achieving expected results. The Committee of Sponsoring Organisations of the Treadway Commission (COSO, 2017) divides enterprise risk into four categories. A similar definition of enterprise risk is provided by the Casualty Actuarial Society (CAS, 2003). All risk categories and sectors must be considered in ERM.

Firms' Strategy

Strategic choices are directly related to how an organisation identifies, evaluates, and manages risks (Fadun & Oye, 2021, 2020; Boyle, DeZoort & Hermanson, 2018). ERM ensures that risk is not only minimised but also considered within an organisation's wider objectives (Lechner & Gatzert, 2017). ERM can have a profound impact on a company's ability to improve value, safeguard assets, and achieve long-term sustainability. ERM enables organisations to anticipate and manage risks associated with their operations (Maduchie & Fadun, 2025; Bohnert et al., 2018). A proactive risk management approach within the strategic framework may help firms deal with regulatory changes, competitive challenges, and economic downturns (Li, He & Xiao, 2019). As a result of this alignment, firms can take measured risks while being aware of potential drawbacks. A company's risk appetite determines how much risk it is willing to take to achieve its goals. To stay within acceptable benchmarks, ERM frameworks help define risk tolerance (Malik, Zaman & Buckby, 2020). Having a clear grasp of a company's risk tolerance helps avoid excessive risk and make judicious decisions.

Firms' Operations

Operations management is a crucial aspect of enterprise risk management (ERM), as a company's capacity to detect, evaluate, and mitigate risks is greatly influenced by its daily operations (McShane, 2018; Danisman & Demirel, 2018). The long-term stability and growth of an insurance company are supported by effective ERM in operations, which ensures risks are consistently tracked and managed. An essential part of insurance companies' operations is underwriting, which entails assessing the risks posed by possible policyholders (Abass, Dansu & Oyetayo, 2021). Here, ERM is essential because it helps insurance firms better evaluate and control underwriting risks. ERM frameworks are used by insurance companies to ensure that risk assessment procedures are sound and that the underwriting team gets the information and resources they need to make judicious judgments. The company can unintentionally take more risk than it can manage without an efficient ERM in place, which might result in more claims and possible financial losses and reduce the firm's value (Osasona, Isimoya & Fadun, 2025; Hoyt & Liebenberg, 2011). For instance, a poorly managed underwriting procedure may lead to larger-than-anticipated claim payments, which reduces profitability and the firm's overall value.

Firms' Compliance

According to Iswajuni, Manasikana and Soetedjo (2018), firms' compliance is a measure of their adherence to laws, rules, standards, and internal policies that are directly related to their risk

management procedures. Compliance is an important metric in the context of Enterprise risk management (ERM) because it shows how committed a company is to managing its risks within ethical, legal, and regulatory bounds, minimising exposure to risks that could compromise its operations, reputation, and financial stability (Callahan & Soileau, 2017).
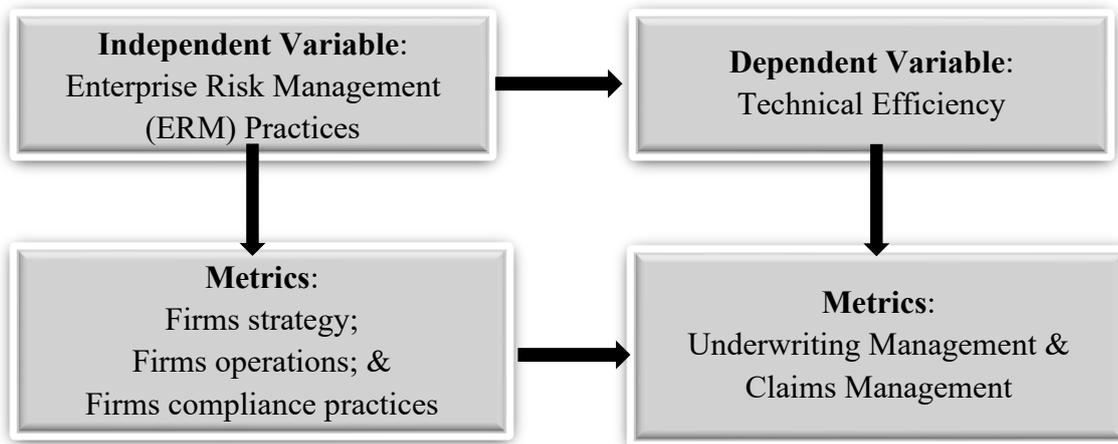
Conceptual Framework

Figure 1: Conceptual Framework (Researcher, 2025)

Theoretical Underpinning

The study is based on the Efficiency Theory, which provides the best framework for linking effective ERM practices to a firm's core efficiency. According to the theory, derived from economic production theory, firms achieve optimal performance by minimising inputs and maximising outputs, thereby operating on an efficiency frontier relative to their peers (Nourani et al., 2018). Insurance firms' technical efficiency can be measured by the ability to turn resources like capital, labour, and risk management inputs into outputs such as insurance premiums earned, underwriting results, and claims settlement results (Fotova Čiković, Cvetkoska & Mitreva, 2024). In the insurance literature, technical efficiency is typically measured using non-parametric approaches such as Data Envelopment Analysis (DEA), which constructs a best-practice frontier against which firms' operations are assessed. Generally, inefficiency represents the discrepancy between actual and potential outputs (Anandarao et al., 2018). Inefficiencies resulting from poor underwriting practices, weak pricing models, or suboptimal resource allocation increase costs and reduce capital buffers over time, thereby increasing solvency risk (Jiang et al., 2019). Moreover, efficiency models have shown that enhanced operational efficiency contributes to improved financial strength and reduced failure probability in insurance firms, further supporting the notion that efficient firms are more resilient in volatile markets (Isola Lawal et al., 2022).

The research hypotheses are developed regarding ERM practices positively affecting operational efficiency. Hence, the following hypotheses are developed:

H_o1: Firms' strategy, operations and compliance do not significantly influence underwriting management.

H_o2: Firms' strategy, operations and compliance do not significantly influence claims management.

Empirical Review

Abbas et al. (2021) used insurance companies listed on the Indonesia Stock Exchange as a case study to investigate the effects of ownership concentration, the number of commissioners on the Risk Management Committee, company size, and leverage on enterprise risk management. The sample procedure employed purposeful sampling. Additional information was sourced from the Indonesia Stock Exchange's website. The study methodology employed was panel data regression analysis. Board size, stake concentration, the risk management committee, and leverage had minimal impact on enterprise risk management transparency, whereas firm scale did.

Faisal, Abidin and Haryanto (2021) investigated how investment choices mediated the association between business value and enterprise risk management (ERM). Using Slovin's technique, 224 firms listed on the Indonesia Stock Exchange during 2017 and 2018 were selected as the sample. The Sobel test and route analysis were used in the study to examine the mediating role of investment choices. The findings indicate that Indonesian publicly listed corporations are still in the early stages of implementing ERM. Furthermore, the regression results demonstrate that investment choices and ERM increase business value.

Amaliah, Haliah and Rasyid (2022) investigated the moderating role of good corporate governance on the relationship between enterprise risk management and the financial performance of companies listed on the Indonesia Stock Exchange. The data analysis technique used in this research is Moderated Regression Analysis (MRA). The results showed that enterprise risk management has a positive and significant effect on firm value, and that financial performance also has a positive and significant effect on firm value. Another finding was that good corporate governance cannot moderate the relationship between enterprise risk management and firm value.

METHODOLOGY

The study adopted a panel research design with an ex post facto approach, as the data used were sourced from the annual financial reports of insurance firms (already in existence). The study population comprises all non-life insurance companies in Nigeria. The study population of 49 non-life insurance companies in Nigeria, according to the Nigeria Insurance Digest (2023). The data gleaned for the purpose of this study were analysed with the aid of E-VIEWS 9.

Sample Size and Sampling Technique

The sample size of the study is ten (10) non-life insurance companies in Nigeria. These companies were selected purposively based on market share, determined by their gross written premiums. This selection was based on judgmental sampling, as the study considers only non-life insurance firms whose operations and activities have the greatest impact on the market. In addition, the selected firms have a complete data set.

Model Specification

Technical Efficiency$_{it}$ = f (Enterprise Risk Management)$_{it}$

Technical Efficiency$_{it}$ = β_0 + β_1 FSTG$_{it}$ + β_2 FOPT$_{it}$ + β_2 FCOMP$_{it}$ + μ_i + λ_t + ε_{it}

Pre-Estimation Test
Table 1: Augmented Dickey Fuller test

Variable	Test Form	ADF Statistic	Probability	Order of Integration
UM	Level	-4.263	0.000	I(0)
CM	Level	39.498	0.006	I(0)
RU	Level	43.163	0.002	I(0)
STG	Level	39.843	0.005	I(0)
OPT	Level	35.229	0.019	I(0)
COMP	Level	56.115	0.000	I(0)

Source: Author's Computation, 2025

Table 1 shows the Augmented Dickey–Fuller unit root test results, which indicate that all variables (UM, CM, STG, OPT, and COMP) are stationary at the level, as their p-values are less than 0.05. This implies that the null hypothesis of a unit root is rejected for all variables. Consequently, each series is integrated of order zero, I(0). Therefore, the variables are suitable for estimation using Ordinary Least Squares (OLS) regression without the need for differencing or cointegration analysis.

RESULTS AND DISCUSSIONS

Table 2: Descriptive Summary of Study Variables

Statistic	UM	CM	RU	OPT	STG	COMP
Mean	2.313	18.431	0.279	0.213	0.089	0.186
Median	1.546	18.490	-0.082	0.183	0.074	0.130
Maximum	47.923	20.318	15.300	1.873	0.292	0.754
Minimum	-1.024	15.283	-0.697	-3.723	-0.092	-0.139
Std. Dev.	4.811	1.109	2.060	0.486	0.078	0.188
Skewness	8.072	-0.418	5.622	-4.104	0.341	0.896
Kurtosis	75.324	2.602	35.599	42.028	2.983	3.259
Jarque–Bera	25,168.59	3.926	5,450.02	7,290.06	2.135	15.023
Probability	0.000	0.140	0.000	0.000	0.344	0.001

Table 2 provides a statistical description of the variables examined in the study, including Underwriting Management, Claims Management (CM), Reinsurance Utilisation (RU), Compliance (COMP), Strategy (STG), and Operations (OPT).

Table 3: Correlation Matrix

Variables	UM	CM	RU	OPT	STG	COMP
UM	1.000					
CM	0.262	1.000				
RU	0.010	0.243	1.000			
OPT	-0.549	-0.052	-0.067	1.000		
STG	-0.211	-0.281	-0.165	0.547	1.000	
COMP	-0.124	-0.245	-0.128	0.484	0.854	1.000

Correlation matrix of study variables: underwriting margin, claims management, risk utilisation, operational risk, strategic risk, and compliance risk. In this study, most correlation coefficients are moderate to low, indicating that the explanatory variables are not seriously multicollinear. Strategic risk (STG) and compliance risk (COMP) have the highest correlation ($r = 0.854$), indicating a strong positive association. In this model, multicollinearity is not considered a major problem since the coefficients are generally below 0.90. It is therefore possible to include the variables simultaneously in the regression analysis.

Pooled OLS regression for hypothesis one: Enterprise risk management variables (firms' strategy, firms' operations and firms' compliance) do not have joint significant influence on underwriting management among non-life insurance companies in Nigeria.

Table 4: Pooled OLS Regression for Hypothesis 1

Variable	Coefficient	Std. Error	t-Statistic	Probability
STG	-0.0020*	0.0011	-1.813	0.073
OPT	-0.0004	0.0055	-0.065	0.948
COMP	-0.0006	0.0027	-0.237	0.814
Constant (C)	0.0347	0.1019	0.341	0.734

	Value	Statistic		Value
R-squared	0.528	Mean dependent variable		0.0839
Adjusted R-squared	0.508	S.D. dependent variable		0.0776
F-statistic	26.565	Durbin–Watson statistic		2.180
Prob(F-statistic)	0.000			

Source*: Author's computation, 2025. Note: ***, ** and * denote statistical significance at 5%*

The panel least squares regression results indicate that strategic management (STG) has a negative effect on UM and is weakly significant at the 10% level, suggesting that increases in strategic activities slightly reduce UM. Operational efficiency (OPT) and competitiveness (COMP) show negative but statistically insignificant relationships with UM. The model is statistically significant as indicated by the F-statistics (26.565, $p < 0.01$). The R-squared value of 0.528 implies that approximately 52.8% of the variation in UM is explained by the explanatory variables. Furthermore, the Durbin–Watson statistic of 2.18 indicates that the model lacks autocorrelation.

Post Estimation Tests Results (Residual Diagnostics)

Test	Statistic	d.f.	Probability
Breusch–Pagan LM	67.383	45	0.017
Pesaran Scaled LM	1.305	—	0.192
Pesaran CD	1.463	—	0.143

Evidence for residual cross-section dependence is mixed. Cross-sectional dependence is statistically significant ($p < 0.05$) in the Breusch–Pagan LM test. Both the Pesaran scaled LM and the Pesaran CD tests fail to indicate significant cross-sectional dependence ($p < 0.05$). Given that the Pesaran CD test

is more appropriate for large panels, the results generally indicate that cross-sectional dependence is not severe.

Pooled OLS regression for hypothesis two: Enterprise risk management variables (firms' strategy, firms' operations and firms' compliance) do not have joint significant influence on claims management among non-life insurance companies in Nigeria.

Table 5: Pooled OLS Regression for Hypothesis 2

Variable	Coefficient	Std. Error	t-Statistic	Probability
STG	-0.0651***	0.0072	-9.073	0.000
OPT	0.0800**	0.0337	2.375	0.020
COMP	-0.0171	0.0166	-1.034	0.304
Constant (C)	-1.213*	0.6199	-1.957	0.053
Statistic	**Value**	**Statistic**	**Value**	
R-squared	0.560	Mean dependent variable	0.2065	
Adjusted R-squared	0.541	S.D. dependent variable	0.5074	
F-statistic	30.195	Durbin–Watson statistic	1.354	
Prob(F-statistic)	0.000			

Source: *Author's computation, 2025. Note: ***, ** and * denote statistical significance at 5%*

At the 1% level, panel least squares results indicate that strategic management (STG) reduces CM, implying a negative effect of strategic activities on CM. At the 5% level, operational efficiency (OPT) is positively correlated with CM, suggesting an association between operational practices and CM. CM is negatively impacted by competitiveness (COMP). Approximately 56% of the variation in CM is explained by the explanatory variables (F = 30.195, p < 0.01), as indicated by the R-squared value (0.560). However, the Durbin–Watson statistic (1.35) suggests a mild positive autocorrelation in the residuals.

Table 6: Post Estimation Test Result (Residual Diagnostics)

Test	Statistic	d.f.	Probability
Breusch–Pagan LM	64.253	45	0.031
Pesaran Scaled LM	0.975	—	0.330
Pesaran CD	3.937	—	0.0001

Table 6 shows the panel cross-sectional dependence test results. The Breusch–Pagan LM statistic (χ^2 = 64.253, p = 0.031) is statistically significant at the 5% level, indicating cross-sectional dependence among the panel units. Although the Pesaran Scaled LM test is not significant (p = 0.330), the Pesaran CD test is highly significant (p = 0.0001), further confirming cross-sectional dependence in the panel data. This implies that the cross-sectional units are correlated with one another and do not behave independently. Consequently, estimation techniques that account for cross-sectional dependence are appropriate for obtaining reliable, unbiased regression results.

DISCUSSION OF FINDINGS

According to the study, enterprise risk management (ERM) variables jointly explain a substantial proportion of the variation in underwriting management in Nigerian non-life insurance firms, with strategy showing a weak negative effect. However, the individual ERM components were relatively insignificant as seen from the correlation matrix. Although ERM frameworks exist in some firms, they are not strategically integrated into underwriting decisions. Insurers may be implementing ERM more as a compliance or operational requirement rather than embedding it into core risk selection processes. The results support McShane, Nair, and Rustambekov's (2019) argument that many firms adopt ERM reactively rather than strategically. Moreover, ERM effectiveness depends on how well it is integrated into strategic decision-making rather than merely documented (Maduchie & Fadun, 2025; Lechner & Gatzert, 2017; Fadun, 2014). A significant negative relationship was found between strategy and claims management, while a positive and significant relationship was found between operations and claims management. This indicates that operational risk practices improve claims administration efficiency, while strategic controls reduce excessive claims exposure. A firm that monitors underwriting assessment, documentation, and policy monitoring can manage claims more efficiently. It is consistent with previous studies that affirmed that risk management enhances operational performance and firm value (Fadun & Oye, 2021, 2020; Hoyt & Liebenberg, 2011).

Eckles, Hoyt, and Miller (2019) noted that ERM reduces earnings volatility and strengthens internal control systems, improving claims handling and operations. This finding is similar to that of Abbas et al. (2021), who found that certain corporate governance and risk management structures have little impact on risk financing. Furthermore, the findings support the literature, which indicates that ERM enhances operational coordination, risk awareness, and financial resilience (Chen et al., 2020; Fadun & Oye, 2020; Brockett & Wang, 2018). Therefore, ERM adoption in Nigerian non-life insurers appears to be more effective at controlling operational risk than financing long-term risks.

Robustness Discussion

In this study, to ensure the reliability of the research instrument, the Augmented Dickey-Fuller (ADF) test was conducted, confirming an I(0) integration, i.e., the series is stationary. In the same vein, the study's multicollinearity diagnostics using the VIF test indicate coefficients below 0.90, indicating a very low level of multicollinearity in the model. Also, the Durbin-Watson statistics of 2.180 and 1.354 in the results reported indicate autocorrelation on the underwriting model used in the study.

Contribution to Knowledge

To assess the differential impacts of ERM across strategy, operations, and compliance, this study disaggregates ERM into these dimensions. Unlike previous ERM studies, which focused on profitability (ROA, ROE, Tobin's Q), this study examines ERM through the lens of technical efficiency, thereby shifting the focus from outcome performance to operational effectiveness. This study provides evidence from Sub-Saharan Africa, particularly Nigeria, where ERM research has been limited. Thus, this article extends the literature on ERM performance by linking ERM to operational risk efficiency in underwriting and claims management rather than market-based measures.

Endogeneity Concern

In this study, we observed that there might be a reverse causality between ERM and performance. To guard against this, we used lagged independent variables and conducted the necessary diagnostic tests. To improve this, future studies in a similar area may adopt a dynamic panel (GMM) estimator.

CONCLUSION AND RECOMMENDATIONS

Based on the study's findings, it can be inferred that non-life insurance companies have focused more on certain key aspects of enterprise risk management than others. Basically, these firms have largely concentrated on risk management in their operations rather than on the strategy employed to achieve organisational objectives. In the same vein, these firms have also shown little commitment to managing compliance and operational risks arising from both external and internal environments.

Implication for Insurers

The practical implication of the findings of this study is that non-life insurance companies in Nigeria integrate enterprise risk management (ERM) into their strategic decision-making processes rather than limiting it to compliance and operational activities, while boards of management establish active risk management committees and make enterprise-wide risk assessments part of underwriting policies, pricing decisions and reinsurance planning. It is also important for regulators, including NAICOM, to ensure that insurers' risk appetites align with their corporate objectives by requiring periodic risk reporting and supervision, thereby enabling non-life insurance companies in Nigeria to enhance underwriting discipline, improve claims management, and strengthen overall financial stability.

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