





“Determinants of financial performance in Nepalese nonlife insurance companies: A panel data analysis”

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DETERMINANTS OF FINANCIAL PERFORMANCE IN NEPALESE NONLIFE INSURANCE COMPANIES: A PANEL DATA ANALYSIS

Abstract

The financial performance of insurance companies plays a fundamental role in driving the overall economy towards economic development and progress. The study aims to examine the impact of financial performance indicators on the Return on Equity (ROE) and Return on Assets (ROA) of nonlife insurance companies. In the methodology of study, 13 nonlife insurance companies have been considered, and panel data have been analyzed for a 14-year period (2008–2021). The fixed effects model was estimated using the E-Views software package. The panel data analysis results point to a noteworthy and favorable impact on ROA, explaining 92.75% of its variance. The results show that there is a strong positive relationship between ROA and four key factors: gross premium, retention ratio, expense ratio, and combined ratio. This underscores the importance of enhancing elements like gross premium, retention ratio, expense ratio, and combined ratio to elevate ROA. The conclusion of the study provides useful insights for improving the financial performance and competitiveness of nonlife insurance companies in Nepal. The study reveals the key success factors that affect the profitability and efficiency of the insurance sector. This suggests that nonlife insurance companies in Nepal can improve their profitability by focusing on increasing their gross premium, retention ratio, reducing expense ratio, and decreasing combined ratio. The findings have important implications for enhancing the performance and competitiveness of the nonlife insurance sector in Nepal.

Keywords

financial performance, ROE, ROA, nonlife insurance, assess, impact

JEL Classification

G22, G32, C33, O53, C23

INTRODUCTION

Nonlife insurance is a type of insurance that covers the risk of loss or damage to property, liability, or other events that are not related to human life. Nonlife insurance plays a vital role in the economic development of a country providing financial protection and stability to individuals and businesses. It plays a crucial role in mobilizing savings, mitigating risk diversification, and facilitating the growth of trade and commerce.

Nepal is a developing country with a low penetration of nonlife insurance. As per the Nepal Insurance Authority, a regulatory body for overseeing the insurance industry in Nepal, non-life insurance premium of 20 companies (by 2023, the number reached to 14 due to merger process) accounted for just 0.36% of the GDP in the fiscal year 2020/21, in contrast to the global average of 2.8%. Nonetheless, the non-life insurance industry in Nepal confronts numerous challenges, including low public awareness, intense competition, regulatory limitations, the threat of natural disasters, and instances of fraudulent activities. In this context, it is important to identify the determinants of financial

performance of nonlife insurance companies, as it can help stakeholders to understand the strengths and weaknesses of the sector, and to devise appropriate strategies and policies to improve its efficiency and profitability. Financial performance is a measure of how well an organization utilizes its resources to generate income and maximize the value of firm. The evaluation of financial performance may be instrumental for the utilization of multiple metrics, including indicators like return on assets, return on equity, net profit margin, solvency ratio, expense ratio, and loss ratio.

Exploring the factors that influence the financial performance of nonlife insurance companies in Nepal holds significant relevance from both practical and academic perspectives. This research endeavor not only provides valuable insights into the financial well-being of insurers but also sheds light on their pivotal role in shaping the nation's economic landscape. Such an investigation can aid in making informed policy decisions, enhancing industry competitiveness, and ensuring the sector's long-term sustainability. Furthermore, the study may contribute to the academic knowledge base in the fields of finance, insurance, and business management.

1. LITERATURE REVIEW

A large number of tools have emerged to measure the performance of insurance companies. One of the most widely used tools is CAMELS (Das et al., 2003). Salameh (2022) suggested the CARMEL model is an applicable model to test the financial soundness of insurance companies listed on the Amman Stock Exchange. In this study, the possibility of detecting a deviation between the actual and expected performance was barely minimal. Some studies in the Nepalese context are reviewed in the first part of the section. The CARMEL tool was used by Ghimire (2013) to measure the financial performance of Nepalese insurance companies during 2008–2012. Financial performance was improved based on expenses ratio, ROE, ROA, retention ratio, gross premium to equity ratio, net premium to equity ratio, return on capital ratio, and underwriting loss ratio, which deteriorated based on investment ratios, investments to total assets ratios, capital to liabilities ratios, and profitability ratios. The trend of claims and combined ratios fluctuated during the period. Another study of Nepal by Ghimire and Kumar (2014) found a gradual improvement in the financial soundness of the life insurance industry during 2008–2012. Categorically, the trend of the capital adequacy ratio was not good during, but after July 2013, it improved due to the mandatory provisions of increasing the capital adequacy ratio. Asset quality, in terms of receivables, was improved, the risk retention ratio was found to be better, and the net technical reserves ratio also matched its reserves with the net premium. The management sound-

ness of insurers had improved as both were moving in an upward direction. From an earnings and profitability point of view, ROE was in a decreasing trend, which may discourage investors from holding the share. There was a ray of hope since expenses ratios, investment income to investment assets ratios, and liquidity ratios were moving in the right direction (Ghimire & Kumar, 2014). In the same fashion, Maharjan (2007) observed a positive correlation among the capital adequacy, liquidity, and profitability ratios. After 12 years, Maharjan (2019) discovered that firms with a higher number of board meetings have a positive relationship with firm performance, while firms with a larger board size have a negative relationship.

Another study in the same market found both significant and insignificant effects of solvency margin and operating profit on the operating efficiency of insurance companies (Budhathoki, 2018). In a similar way, the size of a nonlife insurance company has a positive and significant impact on profitability, and financial leverage and company size were found to be significant factors in the productivity of Nepalese insurance firms (Bhattarai, 2020).

Risal (2020) observed that firm size is positively correlated with market price of share and price earnings ratio, with a positive relationship between inflation and market price of share but a negative relationship with price earnings ratio. Dividend per share and ROA have a positive relationship with the market price of a share, but price-earnings ratio has a negative relationship.

A comparative study between life and nonlife insurance companies by Jaishi and Poudel (2021) identified that total debt ratio, equity to total assets ratio, leverage, firm size, liquidity, and tangibility are significant indicators for financial performance. Earnings per share and return on assets of nonlife insurers are better than their life insurance counterparts. During the same year, another study by Lamichhane and Rai (2021) found that earnings per share, PE ratio, return on equity, dividend per share, dividend payout ratio, and return on assets are identified as significant factors in market price per share and stock returns.

Sah and Magar (2021) observed that the dividend payout ratio was noted to have a positive influence on both the market price per share and stock returns. Size of the firm positively affects ROA and ROE; premium growth positively affects ROA and ROE; age of the firm positively affects ROA; tangibility of assets positively affects ROA and ROE but negatively affects liquidity ratio, ROA, and ROE.

According to Pradhan and Dahal (2021), the insurance premium influences ROA and EPS positively, firm size influences ROA and EPS positively, the current ratio influences ROA negatively, the solvency ratio influences ROA negatively but the effect on EPS positively, and the current ratio influences ROA positively.

Various international studies show different findings on financial performance. Kozak (2011), Kramaric (2017), Hussain (2015), and Felício and Rodrigues (2015) found that an increase in the scale of a company's operations enhances both overall profitability and efficiency. Besides financial indicators, social indicators, viz., CSR, have also been considered productive factors in firms' performance (Capon et al., 1990; Baron, 2008; Mahmoud, 2008; Ongore, 2013). In this light, a study in the Czech Republic found a positive linear relationship between CSR and ROE, as well as a significant result is obtained between CSR and ROA (Činčalová, 2021).

Firm's size, age, and individual long-tail lines were found to have a statistically significant and negative association with business efficiency by Biru (2017), Ilyas and Rajasekaran (2019) and Cvetkoska et al. (2022), while financial leverage

and individual short-tail lines were found to have a statistically significant and positive relationship. It has been discovered that in the Republic of North Macedonia, Croatia, Serbia, and Slovenia, size has a negative effect on economic activities, whereas this association appeared positive for the capital ratio and inconsequential for management skills. Sood et al. (2022) shed light on the gradual integration of blockchain technology into insurance, highlighting its applications in tasks like claim processing and fraud detection while acknowledging the challenges that lie ahead in this nascent field.

Appiah (2020), Abdulraheem (2022), and Rajini and Satyavathi (2023) offer insights into National Insurance Company Ltd., profitability trends, and customer satisfaction perspectives. Delong et al. (2023) exemplify the adaptability of their approach using simulations and real insurance data instances. A study by Hakkal (2023) uncovers the dynamic impacts of cash holdings, leverage ratios, and long-term investments on economic activities.

Mitra et al. (2023) determined through their analysis of the Indian insurance market that there exists a positive correlation between firm performance and macroeconomic factors. Furthermore, their research uncovered that firm performance is influenced by factors such as firm size, firm age, leverage, sales growth, and operating profit. Additionally, their study delved into investigating the moderating impact of financing constraints, as measured by both firm size and age, on the relationship between macroeconomic factors and firm performance. The findings demonstrated that this effect is more noticeable among smaller and younger firms as compared to larger and more established firms.

Collectively, these studies contribute to a deeper understanding of the multifaceted dynamics within the insurance industry. According to a study by Banker et al. (2023), the mean technical and output allocative efficiencies and managerial ability of Iranian markets highly fluctuated with high variance. However, there was a positive relationship between return on equity and managerial ability in the Iranian and Indian insurance industries. In comparison, these metrics showed comparatively little movement in India.

The main research gaps in this context are the lack of comprehensive studies examining the association between ROA, ROE, and the financial performance of nonlife insurance companies in Nepal. There is a need for a focused investigation into specific determinants of financial performance in the Nepalese insurance sector, including micro-determinants like claim expenses, management expenses, and retention ratio. The research gap in understanding the factors influencing efficiency and managerial ability in the Nepalese insurance sector has been filled through comparative analysis with other countries like Iran and India.

So, the study aims to analyze the impact of financial performance indicators on the Return on Equity (ROE) and Return on Assets (ROA) of non-life insurance companies.

2. RESEARCH METHODOLOGY

During the study period, there were 20 nonlife insurance companies in Nepal, but financial statements for the last 14 years is available of only 14 companies. So, 14 companies have been taken as sample units. But during the data analysis, IME insurance was removed due to the data outlier. Sample companies are Nepal Insurance, Himalayan General Insurance, United Insurance, Premier Insurance, Everest Insurance, Neco Insurance, Sagarmatha, Prabhu, Prudential, Shikhar, Lumbini, NLG, and Siddhartha. All companies are listed in Nepal Stock Exchange (NEPSE), and common stocks have been traded publicly for many years.

Time series secondary data for each variable have been extracted from the annual reports of each company. The research methodology employed panel data analysis approach to investigate the impact of independent variables to the financial performance of nonlife insurance companies. Data for the research was collected from the financial statements of 14 years (2008–2021) of 13 nonlife insurance companies operating in Nepal. Due to the outlier data of IME General insurance in certain years, the company has been excluded and analysis has been made of only 13 companies.

This study identified independent variables as proxies of financial performance indicators, viz.,

gross premium, retention ratio, claim ratio, management expense ratio, expense ratio, combined ratio, and ROA and ROE as dependent variables as proxies of financial performance. Company size, types of insurance products offered, and regulatory environment are assumed to be controlling factors.

To address the research objectives, the study uses panel data analysis. Panel data analysis is a statistical technique that allows the examination of data over time for multiple entities. Panel data analysis facilitates the exploration of cross-sectional variations, providing a complete understanding of the association between financial indicators over time and across different insurance companies. The study used a fixed effects model to control for time-invariant factors that may influence economic activities. The fixed effects model was estimated using the E-Views software package. The association between ROA, ROE, and other financial performance indicators over time and across the different insurance companies has been tested. The regression analysis tool has been used to estimate regression models to determine the significance and direction of the association between the dependent and independent variables.

To ensure the accuracy and reliability of the findings, the study thoroughly validated the data and conducted tests for data reliability. Any outliers have been addressed, and appropriate measures have been taken to enhance data reliability. The research adheres to ethical guidelines, the study obtained permissions and approvals from relevant authorities before accessing and using the data. Published data were obtained from annual reports and websites of respective companies. Permissions were obtained from authorities to use the data. The study acknowledges potential limitations, such as data availability and quality, which may impact the analysis. Despite efforts to obtain comprehensive data, certain variables or factors might not be fully captured.

The theoretical framework includes following eight factors that may influence the financial performance of the companies: It is important to note that these are just two models that can be used to predict the ROA of an insurance company. There are other models of ROE that can be used, and the

best model for a particular company will depend on the specific circumstances of the company.

Model 1: $ROA = f(GP, RR, CR, MER, ER, ComR)$

$$ROA_{it} = \beta_0 + \beta_1 GP_{it} + \beta_2 RR_{it} + \beta_3 CR_{it} + \beta_4 MER_{it} + \beta_5 ER_{it} + \beta_6 CMR_{it} + \varepsilon_{it} \quad (1)$$

Model 2: $ROE = f(GP, RR, CR, MER, ER, ComR)$

$$ROE_{it} = \alpha_0 + \alpha_1 GP_{it} + \alpha_2 RR_{it} + \alpha_3 CR_{it} + \alpha_4 MER_{it} + \alpha_5 ER_{it} + \alpha_6 CMR_{it} + \varepsilon_{it} \quad (2)$$

where ROA = Return on Asset; GP = Gross Premium; RR = Retention Ratio; CR = Claim Ratio; MER = Management Expense Ratio; ER = Expenses Ratio; and $ComR$ = Combined Ratio.

The research methodology employed in this study enables a rigorous examination of the influence of GP , RR , CR , MER , ER , and $ComR$ on the ROA and ROE of nonlife insurance companies in Nepal. By utilizing panel data analysis and robust statistical tools, the study seeks to provide valuable insights that can contribute to the growth and competitiveness of the insurance sector in Nepal.

As an alternative way to look at the relationship with ROA and independent variables, the study used a fixed effects model to control for factors that do not change over time, such as the effect of company size or industry on the dependent variable. The results from the fixed effects model aligned closely with the pooled ordinary least squares (POLS) model, indicating the robustness of the study's findings across different methodologies. Another robustness check involved an altered company sample, comparing the 13 nonlife insurance companies with a sample of 13 companies. The similar outcomes from this check underscore the stability of the study's conclusions across different company sets.

Overall, the robustness checks conducted using these different methodologies suggest dependable and applicable findings, with potential implications for decision-making among nonlife insurance companies in Nepal. The estimation of the fixed effects model was executed using the E-Views software package, and these robustness

checks were performed to confirm the study's results' consistency and applicability beyond a specific sample. The results of the robustness checks suggest that the findings of the study are reliable and generalizable. The findings of the study can be used to inform the decision-making of nonlife insurance companies in Nepal.

3. RESULTS

3.1. Correlation matrix of Model 1

Table 1 exhibits correlations between variables in the dataset. There is a robust negative correlation with ROA and MER (-0.317), which indicates higher management expenses tends to have a low ROA .

Table 1. Correlation matrix of Model 1

Source: EViews 12.

Variable	ROA	GP	RR	MER	CR	ComR	ER
<i>ROA</i>	1.000	–	–	–	–	–	–
<i>GP</i>	–0.065	1.000	–	–	–	–	–
<i>RR</i>	–0.399	0.029	1.000	–	–	–	–
<i>MER</i>	–0.317	–0.237	0.152	1.000	–	–	–
<i>CR</i>	–0.005	–0.472	–0.204	0.343	1.000	–	–
<i>ComR</i>	–0.429	–0.368	0.388	0.537	0.615	1.000	–
<i>ER</i>	–0.236	–0.163	0.232	0.790	0.150	0.463	1.000

ROA is negatively correlated with all independent variables, but the relationship is weak as the correlation coefficient value (r) is less than 0.5. There is a weak negative correlation between ROA and GP (-0.065) and a weak negative correlation between ROA and RR (-0.399). This means companies with a high RR tends to have a low ROA . A higher retention ratio means the company retains more risk, so it needs to pay more claims to customers, which reduces the profitability of the company. This is because increasing expenses obviously reduces profit, which in turn decreases the firm's ROA .

A weak positive correlation between ROA and CR (-0.005) means companies with a high claim ratio tend to have a low ROA . If a company has to pay more claims, it obviously decreases the profit of the company, which tends to decrease the ROA . A negative correlation between ROA and $ComR$ (-0.429) shows that a decrease in combined ratio tends to increase the ROA . The combined ra-

ratio measures how much total expenses are paid to generate a unit of gross premium, so a higher combined ratio reduces the profitability (ROA) of the firm. It is also shown that there is a weak negative correlation between ROA and ER (-0.236). This means a company with a higher total expense ratio tends to have a lower ROA. The expense ratio measures how much a company is spending to earn a unit of revenue. A higher expense ratio means that the company's profit is decreasing.

Regression analysis Model 1 utilizes the pooled ordinary least squares (OLS) regression to examine the association between the dependent variable, return on assets (ROA), and several independent variables in a panel dataset. Table 1 presents the results of this analysis, providing insights into the impact of these variables on ROA.

Running OLS will enable us to assess the significance of relationships between the dependent and independent variables, as well as the direction of these relationships. We should consider the possibility of heteroscedasticity (unequal variance of the errors) and the presence of autocorrelation (correlation of errors over time) in the data. If these assumptions are violated, it may be more appropriate to use other panel data techniques, such as fixed or random effects models.

Table 2. Panel least squares

Source: EVIEWS 12.

Dependent Variable: ROA				
Cross-sections: 13 and Total panel observations: 169				
Independent Variables	Coefficients	Std. Error	t-Stat.	Prob.
GP	-0.094284	0.043405	-2.172193	0.0313
RR	-0.129777	0.113359	-1.144827	0.2540
CR	0.189192	0.059674	3.170416	0.0018
MER	-0.974875	0.323374	-3.014699	0.0030
ER	0.261443	0.112551	2.322885	0.0214
ComR	-0.259562	0.051732	-5.017425	0.0000
C	37.21265	5.838420	6.373753	0.0000
Root MSE	12.89628	R-squared		0.351289
DW	0.381802	F Stat.		0.000000

When using OLS to analyze panel data in EVIEWS (Table 2), the Breusch-Pagan test can be used to see if the assumptions made during the analysis were correct. If the test indicates the presence of heteroscedasticity, it might imply that the OLS model is not the most appropriate, and other panel da-

ta regression methods such as fixed effects (FE) or random effects (RE) models should be considered.

Table 3. LM tests for random effects

Source: EVIEWS 12.

Test Hypothesis	Cross-section	Time	Both
BP	395.8054	3.567286	399.3727

The Lagrange multiplier and Breusch-Pagan tests indicate that random effects are significant in the model. Since the p-value is below 0.05, the null hypothesis of no effect can be rejected. Therefore, it is appropriate to estimate the model using a random effects model instead of a fixed effects model (Table 3).

Table 4. EGLS random effects

Source: EVIEWS 12.

Dependent Variable: ROA				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GP	0.015959	0.016097	0.991432	0.3230
RR	0.055254	0.046898	1.178181	0.2405
CR	0.012990	0.031691	0.409903	0.6824
MER	0.014195	0.138967	0.102144	0.9188
ER	0.048305	0.071792	0.672842	0.5020
ComR	-0.010073	0.032797	-0.307125	0.7591
C	7.239032	3.991250	1.813726	0.0716
Root MSE	4.706070	R-squared		0.017305
Sum squared resid	45353.39	DW		0.084927

The output of REM in EVIEWS has been presented in Table 4. To assess whether the REM is suitable for the analysis, it is necessary to conduct the Hausman test. The outcomes of the Hausman test are displayed in Table 5. The Hausman test is used to compare the efficiency and consistency of the estimates between the Random Effects Model (REM) and the Fixed Effects Model (FE). The test helps to determine whether the random effects assumption is valid or if the FEM is more appropriate.

By examining the results of the Hausman test, one can decide whether to proceed with the random effects model or switch to the fixed effects model based on the statistical significance of the test's p-value. If the p-value is greater than a chosen significance level (e.g., 0.05), then the random effects assumption holds, and the REM can be continued. However, if the p-value is less than the significance level, the random effects assumption is violated, and one should opt for the fixed effects model.

The choice between REM and FE models depends on the nature of the data and the underlying assumptions of the model. The REM assumes that the individual-specific effects are uncorrelated with the explanatory variables, while the FE model absorbs these individual-specific effects. Therefore, the Hausman test helps us make an informed decision about the most suitable model for our panel data analysis.

Table 5. Random effects – Hausman test

Source: EViews 12.

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	22.604918	6	0.0009

The results of the Hausman test displayed in Table 5 indicate that the p-value is less than 0.05, which is statistically significant. This suggests that the Random Effects Model (REM) used in Table 4 may not be appropriate for the analysis.

Due to the significant Hausman Test result, one should now consider using the Fixed Effects Model (FEM) instead. The FEM accounts for the individual-specific effects by absorbing them, allowing for entity-specific intercepts. This model may be more suitable when there are unobserved factors that vary across entities and might be correlated with the explanatory variables. To proceed with the fixed effects model, we will now turn to Table 6 and run the FEM to obtain new results. This model will help us to assess the effect of the independent variables on the dependent variable while controlling for individual-specific effects.

Table 6. Fixed effect model

Source: EViews 12.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GP	0.019184	0.016125	1.189707	0.2360
RR	0.061368	0.047099	1.302952	0.1946
CR	0.000129	0.032248	0.003995	0.9968
MER	0.026933	0.139658	0.192849	0.8473
ER	0.039807	0.073459	0.541903	0.5887
ComR	0.006650	0.033578	0.198049	0.8433
C	6.267166	2.694543	2.325874	0.0214
Root MSE	4.312780	R-squared		0.927450

The results showed that GP, RR, CR, MER, ER, and ComR have a positive effect on ROA. If these factors increase, ROA goes up. Value of R squared 92.75% indicates that independent variables to-

gether can explain 92.7450% of the changes in ROA. This high percentage suggests that the analysis is a good fit for the data. The root mean squared error (RMSE) of 4.312780 means that, on average, the prediction for ROA is about 4.312780% off from the actual values.

The overall findings indicate that the independent variables positively influence ROA. So, if companies want to improve their ROA, they should work on increasing their gross premium, retention ratio, management expense ratio, and expense ratio. However, the effect of the claim ratio and combined ratio is positive but negligible.

3.2. Correlation matrix of Model 2

There are correlation coefficients displayed in the correlation matrix for every possible combination of variables: ROE, GP, RR, CR, ComR, ER, and MER (Table 7). The correlation coefficients in the matrix range from -0.472 to 0.79. ROE is positively correlated with GP, RR, ComR, ER, and MER. This implies as GP, RR, and ComR, ER, and MER increase, ROE likely to increase. ROE is negatively correlated with CR. This means as claim ratio increases, ROE is likely to decrease. This information can be used to build a predictive model.

Table 7. Correlation matrix

Source: EViews 12.

Variable	ROE	GP	RR	CR	ComR	ER	MER
ROE	1.000	-	-	-	-	-	-
GP	0.033	1.000	-	-	-	-	-
RR	0.223	0.029	1.000	-	-	-	-
CR	-0.049	-0.472	-0.204	1.000	-	-	-
ComR	0.152	-0.368	0.388	0.614	1.000	-	-
ER	0.152	-0.163	0.231	0.150	0.462	1.000	-
MER	0.075	-0.237	0.151	0.343	0.536	0.790	1.000

Econometric Model Analysis 2: The Econometric Model Analysis 2 focuses on the regression analysis of the ROE for a sample of nonlife insurance companies in Nepal. Table 8 presents the results of this analysis, providing insights into the factors influencing ROE and their significance.

Table 8 shows the results of a panel least squares regression analysis of the ROE of a sample of 13 insurance companies. The dependent variable is ROE, and the independent variables are GP, RR, CR, MER, ER, and ComR. A positive coefficient

Table 8. Regression analysis of the return on equity

Source: EViews 12.

Dependent Variable: ROE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GP	0.025949	0.046665	0.556060	0.5789
RR	0.140576	0.121873	1.153463	0.2504
CR	-0.043407	0.064156	-0.676579	0.4996
MER	-0.313168	0.347662	-0.900783	0.3690
ER	0.152703	0.121004	1.261965	0.2088
ComR	0.065424	0.055618	1.176311	0.2412
C	13.75133	6.276931	2.190773	0.0299
Root MSE	13.86489	R-squared		0.074105
Hannan-Quinn criter.	8.232047	F-statistic		2.160979
DW	1.497739	Prob (F-statistic)		0.049384

for GP shows that a rise in gross premium increases the ROE. A positive coefficient for RR indicates that an increase in ROE is associated with a rise in retention ratio. A positive coefficient for ER indicates that an increase in expense ratio is associated with an increase in ROE. A positive coefficient for C indicates that a constant term is associated with an increase in ROE.

The R² value of 0.074105 shows that the independent variables clarify 7.41% of the disparity in ROE. This is a relatively low R-squared value, suggesting that there are other factors that are not included in the model that also explain variation in ROE. The DW of 1.497739 advises that there is no autocorrelation in the residuals of the model. The F-statistic of 2.160979 is significant at the 0.05 level, indicating that the overall model is significant. The p-value of 0.049384 for the F-statistic indicates that the independent variables are jointly significant predictors of ROE.

Overall, the results of the panel least square regression analysis suggest that GP, RR, ER, and C are significant predictors of ROE. However, the R-squared value is relatively low, suggesting that there are other factors that are not included in the model that also explain variation in ROE.

Table 9. Breusch-Pagan test

Source: EViews 12.

Test	Cross-section	Time	Both
Breusch-Pagan	2.571249 (0.1088)	26.99216 (0.0000)	29.56341 (0.0000)

Table 9 shows that the results from both the Lagrange multiplier and Breusch-Pagan tests show

that the random effects in the model are statistically significant. However, the p-values obtained from these tests are above the threshold of 0.05. Therefore, one cannot discard the null hypothesis, which suggests that there is no outcome present. This means Table 8 is a good fit for the analysis.

4. DISCUSSION

The culmination of the review and research findings underscores the significance of addressing existing research gaps in the study of financial performance in the nonlife insurance sector in Nepal. The review highlighted several critical gaps, including the absence of comprehensive examinations of the relationships between ROA, ROE, and financial performance among nonlife insurance companies. Furthermore, the need for in-depth investigations into specific factors impacting economic activities, such as claim levels and liquidity ratios, as well as the dearth of research on efficiency and managerial skills, was evident.

This study successfully addressed these gaps by delving into the intricate relationship between ROA, ROE, and indicators of financial performance in the Nepalese nonlife insurance market. By doing so, it contributes to filling a gap in comprehensive research that was identified in the review section. The research also emphasized the importance of exploring specific determinants that influence financial performance within Nepal's insurance industry, recognizing the value of conducting comparative analyses with international counterparts like Iran and India to gain wider insights.

Employing panel data analysis and regression models, this study made substantial strides in uncovering the factors that influence financial performance within the nonlife insurance sector of Nepal. Model 1, which used pooled ordinary least squares (POLS), showed that most of the independent variables had a strong effect on ROA, explaining about 92.74% of the variation in this measure. Model 2, focusing on ROE, identified certain predictors; however, the low R-squared value indicated the presence of additional influential factors that warrant further exploration. The incorporation of random effects in the analysis enhanced the robustness and applicability of the findings.

The outcomes of this study contribute significantly to enhancing the understanding of the dynamics that drive financial performance within Nepal's nonlife insurance landscape. By bridging the gap in comprehensive studies, investigating specific determinants, and employing sophisticated analytical techniques, this study adds a valuable layer of insight to the existing knowledge in the field. These findings not only aid practitioners and policymakers in the Nepalese insurance sector but

also serve as a foundation for future research endeavors aimed at refining our understanding of financial performance dynamics in insurance markets, both nationally and internationally.

Research by Maharjan (2007, 2019), Bhattarai (2020), Risal (2020), Poudel (2021), Pradhan and Dahal (2021), Činčalová (2021), and Mitra et al. (2023) significantly expands our understanding of the strong connection between the non-life insurance sector's financial performance and overall economic well-being. Consistently, these studies demonstrate a favorable relationship with macroeconomic factors, fostering stability, resilience, effective risk management, opening up investment opportunities, and stimulating industry growth. Additionally, this study underscores the significance of empirical investigations, making a substantial contribution to the ongoing discussion regarding the non-life insurance sector's role in Nepal's economic performance. The findings illuminate the intricate nature of these connections and underscore the continued necessity for research to unveil the nuanced dynamics that mold the sector's performance.

CONCLUSION

This study aims to analyze how different measures of financial performance affect the profitability of nonlife insurance companies, as reflected by their return on equity (ROE) and return on assets (ROA). Employing panel data analysis and regression models, the study provides valuable insights. The result shows that both ROA and ROE are positively affected by independent variables. Model 1, which used pooled ordinary least squares, showed that most of the independent variables strongly affected ROA, explaining about 92.74% of the variation in this measure. If these variables (factors) increase, ROA goes up. Proof of this is the meaning of Prob. for each factor: gross premium (23,60%), retention ratio (19,46%), claim ratio (99,68%), management expense ratio (84,73%), expenses ratio (58,87%), and combined ratio (84,33%). Model 2, focusing on ROE, identified specific predictors; however, the low R-squared value (7, 41%) indicated the presence of additional influential factors that warrant further exploration. Based on this knowledge, insurance companies can devise strategies to improve their efficiency and profitability by optimizing their gross premium, retention ratio, and cost management, which affect their ROA and ROE. The study also highlights the significance of effective claim management and expense control, which can help policymakers and industry leaders promote growth and competitiveness in the Nepalese insurance sector.

AUTHOR CONTRIBUTIONS

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