Operational Performance of Select Private Sector Health Insurance Companies in India

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ABSTRACT

The health insurance sector in India has witnessed a remarkable journey spanning over five decades, evolving into one of the largest and most significant industries in the country. Its origin can be traced back to the post-independence era, a time characterized by high mortality rates, inadequate healthcare infrastructure, and limited resources. Recognizing the pressing need to address these challenges, the government introduced health insurance schemes aimed at making healthcare more accessible and affordable to the Indian population. This initiative laid the foundation for a sector that has grown exponentially over the years.

The study explores the role of operational performance metrics in driving profitability among select private health insurance companies in India. Utilizing a panel data approach, the research analyses key metrics, including Net Claims Ratio, Operational Expenses Ratio, Claim Settlement Ratio, Firm Size, and Net Premium Retention Ratio, over the period 2013–2022. The study finds that several operational factors shape the profitability of private health insurance companies in India. Effective claims management and prompt settlements are essential, highlighting the role of streamlined claim processing in boosting profitability. High operational costs and firm size negatively impact earnings, suggesting that cost control and operational efficiency are crucial for sustainable profits. Efficient management of operational expenses relative to premiums further boosts earnings, as maintaining adequate liquidity to meet obligations and capture investment opportunities. Insights from this research can guide strategic decision-making and enhance the operational health of the Indian health insurance sector.

Key Words: Private Health Insurance Companies, Panel Regression, Operational Performance

INTRODUCTION

Insurance is a mechanism designed to protect individuals and entities from financial losses arising from unforeseen events. At its core, the concept of insurance is built on the principle of risk pooling, where a group of people contributes to a common fund to safeguard against potential risks. This collective arrangement ensures that the financial impact of a loss is distributed among many, making it manageable for any single individual or entity. By providing security and stability, insurance plays a vital role in both personal and economic contexts, enabling individuals to pursue opportunities and businesses to operate with confidence.

The health insurance sector in India has witnessed a remarkable journey spanning over five decades, evolving into one of the largest and most significant industries in the country. Its origin can be traced back to the post-independence era, a time characterized by high mortality rates, inadequate healthcare infrastructure, and limited resources. Recognizing the pressing need to address these challenges, the government introduced health insurance schemes aimed at making healthcare more accessible and affordable to the Indian population. This initiative laid the foundation for a sector that has grown exponentially over the years.

The liberalization of the Indian economy in the 1990s marked a turning point for the health insurance sector. It opened the doors for private players to enter the market, introducing innovative products and expanding the scope of health insurance beyond basic coverage. The entry of private insurers brought about competition,

leading to improved service quality, broader coverage options, and increased awareness about the importance of health insurance. Additionally, public-private partnerships emerged as a key strategy to extend the reach of health insurance to rural and underserved areas.

Despite the significant development in the health insurance sector, there is still concrete progress that needs to be made. Up till now, only about 40% of the Indian population has health insurance. The onset of the COVID-19 pandemic fuelled this number, as many citizens rushed to buy health insurance to cover COVID-19 treatment costs. However, the dark truth is that only the upper and middle classes of India can afford to buy health insurance.

REVIEW OF LITERATURE

Vadakam Sreeshailam (2022)[91] The study conducted a comparative analysis of public and private sector health insurance companies in India. The study revealed that, due to the highly regulated nature of the health insurance industry in the country, there were no statistically significant differences in the overall financial performance between the two sectors. However, an exception was observed in the metric of Return on Equity (ROE), where a notable difference was identified. This finding highlights the impact of regulatory policies on standardizing financial performance across sectors. The study underscores the importance of further research into sector-specific factors influencing profitability and operational efficiency.

Geha Nath Khanal et al., (2023)[92] Despite political commitments to reduce out-of-pocket healthcare expenses through Nepal's National Health Insurance Program (NHIP), implementation challenges persist, marked by low enrollment and high dropout rates. This study examines the organizational and systemic obstacles hindering NHIP's performance using a structured narrative review and political economy analysis. Challenges identified include inadequate reimbursement, bureaucratic dominance of providers over purchasers, weak monitoring, and leadership deficiencies. Beneficiaries faced compromised care quality, leading to high dropout rates. The study recommends institutional reforms, such as digitalizing claims, expanding coverage, introducing cost-sharing models, and leveraging external support to improve financial sustainability and implementation.

Samir Garg et al., (2023)[93] In India, institutional deliveries have been promoted to reduce maternal and neonatal mortality, yet these often result in significant out-of-pocket expenditures (OOPE) and financial distress for families. To mitigate these financial burdens, publicly funded health insurance (PFHI) schemes have been implemented, including the Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (PMJAY) launched in 2018. This study assesses the impact of PFHI on OOPE and distress financing for both caesarean and non-caesarean deliveries post-PMJAY implementation. Analyzing data from the National Family Health Survey (NFHS-5) 2019-21, the study found no significant reduction in OOPE or distress financing associated with PFHI coverage. Private hospitals incurred five times higher OOPE than public hospitals, with a higher prevalence of caesarean sections in private facilities. The study concludes that private hospital utilization is strongly linked to increased OOPE and financial distress.

Shweta Jaiswal et al (2023)[94] This study evaluates the financial performance of select private health insurance companies in India, focusing on key financial metrics such as profitability, solvency, and growth indicators. The research utilizes data from financial statements of various insurance companies over a specified period, applying ratio analysis and comparative evaluation techniques to assess their performance. The study aims to provide insights into the financial health of the private health insurance sector in India, highlighting areas of strength and potential challenges. The findings indicate variability in performance among the selected companies, with some exhibiting strong financial resilience while others face challenges related to profitability and growth.

Research Gap

Despite extensive research on health insurance, limited studies specifically address the analysis of operational performance of Private sector Health insurance companies, particularly in the Indian context. Most research focuses on each sector independently or examines broader market trends, such as premium growth and policy uptake. These gaps leave unexplored how operational efficiencies, financial stability, profitability, claim settlement rates, and customer service standards. Public and private health insurance providers may respond

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differently to regulatory changes, cost pressures, and consumer demands. Current literature lacks a comprehensive and recent empirical analysis of how operational metrics impact on Profitability.

Statement Of The Problem

The health insurance sector in India has witnessed significant growth, yet it faces several core challenges that affect its operational and financial sustainability, particularly among public and private insurers. Private sector health insurance companies often struggle with issues related to claim settlement delays, high claim ratios, and operational inefficiencies, impacting customer satisfaction and profitability.

Research Questions

The following are the research question framed based on the literature gap.

1. What are the operational performance indicators of select private health insurance companies in India ?

Objectives Of The Study

Keeping in view the importance of the study, the following objective was formulated.

1. To analyze the Operational Performance of select private health insurance companies in India.

Hypotheses Of The Study

The study has framed the following Null Hypothesis based on the objective.

2. **H_0:** There is no effect of Operational Indicators on the Financial Performance of the select Public sector Health Insurance Companies in India.

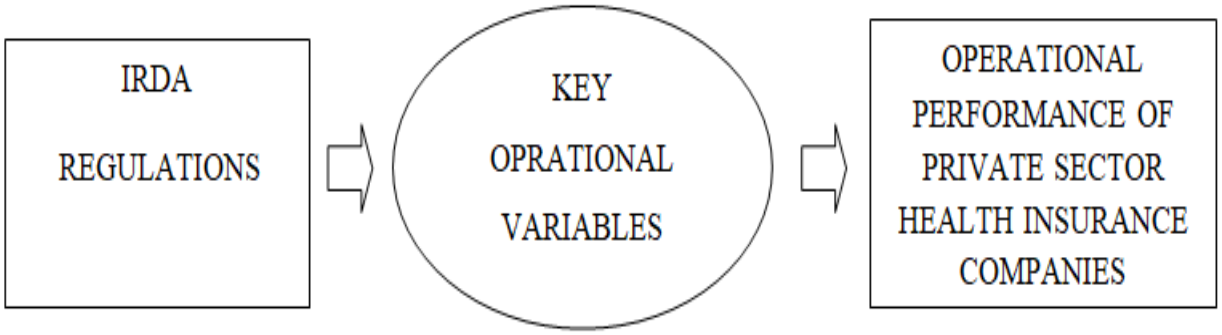
RESEARCH METHODOLOGY

This study adopts a quantitative research approach to examine the objectives. It utilizes secondary data spanning the period from 2013-14 to 2022-23, focusing primarily on analyzing the operational performance of select private health insurance companies in India. Operational efficiency is measured through indicators such as Net Claims, Claim Settlement, and Firm Size, employing panel data to offer insights into their relative performance over the selected timeframe.

Conceptual Frame work

The study framed the following conceptual frame work keeping in view of objectives. The role of operational efficiency ratios on the financial performance of the Private Health Insurance companies.

Figure – 1.1 Conceptual Frame work



Source: Compiled by the Researcher

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The study utilizes secondary data collected from the annual reports of selected Private health insurance companies, covering the period from 2013-14 to 2022-23. Key operational efficiency metrics were gathered to assess the companies' performance. Hypotheses were framed to examine the impact of operational ratios on the financial performance of Private insurers, offering insights into their respective strengths and weaknesses in the health insurance market.

Methods of data Collection: Secondary data was collected from a variety of sources includes Annual reports, Journals, Research reports, Unpublished works.

Data Sources: This research necessitates the collection of information from the operational efficiency ratios data from Annual Reports

Scope and Period of the Study: The study collected secondary data from 2013-14 to 2022-23, focusing on information post the companies' enactment in 2013. This data spans operational performance indicators. The analysis includes three Private sector health insurance companies in India.

Selection of Sampling Units: The study focuses on Private sector health insurance companies. It selects the top three companies from Private sector based on their premium collections. The following are the considered sample units under the Private health insurance companies.

Private Sector Health Insurance Companies

- Niva Bupa Health Insurance Company Ltd.
- Manipal Cigna Health Insurance Company Ltd.
- Star Health and Allied Insurance Company Ltd.

Key Operational Efficiency Variables

The study considered the operational efficiency ratios of the selected Private sector insurance companies. They are Net Earnings Ratio, Net Claims, Operational Expenses, Claim Settlement Ratio and Firm Size.

Statistical Tools Used

To analyze and interpret the data effectively, various statistical tools are employed to ensure robustness and accuracy in the results. These tools help assess the relationships between variables, the distribution of data, and the reliability of findings. The statistical tools used in this study include:

Stationary test: Stationarity tests are essential in panel data analysis to ensure that variables do not exhibit unit roots, which can lead to spurious results. Several tests are commonly applied in panel datasets. The Levin, Lin, and Chu (LLC) t test* assumes a common unit root process across panels, providing a powerful test for stationarity with a null hypothesis that all panels contain a unit root. The Im, Pesaran, and Shin (IPS) W-stat test allows for individual unit root processes, making it more flexible by testing for stationarity across heterogeneous panels. The ADF-Fisher Chi-square and PP-Fisher Chi-square tests apply Augmented Dickey-Fuller and Phillips-Perron unit root testing, respectively, but combine p-values across cross-sections using Fisher's methodology. Both tests accommodate panel heterogeneity and test for unit roots with null hypotheses that all series contain a unit root, providing insights into individual and panel-wide stationarity across variables.

Descriptive Statistics: The descriptive statistics reveal key insights into the data across several performance indicators for public and private health insurance companies. The mean provides an average measure of performance, while the median indicates the central tendency, highlighting any deviations in the data. The maximum and minimum values capture the range of performance levels, showcasing the highest and lowest values observed. Standard deviation measures the dispersion, indicating variability in operational and financial metrics. Skewness assesses data symmetry, and kurtosis reveals the presence of extreme values. Lastly, the Jarque-Bera test checks for normality, assessing if the data follows a normal distribution.

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Bivariate Correlation: The study employed bivariate correlation analysis to examine the relationship between various operational and financial ratios and the dependent variable, Net Earnings Ratio. This analysis helps identify the strength and direction of associations between Net Earnings Ratio and each selected ratio, providing insights into how operational and financial metrics may impact profitability.

Panel Regression Analysis: Fixed and Random Effects

To analyze the impact of operational ratios on the financial performance of health insurance companies, panel regression models are suitable due to their ability to handle data across both cross-sections (different companies) and time (over several years). Panel regression captures variations across entities (health insurance companies) while considering time-specific influences. The general panel regression model can be represented as:

$$Yit=\alpha+\beta Xit+UitY$$

where:

- Yit : Dependent variable (e.g., Net Earnings Ratio) for entity iii at time t
- α: Intercept
- β: Coefficients for independent variables (operational and financial ratios)
- Xit: Independent variables (e.g., operational ratios such as Net Claims Ratio, Claim Settlement Ratio, and financial ratios)
- Uit: Error term

Fixed Effects Model (FEM) : The Fixed Effects Model assumes that individual characteristics of each company (that may affect performance) are time-invariant and specific to each entity. Thus, the model accounts for heterogeneity by removing these entity-specific effects. This approach estimates how variables change over time within each company. The fixed effects model can be represented as:

$$Yit=\alpha_i+\beta X_{it}+U_{it}Y$$

where α_i is an intercept that varies by entity, capturing all time-invariant differences among companies. FEM helps identify within-company effects by controlling for all individual-specific characteristics.

Random Effects Model (REM) : The Random Effects Model assumes that individual differences across entities are random and uncorrelated with the independent variables. This approach is preferable if entity-specific effects are assumed to be random and not related to the explanatory variables, making it more efficient for estimation. The REM equation is as follows:

$$Yit=\alpha+\beta Xit+\mu i+UitY$$

where μ_i is the entity-specific random effect, representing individual differences among companies.

Hausman Test : The Hausman test is used to determine the most appropriate model between fixed and random effects by checking if the unique errors ($\mu i\backslash mu\_i\mu i$) are correlated with the regressors. The null hypothesis states that the random effects model is preferred (i.e., no correlation). The test statistic is calculated as:

$$H=(\hat{\beta}_{RE}-\hat{\beta}_{FE})'[Var(\hat{\beta}_{RE}-\hat{\beta}_{FE})]^{-1}(\hat{\beta}_{RE}-\hat{\beta}_{FE})$$

where $\hat{\beta}_{RE}\backslash$ and $\hat{\beta}_{FE}$ are the coefficients from the random and fixed effects models, respectively. A significant result suggests that the fixed effects model is more appropriate.

Wald Test : The Wald test evaluates the joint significance of coefficients in the regression model. It tests whether the independent variables (operational and financial ratios) significantly impact the dependent variable (Net

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Earnings Ratio). The null hypothesis for the Wald test is that all coefficients are equal to zero (i.e., no significant impact). The Wald statistic is calculated as:

$W=\hat{\beta}'[Var(\hat{\beta})]^{-1}\hat{\beta}$

where β represents the estimated coefficients. A high value of the Wald statistic suggests that the explanatory variables significantly impact financial performance.

This approach using panel regression, the Hausman test, and the Wald test provides a robust framework for analyzing the influence of operational ratios on the financial performance of health insurance companies, helping to identify key drivers and enhance sector insights.

Limitations Of The Study

While this study provides valuable insights into the performance of Private sector health insurance companies, certain limitations may affect the comprehensiveness and accuracy of the findings. These limitations are outlined as follows:

1. Using secondary data may lead to limitations in scope and potential inaccuracies due to incomplete or inconsistent records.

2. The study period (2013-14 to 2022-23) may not capture recent trends or long-term regulatory impacts on health insurance companies.

3. Focusing on selected Private health insurance companies in India. The study not covering the all the Private health insurance companies.

4. The study's emphasis on quantitative analysis may overlook qualitative factors, such as management practices or customer satisfaction, that influence performance.

5. The operational ratios chosen may not fully encompass all aspects of a company's performance, potentially missing other influential metrics.

The present paper deals with an analysis of the operational performance of select Private sector health insurance companies in India, specifically Niva Bupa Health Insurance Company Ltd., Manipal Cigna Health Insurance Company Ltd., and Star Health and Allied Insurance Company Ltd. This paper examines key operational metrics like Net claims, Expenditure, and Claims settlement efficiency of CARAMEL ratios, using descriptive statistics, correlation analysis, and panel OLS regression to assess the influence on net profits.

The objective of the study is to analyse the Operational performance of select Private sector health insurance companies in India (Niva Bupa Health Insurance Company Ltd., Manipal Cigna Health Insurance Company Ltd., and Star Health and Allied Insurance Company Ltd.) The study focuses on evaluating key operational metrics such as net claims, operational expenditures, claims settlement efficiency, and company size through CARAMEL ratios.

To achieve this, the study employs descriptive statistics, correlation analysis, and panel Ordinary Least Squares (OLS) regression. The operational factors serve as independent variables, while the net profits ratio is treated as the dependent variable to assess the relationship and influence between these dimensions of performance.

Operational Performance Of Select Private Sector Health Insurance Companies.

The present paper analysed select private sector health insurance companies, specifically Niva Bupa Health Insurance, Manipal Cigna Health Insurance, and Star Health and Allied Insurance. This study employs descriptive statistics, correlation analysis, and panel OLS regression to examine the operational indicators, using the net profits ratio as the dependent variable to understand performance influences.

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The objective of the study is to analyse the operational performance of select Private sector health insurance companies in India (Niva Bupa Health Insurance, Manipal Cigna Health Insurance, and Star Health and Allied Insurance). The study focuses on evaluating key operational metrics such as net claims, operational expenditures, claims settlement efficiency, and company size, alongside financial performance indicators measured through CARAMEL ratios. To achieve this, the study employs descriptive statistics, correlation analysis, and panel Ordinary Least Squares (OLS) regression. The operational factors serve as independent variables, while the net profits ratio is treated as the dependent variable to assess the relationship and influence between these dimensions of performance.

Operational Performance of Select Private Sector Health Insurance Companies

The performance of Niva Bupa Health Insurance, Manipal Cigna Health Insurance, and Star Health and Allied Insurance is evaluated in terms of claim processing efficiency, market reach, grievance resolution, and policy servicing Operational metrics include Net Earnings ratio, Net claims, Operational Expenses, Claim Settlement and Firm Size. This analysis helps determine the competitive edge of private companies in terms of their service delivery and customer engagement. The following is the Hypothesis of Operational performance.

H_0: There is no effect of Operational Indicators on the Financial Performance of the select Private sector Health Insurance Companies.

H_1: There is a effect of Operational Indicators on the Financial Performance of the select Private sector Health Insurance Companies.

Descriptive Statistics, the method provides a summary of the data, such as averages, variances, and distributions, helping to understand the overall trends and patterns.

Operational metrics of private health insurance companies.

Table : 4.1 Descriptive analysis of Operational metrics of Private Health Insurance Co

	Net Earning ratio	Net claims	OpExp GrossPre	Claim settlement	Firm size
Mean	-6.635023	149601.3	10.01679	91.23333	5.098244
Median	-0.111161	53607.50	0.279360	89.58500	5.019753
Maximum	0.516465	954031.0	186.9878	99.90000	6.182589
Minimum	-189.3154	0.740000	0.149443	83.21000	4.244147
Std. Dev.	34.51801	247246.1	34.99048	4.780546	0.519105
Skewness	-5.192237	2.279133	4.601624	0.513856	0.443105
Kurtosis	27.98528	7.034392	23.45321	2.124128	2.577895
Jarque-Bera	915.1268	46.31765	628.7920	2.279180	1.204427
Probability	0.000000	0.000000	0.000000	0.019950	0.047598
Sum	-199.0507	4488040.	300.5036	2737.000	152.9473
Sum Sq. Dev.	34553.30	1.771253	35505.68	662.7551	7.814626
Observations	30	30	30	30	30

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Source: Secondary Data

The descriptive statistics table provides an overview of the operational performance metrics for Niva Bupa Health Insurance, Manipal Cigna Health Insurance, and Star Health and Allied Insurance. The mean values indicate that the average Net Earnings Ratio is negative (-6.64), suggesting challenges in profitability, while the average Net Claims amount is 149,601.3, reflecting significant claim volumes.

The high standard deviation for Net Earnings Ratio (34.52) and Net Claims (247,246.1) indicates considerable variability in these metrics across observations, which may highlight fluctuations in operational efficiency. The skewness and kurtosis values reveal that the Net Earnings Ratio and Operational Expenses have extreme values and are highly skewed, as indicated by their high skewness (e.g., -5.19 for Net Earnings Ratio) and kurtosis (e.g., 27.99 for Net Earnings Ratio), indicating the presence of outliers or extreme cases. The Jarque-Bera test for normality confirms this, with p-values of 0.000, indicating that the distributions are not normal. The analysis shows substantial variability in performance, particularly in operational efficiency and profitability, highlighting areas where these private insurers may need to improve consistency in service delivery and expense management.

Correlation Analysis, is used to measure the strength and direction of relationships between independent variables (operational factors) and the dependent variable (net profits ratio). It helps determine which factors have a significant linear association with profitability of private health insurance companies.

H_0: There is no significant relationship between Operational factors and Net Earnings ratio.

H_1: There is a significant relationship between Operational factors and Net Earnings ratio.

Table : 4.2 Correlation analysis between Operational factors and Net Earnings ratio of Private Health Insurance Companies

	Net Earning ratio	Net claims	Op Exp Gross Pre	Claim settlement	Firm size
Net Earning ratio	1				
Net claims	0.119753	1			
Op Exp Gross Pre	-0.963462	-0.171380	1		
Claim settlement	0.244067	0.770251	-0.323962	1	
Firm size	0.324009	0.836017	-0.433890	0.874569	1

Source : Secondary Data

The correlation analysis table shows the relationships between the Net Earnings ratio and various operational factors for private health insurance companies. There is a weak positive correlation between Net Earnings ratio and Net claims (0.1198), indicating that an increase in net claims has a minimal positive impact on profitability. Conversely, the correlation between Net Earnings ratio and Operational Expenses relative to Gross Premium is strongly negative (-0.9635), suggesting that higher operational expenses significantly reduce profitability. The Claim Settlement ratio shows a moderate positive correlation (0.2441) with the Net Earnings ratio, indicating that efficient claims processing may positively influence profitability.

Firm size demonstrates a positive correlation (0.3240) with the Net Earnings ratio, implying that larger firms have a slight profitability advantage, possibly due to economies of scale. Additionally, the strong positive correlations between Firm size and both Net claims (0.8360) and Claim Settlement (0.8746) indicate that larger firms tend to handle a higher volume of claims and settlements, likely enhancing their market reach and service

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efficiency. The study results indicate that managing operational expenses while leveraging firm size and improving claim settlement processes are critical for enhancing profitability in private health insurance companies.

Panel Ordinary Least Squares (OLS) Regression, is applied to analyze the impact of Operational factors on Net profitability, using both cross-sectional (across companies) and time-series (over periods) data. The study employs a statistical methodology to determine the suitable approach for assessing the Operational performance of select private health insurance companies in India.

The **Hausman test** is first conducted to determine the suitability of either a Fixed Effects model or a Random Effects model for the purpose of the study. This crucial step allows for identifying the model that most effectively explains the variances in the results, hence assuring the accuracy of the following study.

Upon selecting the suitable regression model, the **Wald test** will be conducted. This test aims to ascertain whether a pooled regression method or the model indicated by the Hausman test (i.e., Fixed Effects or Random Effects) is the best appropriate for evaluating the influence of operational performance. The Wald test facilitates a rigorous comparison between these two methodologies, allowing the researcher to select the most reliable and appropriate method for study.

Hausman test for Privatehealth insurance companies

The Hausman test is used to determine whether a fixed or random effects model is more appropriate for the analysis. It evaluates the presence of endogeneity or correlation between the independent variables and the error term. If the p-value is less than 0.05, the null hypothesis (that the random effects model is suitable) is rejected, indicating that the fixed effects model is a better fit. Conversely, if the p-value is greater than 0.05, the random effects model is preferred. This test ensures the selection of the most suitable model for assessing the **Operational Performance of Private Health Insurance** companies. The hypotheses guiding the Hausman test are as follows:

H0: The Random effects model is appropriate.

H1: The fixed effects model is appropriate**.**

Table : 4.3 Hausman Test of Operational Performance of Private Health Insurance Companies

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	9.544138	4	0.0625

Source: Secondary Data

The Hausman test table represents a statistical comparison to determine whether a fixed effects or random effects model is more suitable for analysing the operational performance of private health insurance companies. The Chi-Square statistic is 9.5441 with 4 degrees of freedom, and the p-value is 0.0625. Since the p-value is greater than the 0.05 significance level, the null hypothesis (H0) that the random effects model is appropriate cannot be rejected. This indicates that the random effects model is more suitable for this analysis, that variations across private health insurance companies are better captured using this model. As such, the random effects approach is considered the best fit for evaluating the impact of operational factors on net profitability in this context.

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Wald test for Private Health Insurance companies

The Wald test is a statistical method used to determine whether the Random Effects model or the Pooled Regression model is more suitable for assessing the Operational Performance of Private Health Insurance Companies. It calculates the Wald statistic and its p-value to test the hypotheses. If the p-value is less than 0.05, the null hypothesis is rejected, indicating that the Pooled Regression model is inappropriate, and the Random Effects model is a better fit. The following is the hypothesis framed.

H0: Pooled effect regression model is appropriate.

H1: Random effect regression model is appropriate.

Table : 4.4 Wald Test of Operational Performance of Private Health Insurance Companies

Wald Test:			
Equation: Untitled			
Test Statistic	Value	df	Probability
F-statistic	251.6494	25	0.0000
Chi-square	424.9481	5	0.0000

Source: Secondary Data

The Wald test results examines whether the Pooled Regression model or the Random Effects model is more suitable for analyzing the operational performance of private health insurance companies. The F-statistic value is 251.6494 with 25 degrees of freedom, and the Chi-square value is 424.9481 with 5 degrees of freedom, both with a p-value of 0.0000. Since the p-value is less than 0.05, the null hypothesis (H0), indicates that the Pooled Regression model is appropriate, is rejected. The results indicate that the Random Effects model is a better fit for the analysis. Therefore, the **Random Effects model is preferred** as it better accounts for the variance and heterogeneity across the private health insurance companies over time, leading to a more accurate assessment of the impact of operational factors on net profitability.

Random Effect Regression Model for Private Health Insurance Companies

Random Effects Regression Analysis was applied to assess the select three Private health insurance companies from 2013-14 to 2021-22. The study conducted the Hausman and Wald tests to determine the most suitable model. The results indicated that the Random Effect model is more appropriate for the analysis. The proposed theories are as follows:

H0: There is no significant impact of Operational factors on Net Earnings Ratio of Private health insurance companies.

H1: There is a significant impact of Operational factors on Net Earnings Ratio of Private health insurance companies.

Table: 4.5 Impact of Operational Performance Indicators on Private Health Insurance Co's

Dependent Variable: NET_EARNING_RATIO		
Method: Panel Least Squares		
Sample: 2013 2022		

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Periods included: 10				
Cross-sections included: 3				
Total panel (balanced) observations: 30				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.523706	1.52324	2.9697	0.0240
NET_CLAIMS	2.409145	1.13658	2.1196	0.0396
OPERATIONAL_EXPENSES__GROSS_PREMIUMS	-2.451612	1.054775	-2.3242	0.0000
CLAIM_SETTLEMENT	3.117667	1.492112	2.0894	0.0314
FIRM_SIZE	-23.93555	11.32891	-2.1127	0.0202
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.952146	Mean dependent var		-6.635023
Adjusted R-squared	0.939662	S.D. dependent var		34.51801
S.E. of regression	8.478940	Akaike info criterion		7.314011
Sum squared resid	1653.526	Schwarz criterion		7.640958
Log likelihood	-102.7102	Hannan-Quinn criter.		7.418604
F-statistic	76.27085	Durbin-Watson stat		2.428768
Prob(F-statistic)	0.000000			

Source : Secondary Data

The Panel Ordinary Least Squares (OLS) regression analysis evaluates the impact of operational factors (Net Claims, Operational Expenses relative to Gross Premiums, Claim Settlement, and Firm Size) on the Net Earnings Ratio of private health insurance companies over the period from 2013-14 to 2021-22.

The results show that the coefficients for Net Claims (2.4091, p = 0.0396) and Claim Settlement (3.1177, p = 0.0314) are positive and statistically significant, indicating that increases in these factors positively impact the Net Earnings Ratio. This indicates that efficient claim handling and increased claims can enhance profitability. Conversely, the coefficient for Operational Expenses relative to Gross Premiums is negative (-2.4516, p = 0.0000), showing a significant inverse relationship, which implies that higher operational expenses significantly reduce profitability.

The coefficient for Firm Size is also negative (-23.9356, p = 0.0202), indicating that larger firms tend to have lower profitability, potentially due to higher costs or inefficiencies associated with managing larger operations.

The model's R-squared value (0.9521) indicates that approximately 95.21% of the variation in the Net Earnings Ratio is explained by these operational factors, demonstrating a very strong fit. The adjusted R-squared value (0.9397) confirms that the model remains robust after accounting for the number of predictors. The Durbin-

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Watson statistic (2.4288) indicates significant autocorrelation. The study results indicate that effective management of claims and controlling operational expenses are critical for enhancing profitability in private health insurance companies.

FINDINGS OF THE STUDY

The study has been emphasized to know the Operational Performance of Select Private Health Insurance Companies in India. The study collected the secondary data of time series nature and applied the Panel least square method and derived the following findings.

1. The study stated that the positive coefficient for Net Claims (2.4091) suggests that higher claim volumes are associated with increased profitability. This indicates that effective management of claims positively contributes to the Net Earnings Ratio for private health insurers.

2. The significant positive coefficient for Claim Settlement (3.1177) implies that efficient claim processing boosts profitability. Timely and effective settlement of claims appears essential to improving financial performance in private health insurance.

3. It has been observed that the negative coefficient for Operational Expenses relative to Gross Premiums (-2.4516) indicates that higher operational costs significantly reduce profitability. This finding underscores the importance of cost control in maintaining strong net earnings ratios.

4. The negative coefficient for Firm Size (-23.9356) suggests that larger private health insurance companies tend to have lower profitability, likely due to higher operational complexities and inefficiencies that accompany scaling.

CONCLUSION OF THE STUDY

The study finds that several operational factors shape the profitability of private health insurance companies in India. Effective claims management and prompt settlements are essential, highlighting the role of streamlined claim processing in boosting profitability. High operational costs and firm size negatively impact earnings, suggesting that cost control and operational efficiency are crucial for sustainable profits. Efficient management of operational expenses relative to premiums further boosts earnings, as maintaining adequate liquidity to meet obligations and capture investment opportunities.