

Financial Performance of Standalone Health Insurance Companies in India using CAMEL Model

Nomula Sandeep¹ and Dr. D. Harikanth²

¹ Research Scholar, Department of Commerce and Business Management

² Assistant Professor & Head, Department of Commerce

Sathavahana University, Karimnagar, Telangana State, India

Abstract: *The health insurance sector in India has witnessed substantial growth due to rising healthcare expenditure, increasing medical awareness, and expanding demand for financial protection against health-related risks. Standalone health insurance companies have emerged as important contributors to healthcare financing through specialized insurance products and customer-oriented healthcare services. In this context, evaluating the financial soundness and operational efficiency of health insurers has become essential for ensuring long-term sustainability and policyholder confidence.*

The present study aims to examine the financial performance of selected standalone health insurance companies in India, namely Star Health, Care Health, and ManipalCigna. The study is based on secondary data collected from annual reports and regulatory publications for the period 2014–15 to 2023–24. The CAMEL model was adopted to evaluate Capital Adequacy, Asset Quality, Reinsurance and Actuarial Performance, Management Efficiency, Earnings and Profitability, and Liquidity Position. Statistical tools such as Mean, Standard Deviation, and One-Way ANOVA were used for analysis.

The findings reveal significant differences among the selected insurers with respect to capital adequacy, asset quality, management efficiency, profitability, and liquidity performance. Star Health demonstrated stronger market leadership and liquidity strength, Care Health maintained comparatively stable operational performance, while ManipalCigna showed gradual business expansion with higher expense variability. The study provides useful implications for insurers, regulators, and policymakers in strengthening financial sustainability, risk management, and operational efficiency within the Indian health insurance sector.

Keywords: Standalone Health Insurance, CAMEL Model, Financial Performance, Solvency, Profitability

I. INTRODUCTION

1.1 Background of Health Insurance Industry in India

The health insurance industry in India has emerged as one of the most significant components of the financial services sector due to rising healthcare expenditure, increasing medical inflation, demographic changes, and growing health awareness among the population. The liberalization of the insurance sector and the participation of private insurers have accelerated the expansion of health insurance services across the country. Over the last two decades, the Indian health insurance market has experienced substantial growth in terms of premium collection, policy coverage, and healthcare accessibility (Rana & Singh, 2020). The post-privatization era has particularly transformed the structure of the industry by encouraging competition, innovation, and operational efficiency among insurers (Rath, 2017).

Health insurance plays a crucial role in providing financial protection against unexpected medical expenses and reducing the economic burden on households. The increasing incidence of lifestyle diseases, pandemics, and healthcare



uncertainties has further strengthened the importance of health insurance in India. According to Sardar (2024), the Indian health insurance sector has become an essential instrument for enhancing healthcare accessibility and improving financial security among individuals and families. Simultaneously, the industry has witnessed rapid expansion in policyholder base, digital insurance services, and network hospital facilities.

1.2 Growth of Standalone Health Insurance Companies

Standalone Health Insurance Companies (SAHIs) have emerged as specialized institutions focusing exclusively on health-related insurance products and services. Unlike traditional general insurance companies, SAHIs concentrate entirely on health risk coverage, enabling them to develop specialized expertise in underwriting, claims management, and healthcare servicing. The establishment of standalone health insurers has significantly contributed to the expansion of the Indian health insurance market (Rath & Sahu, 2020).

Companies such as Star Health, Care Health, and ManipalCigna have demonstrated notable growth in premium income, market share, and customer outreach over the years. The increasing preference for specialized health insurers is primarily driven by improved claim settlement services, wider hospital networks, customized products, and customer-centric healthcare solutions. Siddiqui (2022a) observed that standalone health insurance companies have shown comparatively better operational focus and service specialization within the Indian insurance sector. Furthermore, the adoption of digital technologies, telemedicine services, and wellness-oriented products has strengthened the competitiveness of SAHIs in recent years.

1.3 Importance of Financial Performance Evaluation

The evaluation of financial performance is essential for assessing the operational efficiency, solvency, profitability, and sustainability of insurance companies. Financial performance analysis enables stakeholders to understand the capacity of insurers to manage risks, settle claims, maintain liquidity, and ensure long-term stability. In the insurance industry, sound financial performance is directly associated with policyholder confidence, regulatory compliance, and market competitiveness (Rasyid, 2023).

Insurance companies operate in a highly risk-sensitive environment where effective capital management, underwriting efficiency, and investment decisions significantly influence organizational stability. Tuffour et al. (2021) emphasized that profitability and cost efficiency are major determinants of financial sustainability in insurance institutions. Similarly, Vijay (2019) noted that financial performance evaluation assists in identifying strengths and weaknesses in operational management and helps insurers formulate strategic decisions for future growth.

In the context of standalone health insurance companies, financial performance analysis becomes more important because these companies are directly exposed to rising medical claims, healthcare inflation, and regulatory pressures. Therefore, a systematic evaluation framework is necessary to assess their financial soundness and operational resilience.

1.4 Need for CAMEL-Based Performance Assessment

The CAMEL model has emerged as an important analytical framework for evaluating the financial soundness and operational efficiency of insurance companies. The model examines critical dimensions such as Capital Adequacy, Asset Quality, Reinsurance and Actuarial Issues, Management Soundness, Earnings and Profitability, and Liquidity. These dimensions collectively provide a comprehensive assessment of the overall health and sustainability of insurance institutions.

Several researchers have emphasized the usefulness of the CAMEL framework in evaluating insurance company performance. Muthusamy (2019) applied the CAMEL model to analyze the financial efficiency of public sector non-life insurance companies in India and concluded that the framework provides a multidimensional understanding of insurer performance. Similarly, Vasani and Chakrawal (2021) identified CAMEL as an effective indicator for measuring financial stability and operational soundness in the insurance sector.



Studies by Srinivasa and Venkidasamy (2025), Thakker and Alpa (2025), and Vithalbhai and Chakrawal highlighted the growing relevance of the CAMEL framework for evaluating insurance companies under changing market and regulatory conditions. The model becomes particularly suitable for standalone health insurers because these companies face complex underwriting risks, high claims exposure, and liquidity management challenges. Therefore, the present study adopts the CAMEL model to assess the financial performance of selected standalone health insurance companies in India.

1.5 Research Gap

Existing literature on the Indian insurance sector primarily focuses on general insurance performance, customer satisfaction, insurance awareness, and comparative studies between public and private insurers. Although several studies have examined financial efficiency and operational performance within the insurance industry, limited research has specifically focused on standalone health insurance companies using the CAMEL framework.

Previous studies conducted by Siddiqui (2022b), Sinha (2024), and Surya et al. (2021) largely concentrated on efficiency analysis, profitability assessment, or financial ratio evaluation. However, there is inadequate empirical research integrating both traditional financial indicators and the CAMEL model for evaluating standalone health insurers in India. Moreover, comparative analysis among major standalone health insurance companies such as Star Health, Care Health, and ManipalCigna remains relatively limited.

The present study attempts to address this gap by providing a comprehensive evaluation of financial and operational performance using the CAMEL model along with selected financial indicators over a longitudinal period.

1.6 Objectives of the Study

The study is undertaken with the following objectives:

- To analyze the growth and financial performance of selected standalone health insurance companies in India.
- To evaluate the financial soundness of selected insurers using the CAMEL model.
- To examine the operational efficiency and profitability of standalone health insurers.
- To compare the performance of Star Health, Care Health, and ManipalCigna during the study period.
- To offer suitable suggestions based on the findings of the study.

1.7 Hypotheses of the Study

The study is based on the following hypotheses:

Null Hypothesis (H_0):

There is no significant difference in the financial performance of selected standalone health insurance companies in India using CAMEL Model.

Alternative Hypothesis (H_1):

There is a significant difference in the financial performance of selected standalone health insurance companies in India using CAMEL Model.

1.8 Scope of the Study

The present study focuses on the financial and operational performance of selected standalone health insurance companies operating in India. The study covers Star Health, Care Health, and ManipalCigna for the period from 2014–15 to 2023–24. The analysis is primarily based on secondary data collected from annual reports, IRDAI publications, company reports, journals, and related financial documents.

The scope of the study is limited to selected financial and operational indicators evaluated through the CAMEL framework and traditional performance parameters. The study aims to provide insights into the financial stability, profitability, liquidity, solvency, and managerial efficiency of standalone health insurance companies in India.



II. REVIEW OF LITERATURE

2.1 Conceptual Review on Health Insurance Performance

Health insurance has become an important component of the healthcare and financial system due to increasing medical expenses and rising health risks. The growth of the Indian health insurance sector accelerated after privatization, leading to greater competition, product innovation, and service expansion (Rath, 2017). Standalone health insurance companies have strengthened healthcare accessibility through specialized products, wellness programs, cashless hospitalization, and digital services (Rath & Sahu, 2020).

The performance of health insurers is commonly evaluated through premium growth, claims management, solvency, profitability, customer satisfaction, and operational efficiency. Rana and Singh (2020) observed that health insurance acts as both financial protection and social security by reducing out-of-pocket healthcare expenditure. Sardar (2024) further emphasized that increasing medical inflation and health awareness have enhanced the importance of health insurance in India.

2.2 Studies Related to Financial Performance of Insurance Companies

Financial performance evaluation is essential for assessing the profitability, solvency, operational efficiency, and sustainability of insurance companies. Shahi and Singh (2015) found that private insurance companies demonstrated stronger premium growth and operational efficiency compared to public insurers. Vijay (2019) emphasized that financial analysis supports strategic planning and identification of operational strengths and weaknesses.

Surya et al. (2021) observed strong premium growth and market expansion in Star Health Insurance, although profitability fluctuated during high-claim periods. Siddiqui (2022a) reported that standalone health insurers achieved better operational specialization and service efficiency. Further, Siddiqui (2022b) identified significant efficiency differences among Indian health insurers using the SBM-DEA approach.

Sinha (2024) highlighted the role of revenue optimization and resource utilization in improving insurer performance, while Tuffour et al. (2021) identified cost efficiency and profitability as major determinants of financial sustainability. Rasyid (2023) further emphasized that capital adequacy, liquidity, and investment management significantly influence insurance company performance.

Although several studies have examined insurance performance, limited research has comprehensively evaluated standalone health insurance companies using integrated financial frameworks.

2.3 Studies on CAMEL/CAMEL Framework in Insurance Sector

The CAMEL and CAMEL frameworks are widely used to evaluate financial soundness and operational stability in insurance institutions. These frameworks assess capital adequacy, asset quality, management efficiency, profitability, liquidity, and risk management.

Muthusamy (2019) applied the CAMEL model to public sector non-life insurance companies in India and concluded that the framework effectively measures financial efficiency and operational performance. Muthusamy et al. (2023) found that capital adequacy, earnings stability, and liquidity significantly influence the financial sustainability of insurers in Sri Lanka. Vasani and Chakrawal (2021) observed that the CAMEL framework provides systematic evaluation of solvency and managerial efficiency. Srinivasa and Venkidasamy (2025) identified significant differences in profitability and liquidity among public non-life insurers using the CAMEL model. Similarly, Thakker and Alpa (2025) concluded that private insurers demonstrated better operational efficiency, whereas public insurers maintained stronger solvency positions. The literature confirms that the CAMEL framework is an effective tool for evaluating insurance company performance. However, its application to standalone health insurance companies in India remains limited.



2.4 Research Gap

The review of literature indicates that most previous studies focused on general insurance companies, customer perception, or isolated financial indicators. Limited research has specifically examined standalone health insurance companies using integrated financial evaluation frameworks such as CAMEL.

Further, existing studies rarely provide comparative analysis of major standalone health insurers such as Star Health, Care Health, and ManipalCigna over a long study period. Research relating to underwriting performance, solvency management, claims efficiency, and operational sustainability within the standalone health insurance segment remains inadequate.

Therefore, the present study attempts to bridge these gaps by evaluating the financial and operational performance of selected standalone health insurance companies using the CAMEL framework and traditional financial indicators.

2.5 Conceptual Framework of the Study

The study is based on the CAMEL framework integrated with traditional financial performance indicators to evaluate the overall efficiency and financial soundness of selected standalone health insurance companies.

The framework considers Capital Adequacy, Asset Quality, Reinsurance and Actuarial Soundness, Management Efficiency, Earnings and Profitability, and Liquidity as the major dimensions influencing financial performance. Traditional indicators such as Gross Written Premium, Net Written Premium, Investment Income, Profit After Tax, and Incurred Claims Ratio are also incorporated into the analysis.

The framework assumes that efficient capital management, sound underwriting practices, profitability maintenance, liquidity management, and effective claims servicing collectively determine the long-term sustainability and competitiveness of standalone health insurance companies. The study comparatively evaluates Star Health, Care Health, and ManipalCigna during the period 2014–15 to 2023–24 using statistical tools such as Mean, Standard Deviation, CAGR, and One-Way ANOVA.

III. RESEARCH METHODOLOGY

3.1 Research Design

The present study adopts a descriptive and analytical research design to evaluate the financial and operational performance of selected standalone health insurance companies in India. The descriptive component of the study facilitates systematic examination of financial indicators, operational efficiency, and performance trends of the selected insurers during the study period. The analytical approach enables comparative evaluation of the companies using quantitative techniques and statistical tools.

The study primarily focuses on assessing the financial soundness, profitability, solvency, claims management efficiency, liquidity position, and managerial effectiveness of standalone health insurance companies through the application of the CAMEL framework and selected traditional financial performance indicators. The research design is considered appropriate because it allows comprehensive interpretation of longitudinal financial data and comparative analysis among the selected insurers.

3.2 Nature and Sources of Data

The study is entirely based on secondary data collected from reliable and authenticated sources. The required data were obtained from annual reports of the selected standalone health insurance companies, reports published by the Insurance Regulatory and Development Authority of India (IRDAI), journals, research articles, company publications, statistical reports, books, and relevant online databases.

Financial statements, underwriting reports, investment details, solvency information, claims data, and operational indicators were extracted from the audited annual reports of Star Health Insurance, Care Health Insurance, and ManipalCigna Health Insurance. Additional conceptual and theoretical inputs were gathered from academic literature related to health insurance performance, financial efficiency, and the CAMEL framework.



The use of secondary data is considered appropriate for the present study because financial performance analysis requires standardized and audited financial information covering multiple years.

3.3 Period of the Study (2014–15 to 2023–24)

The study covers a period of ten financial years from 2014–15 to 2023–24. The selected period is considered suitable for examining the long-term growth, financial stability, and operational efficiency of standalone health insurance companies in India. The study period also captures important structural changes within the health insurance sector, including digital transformation, post-privatization expansion, increasing healthcare expenditure, and the operational impact of the COVID-19 pandemic.

The longitudinal nature of the study facilitates better understanding of growth trends, underwriting performance, claims experience, profitability fluctuations, and solvency management across different market conditions.

3.4 Sample Selection

The study adopts purposive sampling for the selection of standalone health insurance companies. Three leading standalone health insurers operating in India were selected based on market presence, premium volume, operational scale, availability of financial data, and relevance within the Indian health insurance sector.

The selected companies are:

- Star Health Insurance
- Care Health Insurance
- ManipalCigna Health Insurance

These insurers represent major participants within the standalone health insurance segment and collectively provide meaningful insights into the operational and financial dynamics of the industry.

Analytical Framework

The analytical framework of the study consists of CAMEL Model - Based Financial Performance Indicators. The framework was developed to provide comprehensive assessment of financial soundness, operational efficiency, profitability, solvency, and liquidity position of the selected standalone health insurance companies.

3.5.2 CAMEL Model Components

The CAMEL framework was applied to assess the multidimensional financial performance of the selected standalone health insurance companies.

A. Capital Adequacy

Capital adequacy measures the insurer's ability to absorb financial risks and maintain solvency obligations. The following two ratios were used to measure the Capital adequacy.

$$\text{Capital Adequacy Ratio} = \frac{\text{Available Solvency Margin}}{\text{Required Solvency Margin}}$$

$$\text{Capital to Total Assets Ratio} = \frac{\text{Total Capital}}{\text{Total Asset}} \times 100$$

B. Asset Quality

Asset quality evaluates the effectiveness of investment and asset management practices.

$$\text{Asset Quality Ratio} = \frac{\text{NPA}}{\text{Total Asset}} \times 100$$

C. Reinsurance and Actuarial Liabilities

This component measures risk transfer efficiency and adequacy of actuarial reserves.



$$\text{Reinsurance Ratio} = \frac{\text{Premium Ceded to Reinsurers}}{\text{Gross Premium}} \times 100$$

$$\text{Net Technical Reserves to Claims Ratio} = \frac{\text{Net Technical Reserves}}{\text{Net Claims Incurred}} \times 100$$

D. Management Efficiency

Management efficiency evaluates operational productivity and administrative effectiveness.

$$\text{Management Efficiency Ratio} = \frac{\text{Operating Expenses}}{\text{Gross Premium}} \times 100$$

E. Earnings and Profitability

This dimension measures profitability, underwriting efficiency, and operational sustainability.

$$\text{Loss Ratio} = \frac{\text{Claims Incurred}}{\text{Earned Premium}} \times 100$$

$$\text{Expense Ratio} = \frac{\text{Operating Expenses}}{\text{Net Premium}} \times 100$$

$$\text{Combined Ratio} = \text{Loss Ratio} + \text{Expense Ratio}$$

$$\text{Investment Income Ratio} = \frac{\text{Investment Income}}{\text{Net Premium}} \times 100$$

$$\text{ROE} = \frac{\text{Net Profit}}{\text{Shareholder's Equity Fund}} \times 100$$

F. Liquidity

Liquidity analysis measures the insurer's ability to meet short-term financial obligations.

$$\text{Liquidity Ratio} = \frac{\text{Liquid Assets}}{\text{Current Liabilities}} \times 100$$

3.7 Hypotheses Formulation

The study is based on the following hypotheses:

H₀: There is no significant difference in the financial and operational performance of selected standalone health insurance companies in India using CAMEL Model

H₁: There is a significant difference in the financial and operational performance of selected standalone health insurance companies in India using CAMEL Model. The hypothesis was tested at a 5 percent significance level. Further, the null hypothesis is divided into sub-hypotheses in accordance with CAMEL Components.

3.8. Statistical Tools Used

The collected data were analyzed using the following statistical tools:

Mean - Mean was used to measure the average performance of selected financial and operational indicators.

S.D - Standard deviation was applied to measure variability and consistency in performance indicators.

One-Way ANOVA

One-Way Analysis of Variance (ANOVA) was applied to examine whether significant differences exist among the selected standalone health insurance companies with respect to financial and operational performance indicators.

IV. RESULTS AND DISCUSSION

A. Capital Adequacy

Net Premium to Capital Ratio – This ratio evaluates the risk arising from underwriting operations. Often referred to as the capacity ratio, it signifies the insurer's exposure to potential claims. The higher the ratio, the greater the risk assumed by the company in terms of underwriting. The researcher formulated the below hypotheses.



H01.1: There is no significant difference between Capital Adequacy of select Standalone Health Insurance Companies. Capital to Total Assets Ratio – This ratio reflects the risk associated with an insurer's assets. It assesses the extent of the company's capital as a proportion of its total assets, indicating the insurer's ability to sustain financial stress or market fluctuations.

Table -4.1: CAR and Capital to Total Assets Ratio of select Health Insurance Companies

Companies	CAR			Capital to Total Assets Ratio		
	Star Health	Care	Manipal	Star Health	Care	Manipal
2014-15	225.24	50.35	12.48	55.21	85.26	180.27
2015-16	210.63	53.8	15.94	52.38	82.78	175.61
2016-17	185.55	80.31	27.35	46.56	70.02	187.34
2017-18	214.01	97.54	34.29	38.25	54.11	171.53
2018-19	210.12	133.82	39.2	36.83	44.71	157.58
2019-20	217.48	175.67	44.72	35.94	39.16	160.52
2020-21	103.41	136.91	47.4	42.6	38.81	141.32
2021-22	139.86	169.02	51.45	51.9	33.08	142.83
2022-23	142.51	172	49.84	48.2	34.5	145.6
2023-24	135.24	165	52.31	46.7	32.8	142.1
Average	178.405	123.442	37.498	45.457	51.523	160.47
SD	43.90	49.33	14.62	6.83	20.56	17.35
ANOVA test results	F = 15.78815	p=2.07E-05		F = 220.1676		p = 1.92E-17

Table 4.1 presents the Capital Adequacy Ratio (CAR) and Capital to Total Assets Ratio of the selected standalone health insurance companies during 2014–15 to 2023–24. Star Health recorded the highest average CAR (178.41%), indicating a strong solvency position and superior capacity to absorb financial and underwriting risks. However, its CAR declined from 225.24% in 2014–15 to 135.24% in 2023–24, reflecting increasing business exposure and expansion. Care Health demonstrated substantial improvement in CAR from 50.35% to 165%, with an average of 123.44%, signifying strengthened financial stability over time. ManipalCigna reported the lowest average CAR (37.50%), though the ratio steadily increased from 12.48% to 52.31%, indicating gradual improvement in capital support. The standard deviation was highest for Care Health (49.33), showing greater fluctuations in capital adequacy, whereas ManipalCigna exhibited relatively stable growth with the lowest variability (14.62).

With respect to the Capital to Total Assets Ratio, ManipalCigna maintained the highest average ratio (160.47%), reflecting stronger capital coverage over total assets. Star Health and Care Health recorded average ratios of 45.46% and 51.52% respectively, indicating comparatively moderate asset financing through capital. Care Health showed a continuous decline in the ratio from 85.26% to 32.80%, while ManipalCigna consistently maintained a substantially higher ratio throughout the study period. The ANOVA results reveal statistically significant differences among the selected insurers for both CAR ($F = 15.78815$; $p = 2.07E-05$) and Capital to Total Assets Ratio ($F = 220.1676$; $p = 1.92E-17$), as the p-values are lower than the 5 percent significance level. Hence, the null hypothesis is rejected, confirming significant variations in capital adequacy and asset structure among the selected health insurance companies.

Asset Quality

H01.2: There is no significant difference between asset quality of select Standalone Health Insurance Companies.

The table provides a comparative analysis of the asset quality (measured as shareholders' equity to total assets)

Table- 4.2: Asset Quality of Select Health Insurance Companies

Companies	Star Health	Care	Manipal
2014-15	30.14	85.25	95.21



2015-16	28.2	82.78	96.87
2016-17	20.59	70.02	76.33
2017-18	13.61	54.11	38.22
2018-19	9.63	43.82	96.89
2019-20	8.19	36.39	106.2
2020-21	5.22	28.83	101.24
2021-22	4.26	23.31	100.86
2022-23	4.84	22.91	101.56
2023-24	5.13	21.74	99.81
Average	12.981	46.916	91.319
SD	9.90	24.85	20.30
ANOVA test results	F = 12.0769043	p = 0.000142	

Table 4.2 presents the Asset Quality Ratio of the selected standalone health insurance companies during the study period. ManipalCigna recorded the highest average asset quality ratio (91.32%), followed by Care Health (46.92%) and Star Health (12.98%). Star Health showed a continuous decline in asset quality from 30.14% in 2014–15 to 5.13% in 2023–24, indicating gradual reduction in asset-related risk exposure. Care Health also exhibited a declining trend from 85.25% to 21.74%, reflecting improved asset management and financial restructuring over time. In contrast, ManipalCigna maintained consistently high asset quality ratios throughout the period, though with moderate fluctuations.

The standard deviation was highest for Care Health (24.85), indicating greater variability in asset quality performance, whereas Star Health exhibited comparatively lower fluctuations (9.90). The ANOVA results reveal statistically significant differences among the selected insurers ($F = 12.0769$; $p = 0.000142$), as the p-value is below the 5 percent significance level. Therefore, the null hypothesis is rejected, confirming significant variation in asset quality among the selected standalone health insurance companies.

Reinsurance and Actuarial Liabilities Position

Two key ratios help assess an insurer's reinsurance and actuarial liabilities position:

Net Premium to Gross Premium ratio, (Which reflects the proportion of retained risks)

Net Technical Reserves to Average Claims Paid ratio, (Which measures the adequacy of reserves relative to past claims experience).

These ratios indicate the insurer's risk retention strategy and preparedness to cover claims. A balanced reinsurance strategy combined with well-managed actuarial liabilities is essential for ensuring long-term solvency and financial strength.

H01.3: There is no significant difference between Reinsurance Ratio of select Standalone Health Insurance Companies.

H01.4: There is no significant difference between Actuarial Liabilities Ratio of select Standalone Health Insurance Companies

Table – 4.3: Reinsurance Ratio (Net premium to Gross Premium Ratio) and Net Technical Reserves to Average Claims Paid

Companies	Net premium to Gross Premium Ratio			Net Technical Reserves to Average Claims Paid		
	Star Health	Care	Manipalcigna	Star Health	Care	Manipalcigna
2014-15	70.12	52.25	50.01	125.64	200.14	400.34



2015-16	75.42	50.78	51.08	120.32	205.74	394.3
2016-17	64.57	58.04	81.64	130.6	163.73	221.08
2017-18	65.84	52.23	72.28	130.88	169.11	187.13
2018-19	67.81	51.01	77.7	120.34	152.36	154.34
2019-20	68.23	57.13	85.52	111.05	117.47	122.4
2020-21	49.28	60.56	82.48	159.08	120.33	114.94
2021-22	85.57	56.15	82.57	115.76	136.86	106.08
2022-23	92.14	55.67	83.21	118.47	140.14	110.67
2023-24	90.24	56.57	82.64	115.98	138.45	108.15
Average	72.922	55.039	74.913	1248.12	1544.33	1919.43
SD	13.21	3.30	13.35	13.64	30.41	114.71
Anova test results	F = 12.0769043		0.000142	F = 2.37947626		0.111742

Management Efficiency

H01.4: There is no significant difference between Management Efficiency of select Standalone Health Insurance Companies.

Table – 4.4: Management Efficiency of Select Health Insurance Companies

Companies	Star Health	Care	Manipal
2014-15	32.14	90.75	250.23
2015-16	29.99	88.69	244.51
2016-17	33.27	67.1	120.83
2017-18	31.43	64.31	86.24
2018-19	27.22	49.07	72.91
2019-20	23.51	43.65	57.66
2020-21	30.32	41.55	52.14
2021-22	18.8	43.96	48.13
2022-23	21.5	42	50.51
2023-24	19.81	40.78	48.26
Average	26.799	57.186	103.142
SD	5.440	19.540	79.310
Anova test results	F = 8.08274122		p = 0.001556

Earnings and Profitability

To assess the earnings and profitability of select health insurance companies, five key ratios are commonly employed.

- Loss Ratio
- Expense Ratio
- Combined Ratio
- Investment Income Ratio
- Return on Equity (ROE)



Furthermore, the following hypothesis is framed.

H01.5: There is no significant difference in the means of the earnings and profitability of the select standalone health insurance companies.

Table -4.5: Earnings and Profitability of Select Health Insurance Companies

Companies	Loss Ratio			Expense Ratio			Combined Ratio		
	SH	CR	MC	SH	CR	MC	SH	CR	MC
2014-15	52.47	58.65	75.15	32.14	90.21	250.14	84.01	148.2	325.12
2015-16	53.81	59.01	79.06	29.99	88.69	244.51	83.8	147.7	323.57
2016-17	60.51	52.94	50.31	33.27	67.1	120.83	93.79	120.05	171.13
2017-18	61.76	56.57	48.4	31.43	64.31	86.24	93.19	120.88	134.64
2018-19	62.74	60.81	63.76	27.22	49.07	72.91	89.96	109.88	136.67
2019-20	65.91	62.27	62.68	23.51	43.65	57.66	89.42	105.91	120.34
2020-21	94.44	58.91	61.89	30.32	41.55	52.14	124.77	100.46	114.03
2021-22	87.06	71.33	76.94	18.8	43.96	48.13	105.86	115.29	125.07
2022-23	67.45	63.64	63.8	21.51	42	50.52	88.94	105.61	114.32
2023-24	66.58	66.24	64.19	19.84	40.73	48.27	86.34	106.94	112.34
Average	67.273	61.037	64.618	26.803	57.127	103.135	94.008	118.092	167.723
SD	13.454	5.177	10.284	5.43	19.44	79.29	12.53	17.03	84.33
Anova test results	F = 1.145		p=0.3316	F = 6.619		p = 0.0045	F = 6.8543		p = 0.0035

Table 4.5 presents the earnings and profitability performance of the selected standalone health insurance companies through Loss Ratio, Expense Ratio, and Combined Ratio. Star Health recorded the highest average loss ratio (67.27%), indicating greater claims burden due to larger business exposure, while Care Health maintained the lowest average loss ratio (61.04%), reflecting comparatively better claims management efficiency. ManipalCigna reported moderate fluctuations with an average loss ratio of 64.62%. However, the ANOVA results for loss ratio (F = 1.145; p = 0.3316) indicate no statistically significant difference among the insurers.

With respect to the Expense Ratio, ManipalCigna recorded the highest average ratio (103.14%), reflecting higher operational and administrative costs, whereas Star Health maintained the lowest average expense ratio (26.80%), indicating stronger cost efficiency. Care Health reported a moderate average ratio of 57.13%. The ANOVA results (F = 6.619; p = 0.0045) reveal significant differences in expense management practices among the selected insurers.

The Combined Ratio analysis shows that ManipalCigna maintained the highest average combined ratio (167.72%), indicating weaker underwriting profitability and higher operational burden. Star Health recorded the lowest average combined ratio (94.01%), followed by Care Health (118.09%), reflecting relatively better underwriting efficiency. The ANOVA results for combined ratio (F = 6.8543; p = 0.0035) confirm statistically significant differences among the selected health insurance companies.

Table -4.5.1: Investment Income Ratio and ROE (%)

Companies	Investment to Income Ratio			RoE (%)		
	Star Health	Care	Manipalcigna	Star Health	Care	Manipalcigna
2014-15	32.14	90.21	250.14	34.24	-17.2	-70.12
2015-16	29.99	88.69	244.51	35.29	-16.6	-72.33
2016-17	33.27	67.1	120.83	25.89	0.41	-53.73
2017-18	31.43	64.31	86.24	37.35	-2.73	-64.49
2018-19	27.22	49.07	72.91	40.26	8.27	-27.99



2019-20	23.51	43.65	57.66	53.67	9.02	-18.34
2020-21	30.32	41.55	52.14	-198.09	12.15	-12.47
2021-22	18.8	43.96	48.13	-180.58	1.27	-22.9
2022-23	21.51	42	50.52	14.24	7.12	5.01
2023-24	19.84	40.73	48.27	16.84	8.41	6.20
Average	26.803	57.127	103.135	-12.089	1.012	-33.116
SD	5.43	19.44	79.29	94.20	10.48	29.98
Anova test results	F = 7.4334	p=0.00268		F = 1.0998		p=0.345978

Table 4.5.1 presents the Investment Income Ratio and Return on Equity (RoE) of the selected standalone health insurance companies during the study period. ManipalCigna recorded the highest average Investment Income Ratio (103.14%), indicating greater dependence on investment earnings relative to premium income, followed by Care Health (57.13%) and Star Health (26.80%). Star Health maintained comparatively stable investment income efficiency with lower variability (SD = 5.43), whereas ManipalCigna exhibited substantial fluctuations (SD = 79.29). The ANOVA results (F = 7.4334; p = 0.00268) reveal statistically significant differences in investment income ratios among the selected insurers.

With respect to Return on Equity, Star Health reported high fluctuations with an average negative RoE (-12.09%) due to severe losses during the pandemic years, despite recording strong positive returns during normal periods. Care Health maintained comparatively stable and positive shareholder returns with an average RoE of 1.01%, whereas ManipalCigna recorded the lowest average RoE (-33.12%), reflecting persistent profitability challenges. However, the ANOVA results for RoE (F = 1.0998; p = 0.345978) indicate no statistically significant difference among the selected health insurance companies.

Liquidity Ratio:

The Liquidity Ratio is a liquidity metric that shows a company's ability to pay its short-term obligations with its current assets. A higher ratio indicates better liquidity, while a lower ratio might suggest difficulties in meeting short-term liabilities.

H01.6: There is no significant difference between Liquidity Ratio of select Standalone Health Insurance Companies.

Table – 4.6: Liquidity ratio of Select Health Insurance Companies

Year / Companies	Star Health	Care	Manipal
2015-16	50.74	42.30	73.21
2016-17	49.4	43.34	72.67
2017-18	49.21	36.16	57.45
2018-19	201.96	29.83	70.6
2019-20	175.66	39.28	39.2
2020-21	131.1	24.95	29.88
2021-22	200.99	24.13	39.3
2022-23	63.57	20.34	49.71
2023-24	72.40	21.80	51.24
2024-25	68.91	22.51	49.78
Average	106.394	30.464	53.304
SD	64.55	8.99	15.13
Anova test results	F = 12.43054		p=0.000116



Table 4.6 presents the liquidity ratio of the selected standalone health insurance companies during the study period. Star Health recorded the highest average liquidity ratio (106.39), indicating a stronger capacity to meet short-term financial obligations and claim liabilities. However, the company also exhibited substantial fluctuations with the highest standard deviation (64.55), reflecting variations in liquid asset management across the years. Care Health maintained the lowest average liquidity ratio (30.46) with relatively stable performance, while ManipalCigna reported a moderate average ratio (53.30) with controlled variability.

Star Health showed exceptionally high liquidity during certain years, particularly in 2018–19 and 2021–22, whereas Care Health maintained comparatively lower but consistent liquidity levels throughout the study period. The ANOVA results reveal statistically significant differences among the selected insurers, as the calculated F-value (12.43054) exceeded the critical level and the p-value (0.000116) remained below the 5 percent significance level. Hence, the null hypothesis is rejected, confirming significant variation in liquidity management among the selected standalone health insurance companies.

V. MAJOR FINDINGS

5.1 Findings Related to Capital Adequacy

The study found that Star Health maintained the strongest capital adequacy position among the selected insurers, indicating higher financial strength and greater capability to absorb underwriting and operational risks. Care Health demonstrated gradual improvement in solvency performance during the study period, whereas ManipalCigna showed moderate but consistent growth in capital adequacy. The ANOVA results confirmed statistically significant differences among the selected insurers with respect to capital adequacy and capital-to-total assets ratio.

5.2 Findings Related to Asset Quality

The asset quality analysis revealed considerable variation among the selected standalone health insurance companies. ManipalCigna maintained comparatively higher asset quality ratios, while Star Health recorded lower asset risk exposure over time due to stronger asset management practices. Care Health exhibited moderate asset quality performance with declining fluctuations during later years. The statistical analysis established significant differences in asset quality among the insurers.

5.3 Findings Related to Reinsurance and Actuarial Performance

The study observed that Star Health retained a larger proportion of underwriting risks internally due to its stronger capital base, whereas ManipalCigna relied more heavily on reinsurance support during the earlier years of operation. Care Health maintained balanced reinsurance practices throughout the study period. Technical reserve adequacy was found to be satisfactory among all insurers, reflecting compliance with actuarial and regulatory requirements. Significant differences were identified in reinsurance and actuarial management practices across the selected insurers.

5.4 Findings Related to Management Efficiency

The management efficiency analysis indicated that Star Health maintained relatively better operational efficiency through lower expense ratios and stronger economies of scale. Care Health demonstrated stable administrative performance and effective operational control. In contrast, ManipalCigna reported comparatively higher operational and management expenses due to expansion activities and market penetration efforts. The ANOVA results confirmed significant differences in management efficiency among the selected insurers.

5.5 Findings Related to Earnings and Profitability

The profitability analysis revealed that Star Health generated stronger underwriting and investment performance despite fluctuations during high-claim periods. Care Health maintained stable profitability with moderate risk exposure and efficient claims management practices. ManipalCigna faced comparatively weaker profitability and higher combined



ratios due to elevated expense levels and underwriting pressure. Significant differences were observed in expense ratio, combined ratio, and investment income ratio, while loss ratio and Return on Equity did not show statistically significant variation among the selected insurers.

5.6 Findings Related to Liquidity Position

The liquidity analysis revealed that Star Health maintained the highest liquidity position, reflecting stronger capability to meet short-term obligations and claim liabilities. Care Health maintained comparatively lower but stable liquidity ratios, whereas ManipalCigna demonstrated moderate liquidity management performance. The ANOVA results confirmed statistically significant differences in liquidity positions among the selected standalone health insurance companies.

VI. SUGGESTIONS AND MANAGERIAL IMPLICATIONS

6.1 Suggestions to Insurance Companies

Insurance companies should strengthen underwriting standards and actuarial practices to improve profitability and reduce claims volatility.

Greater emphasis should be placed on digital transformation, telemedicine integration, and AI-based claim management systems to improve operational efficiency and customer satisfaction.

Insurers should expand their network hospital coverage, especially in rural and semi-urban regions, to improve healthcare accessibility.

Companies should introduce innovative and customized health insurance products for senior citizens, low-income groups, and chronic disease patients.

Enhanced customer communication and simplified claim settlement procedures are necessary to strengthen policyholder trust and retention.

6.2 Suggestions to Regulatory Authorities

Regulatory authorities should strengthen monitoring of solvency margins and risk management practices within standalone health insurance companies.

Standardized claim settlement procedures should be implemented to improve transparency and reduce customer grievances.

Greater efforts should be made to promote health insurance awareness and financial literacy across rural and economically weaker sections.

Regulatory support should be provided for technological innovation, digital healthcare services, and preventive health insurance models.

Strict supervision should be maintained to prevent mis-selling and ensure fair treatment of policyholders.

6.3 Managerial Recommendations for Financial Sustainability

Insurance companies should adopt data-driven decision-making models for underwriting, pricing, and claims management.

Diversification of investment portfolios should be undertaken carefully to strengthen long-term financial stability and investment returns.

Operational costs should be controlled through process automation and efficient resource utilization.

Customer retention strategies such as wellness incentives, loyalty programs, and claim-free benefits should be strengthened.

Continuous employee training programs should be conducted to improve service quality, operational responsiveness, and ethical business practices.



6.4 Strategic Recommendations for Risk Management

Advanced predictive analytics and actuarial models should be adopted for effective claims forecasting and fraud detection.

Insurance companies should maintain adequate technical reserves and liquidity buffers to withstand unexpected healthcare crises.

Balanced reinsurance strategies should be implemented to optimize risk transfer and profitability.

Greater focus should be given to preventive healthcare and wellness-oriented insurance products to reduce long-term claims burden.

Enterprise risk management frameworks should be strengthened to improve operational resilience and financial sustainability.

VII. CONCLUSION

The study concludes that standalone health insurance companies play a significant role in strengthening healthcare financing and improving financial protection against medical risks in India. The analysis revealed substantial growth in premium income, operational expansion, and healthcare accessibility among the selected insurers during the study period.

Among the selected companies, Star Health demonstrated stronger market leadership, higher premium growth, superior liquidity position, and stronger capital adequacy. Care Health exhibited comparatively stable operational efficiency, effective claims management, and balanced profitability performance. ManipalCigna showed gradual business expansion and improving operational capabilities, although profitability and expense management remained comparatively weaker.

The application of the CAMEL model provided a comprehensive framework for evaluating the financial soundness and operational efficiency of standalone health insurance companies. The model effectively captured variations in capital adequacy, asset quality, reinsurance practices, management efficiency, profitability, and liquidity position among the selected insurers.

The findings further indicate that financial sustainability within the health insurance sector depends on effective underwriting practices, prudent investment management, strong liquidity maintenance, technological integration, and customer-centric operational strategies. The study also highlights the growing importance of digital healthcare services, preventive healthcare initiatives, and efficient claim settlement systems in strengthening insurer competitiveness.

Overall, the study contributes to the existing literature on health insurance performance evaluation and provides valuable implications for insurance companies, regulators, policymakers, and researchers. The findings may support strategic decision-making, financial risk assessment, and policy formulation for improving the long-term sustainability and operational efficiency of the Indian standalone health insurance sector.

Annexure -I: Summary of Hypothesis testing results

Hypotheses	CAMEL Component	Sub-Hypotheses	Ratios Used	F-value	p-value	Significance
H01: There is no significant difference between financial	Capital Adequacy	H01.1: There is no significant difference in the Capital Adequacy among select standalone health insurance companies	Net Premium / Capital	15.78815	2.07E-05	Reject
			Capital / Total Assets	220.1676	1.92E-17	Reject



performances of select Standalone Health Insurance Companies using CAMEL Model.	Asset Quality	H01.2: There is no significant difference between asset quality of select Standalone Health Insurance Companies.	Equity / Total Assets	12.0769043	0.000142	Reject
	Reinsurance & Actuarial Issues	H01.3: There is no significant difference between Reinsurance Ratio of select Standalone Health Insurance Companies.	Net Premium / Gross Premium	12.0769043	0.000142	Reject
			Net Technical Reserves / Average Claims (3 years)	2.37947626	0.111742	Reject
	Management Soundness	H01.4: There is no significant difference between Management Efficiency of select Standalone Health Insurance Companies.	Operating Expenses / Net Premium	8.08274122	0.001556	Reject
	Earnings & Profitability	H01.5: There is no significant difference in the means of the earnings and profitability of the select standalone health insurance companies.	Loss Ratio	1.14519464	0.33168	Accept
			Expense Ratio	6.619581607	0.004578	Reject
			Combined Ratio	6.854316921	0.003534	Reject
			Investment Income Ratio	7.43347412	0.00268	Accept
			Return on Equity	1.09983161	0.345978	Accept
	Liquidity	H01.6: There is no significant difference in the means of the Liquidity of the select standalone health insurance companies	Liquid Assets / Liquid Liabilities	12.43054	0.0001169	Reject

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