

Trends, Pattern and Performance of Private Health Insurance in India

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Received: 20th Feb, 2026 | Revised: 4th Mar, 2026 | Accepted: 25th Mar, 2026 | Available Online: 10th Apr, 2026

ABSTRACT

This paper examines the trends, patterns, performance, efficiency, and productivity of private health insurance in India over the period 2014–2024. Using secondary data from IRDAI Annual Reports and applying Data Envelopment Analysis (DEA) and the Malmquist Productivity Index, the study evaluates the technical efficiency, scale efficiency, and total factor productivity of major private health insurance companies. The analysis reveals significant growth in equity capital, operating costs, and premium output, reflecting market expansion and increased health awareness. However, efficiency scores vary widely across firms, indicating structural and scale-related inefficiencies. While some insurers demonstrate increasing returns to scale, others operate under decreasing returns, suggesting over-expansion. The productivity analysis highlights that technological progress is the primary driver of productivity gains in the sector. Despite growth in premiums and insurer registrations, insurance penetration in India remains low, with uneven coverage across regions and income groups. The findings underscore the need for improved regulatory oversight, better risk pooling, enhanced operational efficiency, and inclusive policy interventions to strengthen the role of private health insurance in achieving financial protection and universal health coverage in India.

Keywords: Private Health Insurance, Insurance Penetration, Insurance Density, Data Envelopment Analysis (DEA).

How to cite this article: Prabhakar N, Suresh Kumar, Ghosh B. Trends, Pattern and Performance of Private Health Insurance in India. *Int J Drug Deliv Technol.* 2026;16(28s):889-907. DOI: 10.25258/ijddt.16.28s.109

Source of support: Nil.

Conflict of interest: The authors declare no conflict of interest.

Introduction In recent decades, India has witnessed a significant transformation in its health financing landscape, marked by the increasing role of private health insurance (PHI) as a supplementary mechanism to cover healthcare costs. This shift has emerged primarily due to the growing burden of out-of-pocket (OOP) expenditure, which continues to be one of the highest in the world, accounting for nearly 48.2% of total health expenditure in 2020–21 (National Health Accounts, 2023). In response, private health insurance has gained momentum as a potential instrument to reduce financial vulnerability and enhance access to quality healthcare.

The growth of the private health insurance sector has been substantial since the liberalization of India's insurance market in 2000, following the recommendations of the Malhotra Committee (IRDAI, 2000). Since then, private health insurers have introduced a variety of products, including individual policies, group insurance, and critical illness coverage, catering to different socioeconomic segments. The gross direct premium underwritten by health insurers grew from ₹3,490 crore in 2006–07 to over ₹73,582 crore in 2021–22, indicating robust demand and expansion (IRDAI Annual Report, 2022). However, the coverage and effectiveness of private health insurance remain uneven and

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skewed. As highlighted by Ghosh (2014), the penetration of health insurance in India is still relatively low, with coverage largely concentrated in urban areas and among higher income groups. This raises questions about the inclusivity and equity of the current insurance framework.

In terms of performance, private health insurers have contributed to greater financial mobilization for healthcare, yet concerns persist about claim settlement ratios, high administrative costs, and inadequate regulation. Studies by Mahal et al. (2010) and Karan et al. (2017) suggest that while PHI can offer financial protection, its actual impact on reducing catastrophic health expenditure is limited without broader risk pooling and integration with public health schemes. Moreover, patterns in the uptake of PHI reveal gender disparities, lack of awareness, and high dropout rates in rural and informal sectors (Reddy & Mary, 2021). The COVID-19 pandemic further emphasized the need for robust and responsive health insurance mechanisms, highlighting gaps in preparedness and affordability even among the insured population (Narayan & Singh, 2022). The present paper examined the recent trends, patterns and performance of private health insurance in India.

Objectives of the Study

The present study has been undertaken with the following specific objectives:

1. To examine the trends and growth patterns of private health insurance in India during the period 2014–2024.
2. To analyze the performance of private health insurance companies in terms of equity capital, operating cost, and premium output.
3. To assess the technical efficiency, pure technical efficiency, and scale efficiency of selected private health insurance companies using Data Envelopment Analysis (DEA).
4. To evaluate the productivity changes in private health insurance companies through the Malmquist Productivity Index.
5. To study the patterns of insurance penetration and density in India and their implications for healthcare financing.
6. To identify structural and scale-related inefficiencies in private health insurance operations.

7. To suggest policy measures and strategic interventions for improving efficiency, inclusiveness, and sustainability of private health insurance in India.

Research Methodology

Research Design

The study is descriptive and analytical in nature, based on secondary data. It aims to examine trends, patterns, efficiency, and productivity of private health insurance companies in India.

Sources of Data

The study is based exclusively on secondary data collected from:

- IRDAI Annual Reports (2014–15 to 2023–24)
- National Health Accounts (Government of India)
- World Health Organization (WHO) reports
- Journals, books, and published research articles
- Government publications and official statistics

Period of Study

The period of study covers ten years from 2014–15 to 2023–24, enabling long-term trend and performance analysis.

Sample Selection

The study covers nine major private health insurance companies in India, selected based on availability and consistency of data. These include:

- HDFC Ergo Health Insurance
- Niva Bupa Health Insurance
- Care Health Insurance
- Aditya Birla Health Insurance
- Star Health Insurance
- ICICI Lombard Health Insurance
- Reliance Health Insurance
- Manipal Cigna Health Insurance
- Cholamandalam MS Health Insurance

Variables Used in the Study

Input Variables

1. Equity Capital
 2. Operating Cost
- Output Variable

1. Gross Premium (Output)

These variables are chosen because they reflect financial strength, operational efficiency, and business performance of insurance companies.

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Tools and Techniques of Analysis

The following tools and techniques are used:

(a) Trend and Ratio Analysis

To examine growth patterns in premiums, penetration, and density.

Both CCR (Constant Returns to Scale) and BCC (Variable Returns to Scale) models are applied to estimate:

- Technical Efficiency
- Pure Technical Efficiency
- Scale Efficiency
- (c) Malmquist Productivity Index
- Its measures:
 - Efficiency Change
 - Technical Change
 - Pure Technical Change
 - Scale Efficiency Change
 - Total Factor Productivity (TFP) Change

Registered Insurers and Reinsurers

More than 200 years old insurance industry of India has witnessed several ups and downs. Initially, there was private sector regulation in the country followed by public sector regulation and then again, a shift towards privatization was initiated (Singh and Kumar, 2005; Pallavi and Rai, 2022). The insurance industry has experienced considerable growth in terms of registered insurers, insurance premiums, number of policies and claims, etc. As per the reports of IRDA (2023-24) a total of 73 registered insurers in India. There is total 26 registered life insurers and 25 general insurers combining from both the sectors. The remaining insurers are either registered as stand-alone health insurers or re-insurers. Out of 25 registered general insurers, only 4 are registered under the public sector and 21 are registered under the private sector.

Table: Registered Insurers and Reinsurers

Type of Insurer	Public Sector	Private Sector	Total
Life Insurers	1	25	26
General Insurers	4	21	25

Stand-alone Health Insurers	-	8	8
Specialized	2	-	2
Re-insurers	1	11	12
Total	8	65	73

Source: IRDA Annual Report (2023-24)

Segment-Wise Premium Underwritten by Life Insurers

The growth of the insurance sector in India can be observed through the premiums underwritten by life and general Insurers. It was observed that there was 10.70 percent growth in life insurers segment, whereas pension segment and variable segment life, pension and variable segment recorded a growth of 13.38 percent and 34.66 percent respectively while the annuity segment along with health segments observed a fall in percentage by 11.83 percent and 2.68 percent respectively during the year 2022-23.

Table: Segment-wise Premium Underwritten by Life Insurers (in crore)

Segment	Premium		Growth (in %)
	2022-23	2023-24	
Annuity	33,637.33	36,378.09	8.14
Health	741.18	683.76	-7.74
Life	5,97,221.08	6,62,933.60	11
Pension	1,48,625.47	1,27,444.26	-14.25
Variable	2,278.91	2,489.75	9.25
Total	7,82,503.97	8,29,929.46	

Source: IRDA Annual Report (2023-24)

Segment-Wise Premium Underwritten by General Insurers

Among various segments under non-life insurance business, health insurance business is the largest segment with a contribution of 40.29 percent (38.02 percent in 2022-23) of the total premium. Health Insurance Segment reported growth of 19.50 percent (21.32 percent growth in 2022-23). The Motor segment witnessed a year-on-year growth of 12.91 percent with premium collection amounted to `91,780 crore in 2023-24 from `81,280 crore of 2022-23. The share of the

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Motor segment in the total premium marginally increased to 31.68 percent from 31.64 percent of previous year. The premium collection in fire segment increased by 7.27 percent and in Marine segment increased by 0.65 percent in 2023-24.

Table: Segment-wise Premium Underwritten by General Insurers (in crore)

Segment	Premium		Growth (in %)
	2022-23	2023-24	
Fire	23,936.12	25,666.52	7.22
Marine	5,058.66	5,091.49	0.64
Motor	81,280.04	91,780.54	12.91
Health	97,663.50	1,16,693.95	19.48
Others	48,955.94	50,440.48	3.03
Total	2,56,894.27	2,89,672.97	

Source: IRDA Annual Report (2023-24)

Health Insurance Premium Underwritten by General & Health Insurers

During the year 2023-24, General and Health insurance companies collected `1,07,681 crore as health (excluding Personal Accident and Travel) insurance premium registering a growth of about 20.32 percent over the previous year.

Health Insurance Premium Underwritten by General & Health Insurers (` crore)

Table: Incurred Claims Ratio under Health Insurance Business of General and Health Insurers (in per cent)

Insurer	2022-23	2023-24
Public Sector Insurers	39,058.09 (18.56)	40,992.94 (4.95)
Private Sector Insurers	25,182.04 (25.24)	34,507.71 (37.03)
Stand-alone Health Insurers	25,251.63 (26.25)	32,180.09 (27.44)
Total	89,491.76 (22.51)	1,07,680.74 (20.32)

Source: IRDA Annual Report (2023-24)

Claims under Health Insurance

The net incurred claims under health insurance business of general and health insurers stood at `76,160 crore in 2023-24 reported an increase of about 18 percent from previous year. There is a decrease in Incurred Claims Ratio (ICR) of health business from 88.89 percent in 2022-23 to 88.15 percent in 2023-24.

Insurance Penetration in India

Insurance penetration and density are significant indicators of growth and development of insurance in the country (Rakshit, 2017; Shukla, 2018; Vimala and Alamelu, 2018). "Insurance penetration and density are two metrics, among others, often used to assess the level of development of the insurance sector in a country. "While insurance penetration is measured as the percentage of insurance premium to GDP, insurance density is calculated as the ratio of premium to population (per capita premium)" (IRDAI, 2023). Further, the private health insurance penetration rate in Punjab is as low as 26 percent (Tribune News Service, 2019). Nevertheless, swift development in the number of registered insurers and premiums underwritten has been observed, still, the penetration of insurance among the citizens of

India is low. The insurance penetration in India was 4.2 percent in the year 2022-23 and 3.8 in 2023-24. Globally if compared, India was ranked at 27th position in terms of insurance penetration in the year 2022-23 (IRDA Annual Report, 2022-23).

Table : Penetration of Insurance in India

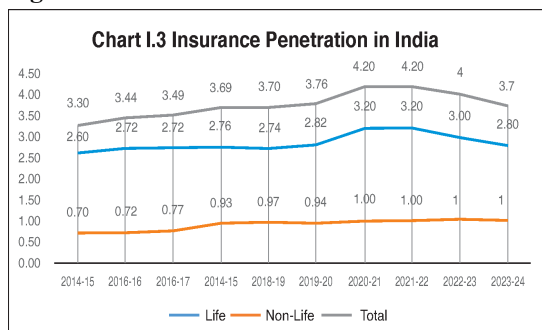
Year	Penetration (%)		
	Life	Non-Life	Total
2001-02	2.15	0.56	2.71
2002-03	2.59	0.67	3.26
2003-04	2.26	0.62	2.88
2004-05	2.53	0.64	3.17
2006-07	4.10	0.60	4.80
2007-08	4.00	0.60	4.70
2008-09	4.00	0.60	4.60
2009-10	4.60	0.60	5.20
2010-11	4.40	0.71	5.10
2011-12	3.40	0.70	4.10
2012-13	3.17	0.78	3.96
2013-14	3.10	0.80	3.90
2014-15	2.60	0.70	3.30
2015-16	2.72	0.72	3.44
2016-17	2.72	0.77	3.49
2017-18	2.76	0.93	3.69
2018-19	2.74	0.97	3.70
2019-20	2.82	0.94	3.76
2020-21	3.20	1.00	4.20

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2021-22	3.20	1.00	4.20
2022-23	2.8	1.00	3.80

Source: IRDA Annual Report (2022-23)

Figure : Penetration of Insurance in India



Source: Author's construction based on secondary data collected from IRDA Report (2022-23)

Insurance Density in India

The insurance density of India has shown consistent growth from 2001-02 to 2022-23 as shown in table 4.1.5. However, in 2022-23 the insurance density recorded was USD 95 and has shown increase from 2021-22 in which the density was USD 91. However, globally India ranked on a 28th position in terms of insurance density (IRDA Annual Report, 2022-23).

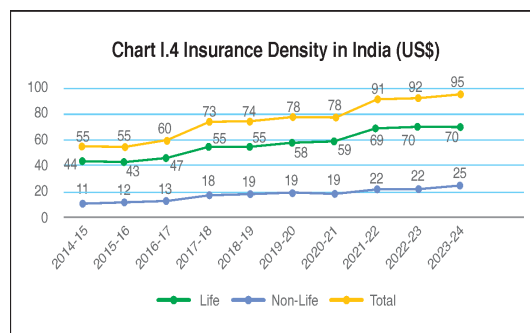
Table: Density Level of Insurance in India

Year	Density (USD)		
	Life	Non-Life	Total
2001-02	9.10	2.40	11.50
2002-03	11.70	3.00	14.70
2003-04	12.90	3.50	16.40
2004-05	15.70	4.00	19.70
2006-07	33.20	5.20	38.40
2007-08	40.40	6.20	46.60
2008-09	41.20	6.20	47.40
2009-10	47.70	6.70	54.30
2010-11	55.70	8.70	64.40
2011-12	49.00	10.00	59.00
2012-13	42.70	10.50	53.20
2013-14	41.00	11.00	52.00
2014-15	44.00	11.00	52.00
2015-16	43.20	11.50	54.70
2016-17	46.50	13.20	59.70
2017-18	55.00	18.00	73.00
2018-19	55.00	19.00	74.00

2019-20	58.00	19.00	78.00
2020-21	59.00	19.00	78.00
2021-22	69.00	22.00	91.00
2022-23	70.00	25.00	95.00

Source: IRDA Annual Report (2023-24)

Figure: Density Level of Insurance in India



Source: Author's construction based on secondary data collected from IRDA Report (2023-24)

Corporate Agents Linked with Insurance Business

Table shows the tying up of insurance with different corporate agents for soliciting and servicing insurance business products can be beneficial for banks as well as insurance companies (Karunagaran, 2006; Rajput, 2013). According to Annual Report of IRDA (2023-24), a total of 635 active corporate agents including 247 banks and 388 NBFCs, cooperative societies, LLP firms and other eligible firms were agents for selling insurance.

Table: Corporate Agents Linked with Insurance Business

Category	Banks	NBFCs and Others	Total
Life	8	12	20
General	9	26	35
Health	0	0	0
Composite	230	350	580
Total	247	388	635

Source: IRDA Annual Report (2023-24)

Contribution of Insurance Agents and Intermediaries in Health Insurance

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Amongst various channels for distribution of health insurance policies, individual agents contributed a major share in total health insurance premium at 30 percent. The share of this channel was high at 72 percent in individual Health Insurance premium. Second important channel for distribution of health insurance business is Brokers, who contributed 29 percent of total health insurance premium. The share of Brokers was high at 50 percent in group health insurance premium.

Table: Contribution of Insurance Agents and Intermediaries in Health Insurance

S . N	Distrib ution Chann el	Gover nment Busine ss	Gro up Busi ness	Indivi dual Busin ess	To tal
1	Individ ual Agents	-	3.58	72.32	29. 73
2	Corpor ate Agents				
	1) Banks	-	12.4 1	6.33	8.8 5
	2) Others	-	5.59	1.09	3.3 1
3	Broker s	-	49.6 4	9.46	29. 30
4	Direct Sale				
	1) Online		0.30	3.90	1.6 5
	2)Other than online	100.00	28.3 7	5.82	26. 67
5	Micro Insuran ce Agents	-	0.09	0.00	0.0 5
6	Comm on Service Centres	-	0.00	0.01	0.0 1
7	Web aggreg ators	-	0.01	0.14	0.0 6

8	Insuran ce Market ing Firms	-	0.02	0.22	0.0 9
9	Point of Sales	-	0.00	0,71	0.2 8
	Total	100	100	100	10 01

EFFICIENCY OF PRIVATE HEALTH INSURANCE COMPANIES IN INDIA

Trends in Efficiency of Private Health Insurance Companies in India

This section of the chapter studies the technical efficiency of the private health insurance companies in India using DEA (data envelopment analysis) technique. The technique has been applied to estimate technical efficiency scores for nine private health insurance companies from the year 2014 to 2024 using CCR with one output and two input variables. The premium of private health companies was considered as the output variable and equity capital and operating cost were taken as input variables for the study.

This section examines the prevailing trends and patterns in the adoption of private health insurance in India. It focuses on equity capital, operating cost and output across different groups, highlighting the overall dynamics of the private health insurance market.

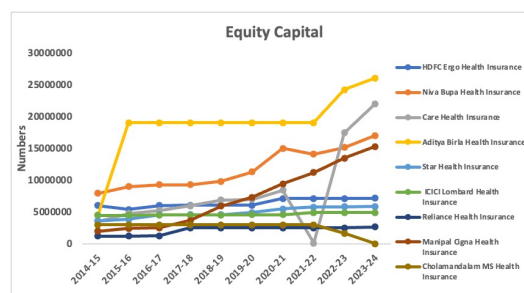


Figure : Company Wise-Trends of Equity Capital from 2014-2024

As shown in Figure, the equity capital of private health insurance companies in India exhibited significant variation during the period 2014–2024. Most companies showed a gradual or sharp

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increase over time, with notable trends observed in Niva Bupa Health Insurance, which grew from ₹7.9 million in 2014–15 to ₹169.95 million in 2023–24, and Care Health Insurance, which increased from ₹3.5 million to ₹219.7 million. Aditya Birla Health Insurance maintained a stable equity capital of ₹19.01 million until 2021–22, after which it increased to ₹26 million by 2023–24. Similarly, Manipal Cigna and Digit Health Insurance recorded substantial capital growth in later years, reflecting aggressive expansion strategies. In contrast, companies like ICICI Lombard and Cholamandalam MS showed relatively stable equity positions with minor fluctuations. Overall, the data indicates significant capital infusion in select insurers during the latter half of the decade, primarily driven by new entrants and market consolidation.

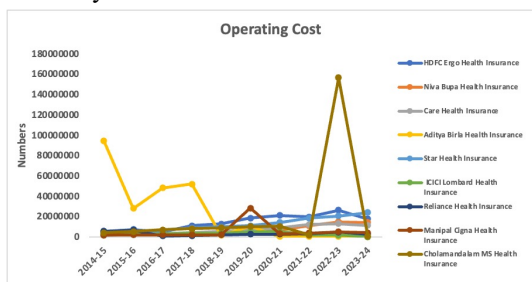


Figure : Company Wise-Trends of Operating Cost from 2014-2024

The operating expenses of private health insurance providers in India from 2014 to 2024 demonstrated considerable fluctuations among various companies shown in Figure 4.1.2. HDFC Ergo Health Insurance exhibited a steady upward trajectory, achieving ₹26.2 million in 2022–23 before experiencing a decline to ₹17.5 million in 2023–24. Niva Bupa Health Insurance also noted a sharp increase, reaching a peak of ₹14.7 million in 2022–23. Care Health Insurance showed consistent growth, with expenditures escalating from ₹1.4 million in 2014–15 to ₹12.3 million in 2023–24. In contrast, Aditya Birla Health Insurance experienced significant volatility, beginning with ₹94.2 million in 2014–15 and then dramatically dropping to ₹0.65 million in 2023–24, suggesting substantial restructuring or cost-cutting measures. Star Health Insurance consistently faced high expenditures, culminating at ₹23.9 million in 2023–24. Other companies, including Manipal Cigna and Digit Health

Insurance, experienced sharp increases in expenditures in the later years, while Cholamandalam MS encountered extreme volatility, with an exceptionally high figure of ₹156.2 million in 2022–23. In summary, the data indicates rising operational costs for the majority of insurers, likely influenced by business growth, competitive pressures, and evolving regulatory conditions.

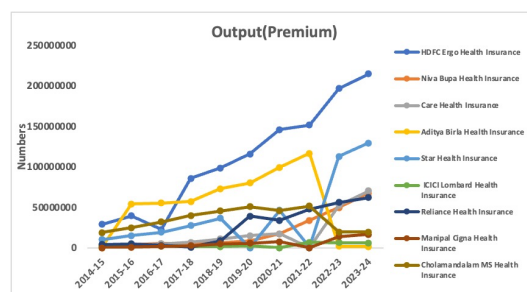


Figure : Company Wise-Trends of Output from 2014-2024

Figure illustrates that the output (expressed in terms of gross premium) for private health insurance companies in India from 2014 to 2024 demonstrates considerable growth for the majority of firms, signifying industry expansion. HDFC Ergo Health Insurance exhibited a robust upward trend, escalating from ₹29.07 million in 2014–15 to ₹214.61 million in 2023–24. Niva Bupa Health Insurance experienced remarkable growth, increasing from ₹3.15 million to ₹67.54 million during the same timeframe. Care Health Insurance followed a comparable path, achieving ₹70.22 million by 2023–24. Aditya Birla Health Insurance, which began with minimal output in 2014–15, advanced to ₹1.72 million by 2023–24, indicating a late yet rapid growth trajectory. Star Health Insurance consistently upheld a strong market position, reaching ₹129.38 million in 2023–24. Other insurers, including Reliance Health and Manipal Cigna, also reported steady growth, while Digit Health Insurance experienced a significant increase in the later years. Cholamandalam MS Health Insurance displayed relatively stable but moderate performance in comparison to other competitors. In summary, the sector showcased substantial expansion, propelled by market penetration, product diversification, and heightened health awareness among consumers.

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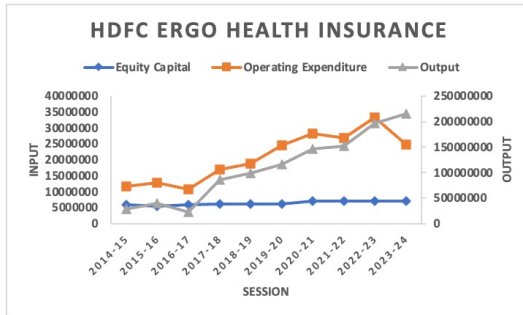


Figure : Temporal Variation in Equity Capital, Operating cost, and Premium of HDFC Ergo Health Insurance (2014–2024)

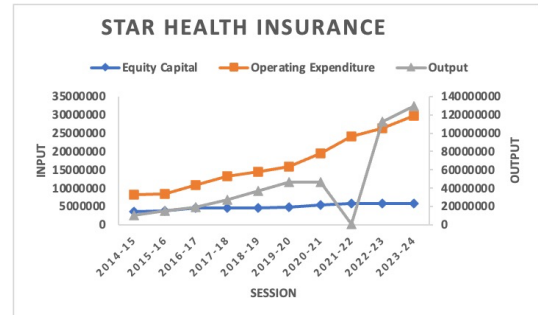


Figure : Temporal Variation in Equity Capital, Operating Cost, and Premium of Star Health Insurance (2014–2024)

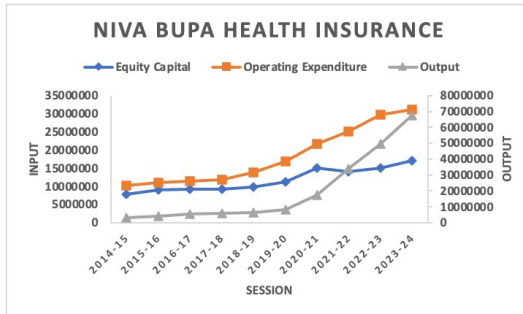


Figure : Temporal Variation in Equity Capital, Operating cost, and Output of Niva Bupa Health Insurance (2014–2024)

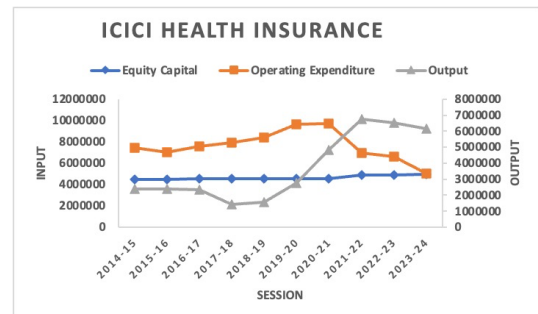


Figure : Temporal Variation in Equity Capital, Operating Cost, and Premium of ICICI Health Insurance (2014–2024)

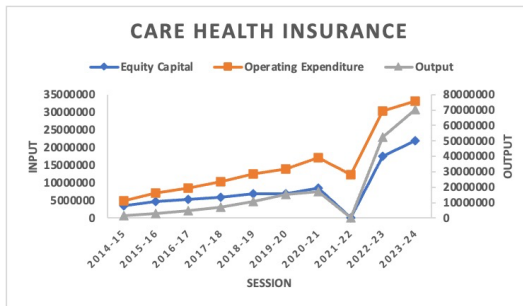


Figure : Temporal Variation in Equity Capital, Operating Cost, and Premium of Care Health Insurance (2014–2024)

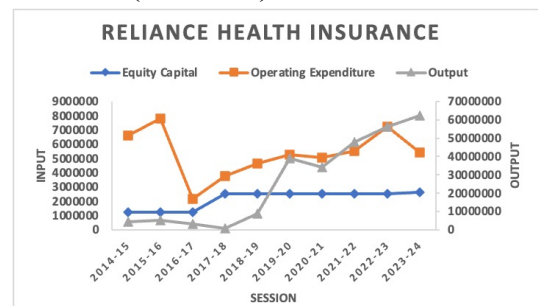


Figure: Temporal Variation in Equity Capital, Operating Cost, and Premium of Reliance Health Insurance (2014–2024)

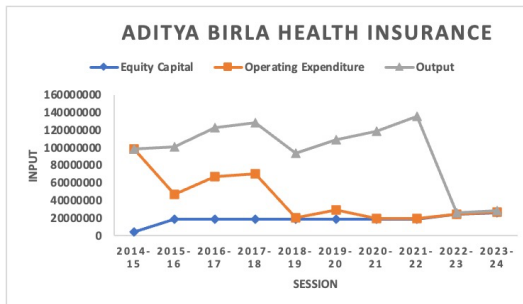


Figure : Temporal Variation in Equity Capital, Operating Cost, and Premium of Aditya Birla Health Insurance (2014–2024)

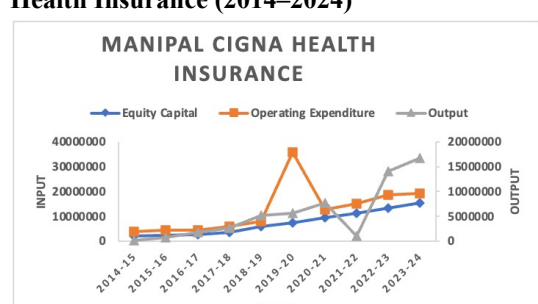


Figure : Temporal Variation in Equity Capital, Operating Cost, and Premium of Manipal Cigna Health Insurance (2014–2024)

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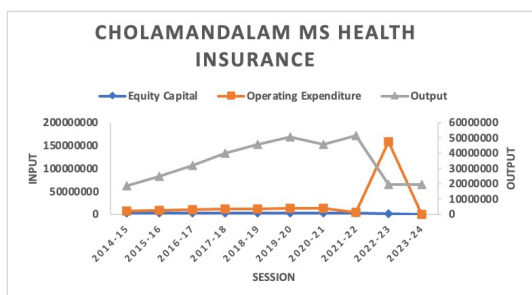


Figure : Temporal Variation in Equity Capital, Operating Cost, and Premium of Cholamandalam Ms Health Insurance (2014–2024)

Performance Analysis of Private Health Insurance in India

In this section, the performance of private health insurance providers is analyzed based on key indicators such as equity capital, operating cost and premium. This analysis provides insights into the effectiveness of private health insurance schemes.

Efficiency of Private Health Insurance

This part of the chapter examines the technical efficiency of private health insurance companies in India through the application of the DEA (data envelopment analysis) technique. This method has been utilized to calculate technical efficiency scores for 10 private sector health insurance companies from 2013-14 to 2023-24, employing both the CCR and BCC models with one output and two input variables. The premium was regarded as the output variable, while equity capital and operating expenditure were identified as the input variables for this analysis.

Company-Wise Efficiency Analysis of Private Health Insurance in India

Table : Company-Wise Efficiency Analysis of Private Health Insurance Companies (2014 to 2024)

Indicators	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	Mean
HDFC Ergo Health Insurance											
CCR	0.738	0.670	0.613	1.000	1.154	1.359	1.453	1.581	1.956	2.124	1.265
BCC	2.258	1.543	1.912	1.160	1.000	1.056	0.982	1.000	1.002	1.000	1.291
SE	0.327	0.434	0.321	0.862	1.154	1.287	1.480	1.581	1.951	2.124	1.152
R to S	DRS	DRS	DRS	DRS	DRS	DRS	DRS	DRS	DRS	DRS	
Niva Bupa Health Insurance											
CCR	0.051	0.061	0.082	0.095	0.116	0.196	0.438	0.661	0.827	0.619	0.315
BCC	0.289	0.294	0.318	0.299	3.126	2.286	1.928	1.154	0.868	0.906	1.147
SE	0.176	0.207	0.257	0.318	0.037	0.086	0.227	0.573	0.953	0.683	0.352
R to S	IRS	IRS	IRS	IRS	IRS	IRS	DRS	DRS	DRS	DRS	
Care Health Insurance											
CCR	0.050	0.064	0.087	0.181	0.227	0.279	0.255	0.092	0.527	15.710	1.747
BCC	0.550	0.358	0.339	1.758	2.255	1.835	1.460	1.000	0.985	1.137	1.168
SE	0.091	0.178	0.257	0.103	0.101	0.152	0.175	0.092	0.535	13.820	1.550

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R to S	IRS	IRS	IRS	IRS	IRS	IRS	IRS	IRS	DRS	DRS	
Aditya Birla Health Insurance											
CCR	0.004	11.117	92.993	96.839	0.692	2.218	1.000	1.224	0.017	0.454	20.656
BCC	0.652	0.456	2.476	1.700	0.695	1.234	1.000	1.000	0.293	0.752	1.026
SE	0.000	24.374	37.561	56.964	0.996	1.797	1.000	1.224	0.058	0.604	12.458
R to S	IRS	DRS	DRS	DRS	DRS	DRS	CRS	DRS	IRS	IRS	
Star Health Insurance											
CCR	0.288	0.380	0.384	0.425	0.569	0.675	0.597	0.013	1.372	1.568	0.627
BCC	2.406	2.287	2.042	1.483	1.329	1.234	1.105	1.052	1.090	1.111	1.514
SE	0.120	0.166	0.188	0.287	0.428	0.547	0.540	0.012	1.259	1.412	0.496
R to S	IRS	IRS	IRS	IRS	IRS	IRS	IRS	IRS	DRS	DRS	
ICICI Lombard Health Insurance											
CCR	0.048	0.053	0.046	0.030	0.037	0.069	0.120	0.155	0.162	0.236	0.096
BCC	0.303	0.341	0.295	0.279	2.472	2.517	2.039	0.458	0.492	1.000	1.020
SE	0.159	0.154	0.155	0.107	0.015	0.028	0.059	0.339	0.330	0.236	0.158
R to S	IRS	IRS	IRS	IRS	IRS	IRS	IRS	IRS	IRS	IRS	
Reliance Health Insurance											
CCR	0.156	0.188	0.134	0.020	0.268	1.032	1.005	1.237	1.577	1.718	0.733
BCC	0.793	0.760	1.000	0.673	0.606	1.193	1.000	1.325	2.626	1.848	1.182
SE	0.197	0.247	0.134	0.030	0.441	0.865	1.005	0.934	0.601	0.929	0.538
R to S	IRS	IRS	IRS	IRS	IRS	IRS	IRS	DRS	IRS	DRS	
Manipal Cigna Health Insurance											
CCR	0.003	0.023	0.058	0.070	0.103	0.197	0.153	0.017	0.188	0.171	0.098
BCC	0.622	0.566	0.524	0.406	0.395	0.831	1.395	0.454	2.522	0.910	0.862
SE	0.004	0.040	0.111	0.172	0.261	0.237	0.109	0.037	0.075	0.188	0.123
R to S	IRS	IRS	IRS	IRS	IRS	IRS	IRS	IRS	IRS	IRS	

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Cholamandalam MS Health Insurance											
CCR	0.596	0.611	0.754	0.945	1.085	1.211	1.187	1.643	1.000	0.261	0.929
BCC	3.135	2.300	2.026	1.992	1.975	2.026	2.026	1.679	3.681	1.000	2.184
SE	0.190	0.266	0.372	0.474	0.549	0.598	0.586	0.979	0.272	0.261	0.455
R to S	IRS	IRS	IRS	IRS	IRS	IRS	IRS	DRS	IRS	IRS	

Company-wise technical efficiency analysis has been shown in the Table. It was found that the majority of the private health insurance companies were showing increasing trends. The DEA results reveal notable differences in the scale efficiency patterns among the insurance companies over the ten-year period. HDFC consistently exhibited decreasing returns to scale across all years, indicating that it has been operating beyond its optimal scale. This suggests that further increases in inputs, such as equity capital and operating cost, yielded less than proportional gains in output, reflecting inefficiencies associated with over-expansion. In contrast, ICICI and Manipal consistently demonstrated increasing returns to scale throughout the same period, implying that these firms are operating below their most productive scale size. Consequently, these companies have the potential to improve efficiency by expanding their operations, as proportional increases in inputs are likely to result in more than proportional increases in outputs. These findings underscore the structural differences in scale positioning among the firms and provide strategic insights for capacity optimization. In all other years, private health insurance companies were witnessing cumulative returns to scale. Among the private sector health insurance companies, it

was observed that Niva Bupa (2020–2024), Care (2022–2024), Aditya Birla (2015–2020), Star Health (2022–2024), Reliance (2023–2024), and Cholamandalam MS (2021–2022) demonstrated Decreasing Returns to Scale (DRS) throughout the specified periods.

The company with the lowest performance was ICICI Lombard, which exhibited the least efficiency, as evidenced by an overall technical efficiency mean score of merely 0.096. In a comparison of the mean scores for overall technical efficiency, it was noted that Aditya Birla achieved the highest mean score (Mean score of CCR= 20.656), followed by Care (Mean score of CCR= 1.747), HDFC Ergo (Mean score of CCR= 1.265), Cholamandalam MS (Mean score of CCR= 0.929), Reliance (Mean score of CCR= 0.733), Star (Mean score of CCR= 0.627), Niva Bupa (Mean score of CCR= 0.315), Manipal Cigna (Mean score of CCR= 0.098), and ICICI (Mean score of CCR= 0.096). These results indicate a significant variation in efficiency levels among the private sector insurance companies under study.

Year-Wise Efficiency Analysis of Private Health Insurance in India

Table: Year-Wise Efficiency Analysis of Private Health Insurance Companies (2014 to 2024)

2014-2015				
Health Insurance Company	CCR	BCC	SE	R to S
HDFC Ergo Health Insurance	0.738	2.258	0.327	DRS
Niva Bupa Health Insurance	0.051	0.289	0.176	IRS
Care Health Insurance	0.050	0.550	0.091	IRS
Aditya Birla Health Insurance	0.004	0.652	0.000	IRS
Star Health Insurance	0.288	2.406	0.120	IRS

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ICICI Lombard Health Insurance	0.048	0.303	0.159	IRS
Reliance Health Insurance	0.156	0.793	0.197	IRS
Manipal Cigna Health Insurance	0.003	0.622	0.004	IRS
Cholamandalam MS Health Insurance	0.596	3.135	0.190	IRS
Mean	0.215	1.223	0.141	
2015-2016				
Health Insurance Company	CCR	BCC	SE	R to S
HDFC Ergo Health Insurance	0.670	1.543	0.434	DRS
Niva Bupa Health Insurance	0.061	0.294	0.207	IRS
Care Health Insurance	0.064	0.358	0.178	IRS
Aditya Birla Health Insurance	11.117	0.456	24.374	DRS
Star Health Insurance	0.380	2.287	0.166	IRS
ICICI Lombard Health Insurance	0.053	0.341	0.154	IRS
Reliance Health Insurance	0.188	0.760	0.247	IRS
Manipal Cigna Health Insurance	0.023	0.566	0.040	IRS
Cholamandalam MS Health Insurance	0.611	2.300	0.266	IRS
Mean	1.463	0.989	2.896	
2016-2017				
Health Insurance Company	CCR	BCC	SE	R to S
HDFC Ergo Health Insurance	0.613	1.912	0.321	DRS
Niva Bupa Health Insurance	0.082	0.318	0.257	IRS
Care Health Insurance	0.087	0.339	0.257	IRS
Aditya Birla Health Insurance	92.993	2.476	37.561	DRS
Star Health Insurance	0.384	2.042	0.188	IRS
ICICI Lombard Health Insurance	0.046	0.295	0.155	IRS
Reliance Health Insurance	0.134	1.000	0.134	IRS
Manipal Cigna Health Insurance	0.058	0.524	0.111	IRS
Cholamandalam MS Health Insurance	0.754	2.026	0.372	IRS
Mean	10.572	1.215	4.373	
2017-2018				
Health Insurance Company	CCR	BCC	SE	R to S
HDFC Ergo Health Insurance	1.000	1.160	0.862	DRS
Niva Bupa Health Insurance	0.095	0.299	0.318	IRS
Care Health Insurance	0.181	1.758	0.103	IRS
Aditya Birla Health Insurance	96.839	1.700	56.964	DRS
Star Health Insurance	0.425	1.483	0.287	IRS
ICICI Lombard Health Insurance	0.030	0.279	0.107	IRS
Reliance Health Insurance	0.020	0.673	0.030	IRS
Manipal Cigna Health Insurance	0.070	0.406	0.172	IRS
Cholamandalam MS Health Insurance	0.945	1.992	0.474	IRS
Mean	11.067	1.083	6.591	
2018-2019				
Health Insurance Company	CCR	BCC	SE	R to S
HDFC Ergo Health Insurance	1.154	1.000	1.154	DRS

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Niva Bupa Health Insurance	0.116	3.126	0.037	IRS
Care Health Insurance	0.227	2.255	0.101	IRS
Aditya Birla Health Insurance	0.692	0.695	0.996	DRS
Star Health Insurance	0.569	1.329	0.428	IRS
ICICI Lombard Health Insurance	0.037	2.472	0.015	IRS
Reliance Health Insurance	0.268	0.606	0.441	IRS
Manipal Cigna Health Insurance	0.103	0.395	0.261	IRS
Cholamandalam MS Health Insurance	1.085	1.975	0.549	IRS
Mean	0.472	1.539	0.443	
2019-2020				
Health Insurance Company	CCR	BCC	SE	R to S
HDFC Ergo Health Insurance	1.359	1.056	1.287	DRS
Niva Bupa Health Insurance	0.196	2.286	0.086	IRS
Care Health Insurance	0.279	1.835	0.152	IRS
Aditya Birla Health Insurance	2.218	1.234	1.797	DRS
Star Health Insurance	0.675	1.234	0.547	IRS
ICICI Lombard Health Insurance	0.069	2.517	0.028	IRS
Reliance Health Insurance	1.032	1.193	0.865	IRS
Manipal Cigna Health Insurance	0.197	0.831	0.237	IRS
Cholamandalam MS Health Insurance	1.211	2.026	0.598	IRS
Mean	0.804	1.579	0.622	
2020-2021				
Health Insurance Company	CCR	BCC	SE	R to S
HDFC Ergo Health Insurance	1.453	0.982	1.480	DRS
Niva Bupa Health Insurance	0.438	1.928	0.227	DRS
Care Health Insurance	0.255	1.460	0.175	IRS
Aditya Birla Health Insurance	1.000	1.000	1.000	CRS
Star Health Insurance	0.597	1.105	0.540	IRS
ICICI Lombard Health Insurance	0.120	2.039	0.059	IRS
Reliance Health Insurance	1.005	1.000	1.005	IRS
Manipal Cigna Health Insurance	0.153	1.395	0.109	IRS
Cholamandalam MS Health Insurance	1.187	2.026	0.586	IRS
Mean	0.690	1.437	0.576	
2021-2022				
Health Insurance Company	CCR	BCC	SE	R to S
HDFC Ergo Health Insurance	1.581	1.000	1.581	DRS
Niva Bupa Health Insurance	0.661	1.154	0.573	DRS
Care Health Insurance	0.092	1.000	0.092	IRS
Aditya Birla Health Insurance	1.224	1.000	1.224	DRS
Star Health Insurance	0.013	1.052	0.012	IRS
ICICI Lombard Health Insurance	0.155	0.458	0.339	IRS
Reliance Health Insurance	1.237	1.325	0.934	DRS
Manipal Cigna Health Insurance	0.017	0.454	0.037	IRS

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Cholamandalam MS Health Insurance	1.643	1.679	0.979	DRS
Mean	0.736	1.014	0.641	
2022-2023				
Health Insurance Company	CCR	BCC	SE	R to S
HDFC Ergo Health Insurance	1.956	1.002	1.951	DRS
Niva Bupa Health Insurance	0.827	0.868	0.953	DRS
Care Health Insurance	0.527	0.985	0.535	DRS
Aditya Birla Health Insurance	0.017	0.293	0.058	IRS
Star Health Insurance	1.372	1.090	1.259	DRS
ICICI Lombard Health Insurance	0.162	0.492	0.330	IRS
Reliance Health Insurance	1.577	2.626	0.601	IRS
Manipal Cigna Health Insurance	0.188	2.522	0.075	IRS
Cholamandalam MS Health Insurance	1.000	3.681	0.272	IRS
Mean	0.847	1.506	0.670	
2023-2024				
Health Insurance Company	CCR	BCC	SE	R to S
HDFC Ergo Health Insurance	2.124	1.000	2.124	DRS
Niva Bupa Health Insurance	0.619	0.906	0.683	DRS
Care Health Insurance	15.710	1.137	13.820	DRS
Aditya Birla Health Insurance	0.454	0.752	0.604	IRS
Star Health Insurance	1.568	1.111	1.412	DRS
ICICI Lombard Health Insurance	0.236	1.000	0.236	IRS
Reliance Health Insurance	1.718	1.848	0.929	DRS
Manipal Cigna Health Insurance	0.171	0.910	0.188	IRS
Cholamandalam MS Health Insurance	0.261	1.000	0.261	IRS
Mean	2.540	1.074	2.251	

Table 4.2.2 illustrates the annual analysis of private sector health insurance. It was observed that each year demonstrated cumulative efficiency, exhibiting either increasing, decreasing, or constant returns to scale. Nevertheless, HDFC Ergo consistently displayed decreasing returns to scale throughout all the years. The average score of overall technical efficiency was 11.067, indicating that the year 2017-2018 was the most efficient, while the average score of 0.215 revealed that 2014-2015 was the least efficient year compared to all other years.

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Analysis of Mean of CCR, BCC and Scale Efficiency of Private Sector Health Insurance in India

Table: Mean of CCR, BCC and Scale Efficiency of Private Health Insurance Companies (2014-2024)

Year	Banks	Average of CCR	Average of BCC	Average of SE
2014-15	All Companies	0.215	1.223	0.141
2015-16	All Companies	1.463	0.989	2.896
2016-17	All Companies	10.572	1.215	4.373
2017-18	All Companies	11.067	1.083	6.591
2018-19	All Companies	0.472	1.539	0.443
2019-20	All Companies	0.804	1.579	0.622
2020-21	All Companies	0.690	1.437	0.576
2021-22	All Companies	0.736	1.014	0.641
2022-23	All Companies	0.847	1.506	0.670
2023-24	All Companies	2.540	1.074	2.251

The overall analysis of efficiency scores reveals notable fluctuations in the overall technical efficiency (CCR), pure technical efficiency (BCC), and scale efficiency (SE) of the insurance companies under study.

- Overall Technical Efficiency (CCR):** The CCR scores show considerable variation over the years. The efficiency was very low in 2014-15 (0.215) and 2018-19 (0.472), indicating that companies were operating far from the efficiency frontier in these years. Peak efficiency was observed in 2017-18

(11.067), followed by 2016-17 (10.572), suggesting that companies were performing closer to the optimal level during this period. The CCR score again increased in 2023-24 (2.540), indicating some improvement.

- Pure Technical Efficiency (BCC):** The BCC scores remained relatively stable across the years, ranging from 0.989 to 1.579, implying that most companies were reasonably efficient in their management and operational processes, independent of scale effects. The highest BCC was observed in 2019-20 (1.579) and 2018-19 (1.539), indicating strong managerial efficiency.
- Scale Efficiency (SE):** The SE scores show moderate fluctuation over time. Peak scale efficiency occurred in 2017-18 (6.591), reflecting optimal utilization of resources relative to size. The lowest SE was observed in 2014-15 (0.141) and 2018-19 (0.443), highlighting periods where companies were operating at suboptimal scales. Overall, the data suggest that while managerial efficiency (BCC) has remained relatively stable, variations in overall efficiency (CCR) are largely driven by changes in scale efficiency. This indicates that inefficiencies in certain years are primarily due to suboptimal resource allocation or scale rather than poor management practices.

Productivity Analysis of Private Sector Health Insurance in India

Table Year-Wise Productivity Change and Malmquist Index Summary of Private Sector Health Insurance

Year	Efficiency Change	Technical Change	Pure Technical Change	Scale Efficiency Change	TFP Change
2014-2015	1.137	2.075	1.133	1.003	2.358
2015-2016	1.038	1.190	1.046	0.992	1.235
2016-2017	1.438	0.706	1.440	0.999	1.015
2017-	1.748	1.769	1.537	1.137	3.093

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2018					
2018-2019	1.335	0.973	1.292	1.033	1.299
2019-2020	1.344	1.363	1.234	1.089	1.832
2020-2021	1.257	0.893	1.251	1.005	1.123
2021-2022	1.218	11.801	1.096	1.111	14.378
2022-2023	1.077	1.081	1.083	0.995	1.165
Mean	1.258	2.428	1.235	1.019	3.055

Table presents the decomposition of productivity change into efficiency change, technical change, pure technical change, scale efficiency change, and total factor productivity (TFP) change for private sector health insurance companies in India during the period 2014–2024. The average values over the study period were 1.258 for efficiency change, 2.428 for technical change, 1.235 for pure technical change, 1.019 for scale efficiency change, and 3.055 for TFP change. These averages indicate a notable improvement in productivity primarily driven by advancements in technology, highlighting the significant role of technical progress in enhancing overall efficiency in the private health insurance sector in India.

Table : Company-Wise Productivity Change and Malmquist Index Summary of Private Sector Health Insurance

Company Name	Efficiency Change	Technical Change	Pure Technical Change	Scale Efficiency Change	TFP Change
HDFC Ergo	1.157	1.002	1.150	1.006	1.159

Health Insurance					
Niva Bupa Health Insurance	1.206	1.045	1.297	0.930	1.260
Care Health Insurance	1.159	1.015	1.185	0.978	1.176
Aditya Birla Health Insurance	1.990	1.448	1.476	1.348	2.882
Star Health Insurance	1.245	10.666	1.141	1.091	13.276
ICICI Lombard Health Insurance	1.145	1.131	1.188	0.964	1.295
Reliance Health Insurance	1.342	1.529	1.270	1.057	2.052
Manipal Cigna Health Insurance	1.067	3.128	1.231	0.867	3.339
Cholamandalam MS Health Insurance	1.192	0.888	1.175	1.014	1.058
Mean	1.258	2.428	1.235	1.019	3.055

Table illustrates the variations in efficiency change, technical change, pure technical change, scale efficiency change, and TFP change for all private sector health insurance companies from 2014-2015 to 2023-2024. All companies recorded positive changes in TFP within the private sector. Each of these banks exhibited a TFP greater than one, indicating an enhancement in productivity, despite

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their technical changes reflecting positive growth. The most significant TFP change was noted in Star Health Insurance.

SUMMARY AND CONCLUSION

The present study provides a comprehensive analysis of the trends, patterns, performance, efficiency, and productivity of private health insurance in India. The findings reveal that the private health insurance sector has experienced substantial growth in terms of premium collection, equity capital, and operational expansion, especially in the post-COVID period. The increase in health awareness, digitalization, and competition has significantly contributed to this growth. However, the study also highlights serious structural and scale inefficiencies among private health insurers. The DEA results indicate wide variations in technical and scale efficiency, with several companies operating under decreasing returns to scale, suggesting over-expansion and suboptimal resource utilization. The year-wise analysis shows fluctuating efficiency levels, reflecting instability in operational performance.

The global private health insurance market was valued at approximately USD 750 billion in 2024 with a projected compound annual growth rate (CAGR) of 3.81% from 2025 to 2035. For the Indian health insurance market, the estimated value in 2024 was around USD 15 billion in terms of Gross Written Premium (GWP), with a projected CAGR of approximately 20.9% from 2025 to 2030. COVID-19 had impacted the market of private health insurance moderately and the swift adoption of digitalization has also increased the demand for private health insurance in the last two-three years. The present chapter examined the recent trends, pattern and performance of private health insurance companies in India.

It was found that penetration of the insurance sector in India has declined in the previous two years viz., 2022-23 and 2023-24. The penetration rate was observed at 3.7 percent in 2023-24 and 4 percent in 2022-23 indicating that penetration of insurance in India is not moving at a constant rate according to IRDA Report (2023-24). In 2023-24, the insurance density in India showed a modest rise, increasing from USD 92 in 2022-23 to USD 95 in 2023-24. Specifically, non-life insurance density increased from USD 22 to USD 25, while life insurance density remained stable at USD 70. This upward

trend in insurance density has been consistent since 2016-17.

To study the trends and pattern and growth of private health insurance in India, the premiums underwritten by life and general Insurers were examined. It was observed that there was 10.70 percent growth in life insurers segment, whereas pension segment and variable segment life, pension and variable segment recorded a growth of 13.38 percent and 34.66 percent respectively while the annuity segment along with health segments observed a fall in percentage by 11.83 percent and 2.68 percent respectively during the year 2022-23. Among various segments under non-life insurance business, health insurance business is the largest segment with a contribution of 40.29 percent (38.02 percent in 2022-23) of the total premium.

During the year 2023-24, General and Health insurance companies collected `1,07,681 crore as health insurance premium registering a growth of about 20.32 percent over the previous year. The net incurred claims under health insurance business of general and health insurers in 2023-24 reported an increase of about 18 percent from previous year. During the COVID years (2020-21, 2021-22) pushed ICR abnormally high and post-pandemic, ratios normalized and Stand-alone health insurers are most efficient in managing claims. According to Annual Report of IRDA (2023-24), a total of 635 active corporate agents including 247 banks and 388 NBFCs, cooperative societies, LLP firms and other eligible firms were agents for selling insurance. Amongst various channels for distribution of health insurance policies, individual agents contributed a major share in total health insurance premium at 30 percent. The share of this channel was high at 72 percent in individual Health Insurance premium.

Company wise and year-wise analysis was performed by calculating technical scores using CCR and BCC models. The equity capital of private health insurance companies in India exhibited significant variation during the period 2014–2024. Most companies showed a gradual or sharp increase over time, with notable trends observed in Niva Bupa Health Insurance and Care Health Insurance whereas Aditya Birla Health Insurance maintained a stable equity capital of ₹19.01 million until 2021–22, after which it increased to ₹26 million by 2023–24. Similarly, Manipal Cigna and Digit Health Insurance recorded substantial capital growth in later years, reflecting aggressive expansion strategies. In contrast, companies like ICICI

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Lombard and Cholamandalam MS showed relatively stable equity positions with minor fluctuations. Overall, the data indicates significant capital infusion in select insurers during the latter half of the decade, primarily driven by new entrants and market consolidation. The data indicates rising operational costs for the majority of insurers, likely influenced by business growth, competitive pressures, and evolving regulatory conditions. In terms of premium, private health insurance companies showcased substantial expansion, propelled by market penetration, product diversification, and heightened health awareness among consumers.

The DEA results reveal notable differences in the company wise scale efficiency patterns among the insurance companies over the ten-year period. HDFC consistently exhibited decreasing returns to scale across all years and ICICI and Manipal consistently demonstrated increasing returns to scale throughout the same period. Among the private sector health insurance companies, it was observed that Niva Bupa (2020–2024), Care (2022–2024), Aditya Birla (2015–2020), Star Health (2022–2024), Reliance (2023–2024), and Cholamandalam MS (2021–2022) demonstrated Decreasing Returns to Scale (DRS) throughout the specified periods. The company with the lowest performance was ICICI Lombard, which exhibited the least efficiency, in comparison of the mean scores for overall technical efficiency, it was noted that Aditya Birla achieved the highest mean score.

The year-wise analysis has shown that each year demonstrated cumulative efficiency, exhibiting either increasing, decreasing, or constant returns to scale. Nevertheless, HDFC Ergo consistently displayed decreasing returns to scale throughout all the years. The average score of overall technical efficiency was 11.067, indicating that the year 2017–2018 was the most efficient, while the average score of 0.215 revealed that 2014–2015 was the least efficient year compared to all other years. The changes in productivity of private health insurance companies were examined with the help of the Malmquist Index of productivity change. It was observed that there have been variations in efficiency change, technical change, pure technical change, scale efficiency change, and TFP change for all private sector health insurance companies from 2014–2015 to 2023–2024.

The awareness about the has increased post-COVID-19 amongst people and private health

insurance has recorded a momentous enhancement in terms of competition, technological improvements, digitalization, quality of service, etc. Through comparative efficiency analysis, it was observed that private health insurance companies are performing better due to technical and scale efficiency. However, it has also been observed that people trust public sector health insurance companies more than private sector health insurance companies due to reputation, long-term relationships etc. Thus, private health insurance companies need to take steps to build confidence among the masses in order to enhance the penetration of insurance among their customers.

Private health insurance in India has emerged as a vital complement to public healthcare financing, bridging gaps in access and financial protection. However, the patterns indicate that coverage remains uneven and concentrated among urban and higher-income groups, pointing to issues of inclusivity. The performance trends show promise, but sustained growth will depend on balancing profitability with equity, strengthening regulation, and enhancing consumer trust. Thus, private health insurance must evolve not merely as a commercial product but as a critical instrument of social security in the broader health financing ecosystem. Overall, the study concludes that private health insurance in India has strong potential but requires strategic reforms, regulatory strengthening, and inclusive policies to become an effective instrument of social protection.

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