



# FINANCIAL PERFORMANCE EVALUATION OF SELECT PRIVATE SECTOR HEALTH INSURANCE COMPANIES IN INDIA

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## ABSTRACT

*In this research article, the researcher conducted a study to know the financial performance evaluation of select private sector health insurance companies in India using CAMEL model. The secondary source of information collected from the annual reports of health insurance companies. Using descriptive statistics, like mean, standard deviation and ANOVA, the data were analysed and the results were presented in tables. The findings of the results show that the companies which are stood first rank are RHICL for the ratios: (i) Net premium to capital, (ii) net premium to gross premium, (iii) expense ratio and (iv) return to equity ratio; STAR Health Insurance Company for the ratios (i) capital to total assets, (ii) operating expenses to net premium, (iii) combined ratio and (iv) current assets to current liabilities; APOLLO for the ratios: (i) equity to total assets ratio, (ii) real estates + debtors to total assets ratio, (iii) net tech reserves to average claims paid ratio and (iv) loss ratio; and MBHICL for investment income ratio. The ANOVA results shows that there is a significant difference in net premium to capital ratio, equities to total assets ratio, real estates + debtors ratio, net technical reserves to average claims ratio, loss ratio, return on equity ratio and current assets to current liabilities ratio, and no significant difference was found for other ratios.*

## 1. INTRODUCTION

Medical coverage is a type of gathering protection, where people pay charges or duties to assist with shielding themselves from high or surprising medical care costs. Health care coverage works by assessing the generally "hazard" of medical services costs and fostering a normal money structure (like a month to month charge, or yearly duty) that will guarantee that cash is accessible to pay for the medical care benefits indicated in the protection arrangement. The medical services benefit is regulated by a focal association, which is regularly either an administration organization, or a private or not-revenue driven element working a wellbeing plan.

Entering into the market ought to be the fundamental objective for insurance agencies. As it is seen that the insurance agencies have made a market, and it is steadily expanding step by step. There is as yet a significant piece of the populace who don't know about protection itself. By making appropriate mindfulness in target regions, the insurance agencies can be effective in expanding the market size generally. Protection area as of now adds to the

financial improvement of the country. It advances soundness in the nation by guaranteeing dangers of people and associations. The public general insurance agencies have been performing better post advancement period when contrasted with private area as far as their benefit and the board sufficiency. However a few private players have entered the market, it is vital that they can play out their administrations with due care and steadiness, simultaneously they ought to give items and administrations by thinking about the requirements of the shoppers.

Benefit improves underwriter's dissolvability state just as expects an essential occupation in persuading policyholders and financial backers to supply resources for protection firms. Without benefits no wellbeing net supplier can attract outside subsidizing to meet its put out objectives in this reliably changing and centered globalized condition. Thusly, one of the objections of the chiefs of protection associations is to accomplish benefit as a key need for driving any protection business. The profit of protection associations can similarly be surveyed both at the more limited size, and full scale



aspects of the economy. The more limited size level insinuates how firm-unequivocal elements, for instance, gauge, capital, capability, age, and ownership structure impact benefit. The huge scope level suggests the effect of help establishments and macroeconomic factors separately. At the scaled down scale level, benefit is the major fundamental for the endurance, improvement and forcefulness of protection firms and the most affordable wellspring of resources.

It is generally acknowledged that the estimation of monetary adequacy is appropriate sign of the strength of by and large body of any association. If not it may seldom tune in with regards to the numbering of most extravagant individual, most extravagant nation and so forth by utilizing their monetary markers.

## 2. CAMEL MODEL

This model is suggested in the Handbook of Financial Sector Assessment by World Bank and IMF to assess the monetary presentation of the insurance agencies. The primary reason for this exploration is to clarify CAMEL model utilized for breaking down monetary adequacy of insurance agencies, CAMEL model, and to comprehend the degree of sufficiency of Indian health care coverage organizations. System used to control and direct protection area in Croatia is not the same as introduced model, so this work gives an alternate perspective on the area's adequacy.

## 3. REVIEW OF LITERATURE

Jansirani P. also Muthusamy A. (2019)<sup>1</sup> surveyed the monetary capability of public area non-disaster protection organizations in India for the five years time of 2012-13 to 2016-17. For this reason the specialists have applied CAMEL model. The discoveries of study show that four boundaries for the calculation of cash related sufficiency and liquidity assessment. From this assessment, it is contemplated that the entire exploration unit for portraying FSI shows ordinary outcomes conversely, with standard guidelines of monetary mechanical assemblies of general organizations.

Krishna Veni, L. also Karteeek Chedadeepu (2018)<sup>2</sup> inspected the monetary sufficiency of the chose insurance agencies during 2007-08 to 2016-17.

For this review the analyst applied the CAMEL model utilizing the distinct measurements and ANOVA. In light of the outcomes, this review reasoned that the invalid speculation is dismissed since there is critical contrast in all the CAMEL marks of the chose insurance agencies considered for this review at 1% degree of importance. Anyway it is likewise obvious from the outcomes that the invalid speculation is acknowledged in the event of all out income and productivity proportion since there is no huge contrast across the chose life back up plans.

Sharda Pandey Lohani (2017)<sup>3</sup> intended to ensure that insurance agencies stay faithful to their commitments by appropriately utilizing their monetary pointer. This incorporates dissolvability and value of back up plan. The proportion of auxiliary information gathered from the yearly report is the clear investigation of the life and non-life safety net providers in Nepalese protection market. Different proportions of non-life safety net providers Balance Sheet, Revenue records and Profit and Loss Accounts from the year 2008-09 to 2013-14 are utilized. Based on seven years information, different proportions are utilized from combined information which are normal forever and nonlife back up plan.

Maraboina Sreedhar Babu (2015)<sup>4</sup> inspected the presentation of the extra security organizations of private and public area. The consequences of this review uncover that the private area insurance agencies should stay cutthroat by presenting savvy inventive items contrasted with public area insurance agencies. This concentrate likewise inferred that during the review time frame, the private area disaster protection organizations' portion of the overall industry has enrolled a lot quicker development than the public area extra security organizations.

Parthiban V.N. (2014)<sup>5</sup> endeavored to look at sufficiency and monetary execution of the existence back up plans' utilizing CAMEL model. The monetary sufficiency and execution of life back up plans, for example, LIC, SBI and ICICI Prudential Life are assessed through CAMEL model and observed that they are monetarily strong all around. Further it is likewise found from this review that the

<sup>1</sup> Jansirani P. and Muthusamy A. (2019), "Caramel Analysis of Financial Efficiency of Public Sector Non-Life Insurance Companies in India", *International Journal of Business Economics & Management Research*, Vol.9 (6), pp. 16-34.

<sup>2</sup> Krishna Veni, L. and Karteeek Chedadeepu (2018), "Application of Caramel Model to Life Insurance Companies in India - A Comparative Analysis", *International Journal of Research in Social Sciences*, Vol. 8, Issue 8(1), pp.381-390.

<sup>3</sup> Sharda Pandey Lohani (2017), "Nepalese Insurance Market, Role of Regulator and Financial Soundness", *Osmania Journal of International Business Studies*, Vol.12(1), pp.295-303.

<sup>4</sup> Maraboina Sreedhar Babu (2015), "A Comparative Study of Public and Private Insurance Sector Performance", *International Journal of Arts and Science Research*. Vol.2(2), pp.56-62.

<sup>5</sup> Parthiban V.N (2014), "Evaluation of Financial Position and Performance of Selected Life Insurers in India through the CAMEL Model", *Splint International Journal of Professionals*, Vol.-2, No.4.



CAMEL boundaries are fundamentally varying among the chosen life safety net providers in India.

#### 4. OBJECTIVE

The study is aimed to find out the financial performance of four private sector health insurance companies using CAMEL parameter.

#### 5. HYPOTHESES

There may not be any significant difference will be found among the select private sector health insurance companies in India regarding financial performance.

#### 6. METHODOLOGY FOLLOWED

The study is mainly based on secondary data and it has been taken from different websites such as (<https://nationalinsurance.nic.co.in>, [www.uic.co.in](http://www.uic.co.in), <https://www.newindia.co.in>, <https://orientalinsurance.org.in>), annual reports of public and private health insurance companies of India during the period 2010-11 to 2020-21.

This review is extremely essential to comprehend the monetary exhibition and adequacy of general society and private area medical coverage organizations in India and to dissect the monetary sufficiency of health care coverage organizations in CAMEL structure, which contains various proportions

To examine the information, proportion investigation, factual apparatuses like engaging measurements, AVOVA have been utilized. The factual apparatuses which are utilized for this review are various proportions which are utilized in the CAMEL Model. The CAMEL boundaries are measurably tried with the assistance of factual devices like unmistakable insights and ANOVA.

#### 7. FINANCIAL PERFORMANCE EVALUATION OF SELECT PRIVATE SECTOR HEALTH INSURANCE COMPANIES

On the basis of the means of net premium to capital ratios, it can be understood that the RHICL is ranked with first (253.65 per cent), the STAR is placed in second with 227.03 per cent, the MBHICL ranked three with 163.06 per cent and the APOLLO placed in the last rank with 33.57 per cent. The means of capital to total asset ratio, it is stated that the STAR Company is ranked with first (144.63 per cent), the RHICL is placed in second with 129.06 per cent, the MBHICL ranked three with 77.33 per cent and the APOLLO placed in the last rank with 67.38 per cent.

The means of equities to total assets, it can be understood that the APOLLO is ranked with first (78.59%), the STAR is placed in second with 55.31 per cent, the RHICL ranked three with 37.19 per cent

and the MBHICL placed in the last rank with 25.70 per cent. Apollo has secured rank 1 with 102.08 per cent, followed by RHICL, MBHICL and STAR with mean scores of 93.12 per cent, 91.40 per cent and 75.21 per cent, respectively.

With regard to Net Premium to Gross Premiums Ratio RHICL secured rank 1 with 78.47 per cent, followed by STAR, MBHICL and APOLLO with means of 76.35 per cent, 70.33 per cent and 67.00 per cent, respectively. Net Technical Reserves to Average Claims Ratio, APOLLO secured rank with 1 and the percentage is 203.14, followed by MBHICL, RHICL and STAR, with means of 77.03 per cent, 79.25 per cent and 33.96 per cent, respectively.

For operating expenses to gross premium ratio the SATR ranked with 1 and the percentage is 29.26, followed by MBHICL, RHICL and APOLLO, with means of 42.80 per cent, 40.49 per cent and 304.51 per cent, respectively.

Loss Ratio Analysis shows the APOLLO ranked with 1 and the percentage is 70.67, followed by STAR, RHICL and MBHICL, with means of 72.79 per cent, 85.00 per cent and 93.61 per cent, respectively. On the basis of the mean scores of expense ratio (least to highest), the lowest mean score of RHICL 17.04 per cent and hence ranked 1, followed by MBHICL, STAR and APOLLO, with 28.16 per cent, 37.01 per cent and 91.87 per cent, respectively. On the basis of mean scores the combined ratio (from least to highest) as shown in table, the STAR ranked with 1 and the percentage is 79.67, followed by RHICL, MBHICL and APOLLO with mean of 90.42 per cent, 96.78 per cent and 248.33 per cent, respectively. The mean scores of investment income ratio, the MBHICL ranked with 1 and the percentage is 29.36, followed by RHICL, APOLLO and STAR with means of 29.28 per cent, 23.01 per cent and 22.62 per cent, respectively. With regard to return on equity ratio, the RHICL ranked with 1 and the percentage is 67.69, followed by MBHICL, STAR and APOLLO with mean of 62.84 per cent, 32.24 per cent and -16.40 per cent, respectively.

The Current Assets to Current Liabilities Ratio, the STAR ranked with 1 and the percentage is 207.13, followed by APOLLO, MBHICL and RHICL with mean of 131.56 per cent, 48.31 per cent and 36.98 per cent, respectively.

##### 7.1 Capital Adequacy

The P value is less than critical value (0.0%) for both ratios of (i) net premium to capital ratios and (ii) Capital to Total Assets ratios. Further, there is no significant difference was found in both the ratios during the study period.



### **7.2 Asset Quality**

For the two ratios of asset quality, the P values (0.00) is less than the table values (0.05). So, it can be understood that a significant difference in the equities to total assets ratio and Real Estates + Debtors to Total Assets ratios.

### **7.3 Reinsurance & Actuarial Issues**

With regard to reinsurance and annual issues, the P value (0.89) and (0.00) for Net premium to gross premium ratios and net technical reserves to average claims ratio, respectively. Hence, there is a significance difference was found among four companies for the study period.

### **7.4 Management Efficiency**

It is observed from the table that the P value (0.30) is more than the critical value (0.05). Hence, the null hypothesis is accepted. It is inferred that there is no significant difference in the Operating Expenses to Gross Premiums Ratios of select Private Sector Health Insurance Companies over a period of study.



**Table 1: Financial Performance Evaluation**

Sl. No.	CARMEL Parameter	Ratio	Insurer	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	Mean	SD	Rank
1.	Capital Adequacy	Net Premiums to Capital Ratio	MBHICL	151.52	125.16	131.1	186.69	194.5	215.76	151.52	125.16	131.1	186.69	194.5	163.06	33.25	3
			RHICL	245.17	281.24	237.51	256.96	257.72	232.96	245.17	281.24	237.51	256.96	257.72	253.65	16.34	1
			STAR	81.24	272.71	357.33	307.85	183	93.11	81.24	272.71	357.33	307.85	183	227.03	107.48	2
			APOLLO	0.28	13.35	25.32	39.67	65.26	81.48	0.28	13.35	25.32	39.67	65.26	33.57	27.47	4
			Mean	119.55	173.12	187.82	197.79	175.12	155.83	119.55	173.12	187.82	197.79	175.12	169.33		
			SD	104.08	128.37	142.39	116.53	80.27	79.59	104.08	128.37	142.39	116.53	80.27	111.17		
		Capital to Total Assets Ratio	MBHICL	27.13	28.57	24.39	18.93	16.78	15.21	125.16	131.10	186.69	151.52	125.16	77.33	66.00	3
			RHICL	22.26	20.50	20.62	18.34	17.30	18.51	281.24	237.51	256.96	245.17	281.24	129.06	126.43	2
			STAR	67.79	40.82	27.11	34.66	60.23	68.44	272.71	357.33	307.85	81.24	272.71	144.63	128.15	1
			APOLLO	116.61	111.48	144.32	104.16	91.53	81.07	13.35	25.32	39.67	0.28	13.35	67.38	50.29	4
			Mean	58.45	50.34	54.11	44.02	46.46	45.81	173.12	187.82	197.79	119.55	173.12	104.60		
			SD	43.82	41.61	60.20	40.80	36.30	33.85	128.37	142.39	116.53	104.08	128.37	79.66		
2.	Asset Quality	Equities to Total Assets Ratio Analysis	MBHICL	8.80	6.84	5.88	5.00	3.72	3.57	54.12	50.76	47.21	44.63	52.21	25.70	23.23	4
			RHICL	4.25	3.36	2.86	2.42	1.99	1.63	87.27	80.18	72.27	64.86	88.01	37.19	40.07	3
			STAR	67.79	40.36	26.08	26.05	38.00	40.75	76.86	91.03	79.00	81.69	40.82	55.31	24.10	2
			APOLLO	116.61	73.84	67.55	54.50	50.56	46.17	92.43	109.41	73.38	68.53	111.48	78.59	25.22	1
			Mean	49.36	31.10	25.59	21.99	23.57	23.03	77.67	82.85	67.97	64.93	73.13	49.20		
			SD	53.36	33.02	29.81	24.12	24.47	23.71	16.98	24.56	14.15	15.34	32.53	26.55		
		Real Estates + Debtors to Total Assets Ratio	BHICL	95.44	95.46	95.43	96.45	92.86	93.46	91.03	101.85	110.89	61.69	70.86	91.40	13.69	3
			RHICL	92.23	92.16	92.03	93.16	92.50	91.62	109.41	113.86	126.41	78.53	42.43	93.12	21.42	2
			STAR	89.67	92.00	84.33	87.62	84.18	82.39	18.93	16.78	15.21	125.16	131.10	75.21	40.81	4
			APOLLO	86.03	86.48	89.20	95.68	97.24	95.42	18.34	17.30	18.51	281.24	237.51	102.08	85.08	1
			Mean	90.84	91.53	90.25	93.23	91.70	90.72	59.43	62.45	67.76	136.66	120.48	90.45		
			SD	3.98	3.72	4.70	3.99	5.45	5.77	47.70	52.66	59.12	100.06	86.34	33.95		
3.	Reinsurance & Actuarial Issues	Net Premium to Gross Premiums Ratio	MBHICL	47.39	58.01	66.55	67.17	68.91	65.36	71.69	76.86	91.03	79.00	81.69	70.33	11.86	3
			RHICL	59.47	72.21	75.90	74.90	75.30	73.08	88.53	92.43	109.41	73.38	68.53	78.47	13.55	1
			STAR	52.46	59.12	63.48	67.73	74.51	59.43	27.11	34.66	60.23	68.44	272.71	76.35	66.66	2
			APOLLO	9.43	44.95	61.02	52.62	63.25	71.31	144.32	104.16	91.53	81.07	13.35	67.00	38.88	4
			Mean	42.19	58.57	66.74	65.61	70.49	67.30	82.91	77.03	88.05	75.47	109.07	73.04		
			SD	22.39	11.14	6.51	9.34	5.60	6.20	48.45	30.38	20.42	5.70	113.04	25.38		
		Net Technical Reserves to Average claims Ratio	MBHICL	86.20	96.56	78.34	53.10	51.46	43.91	89.67	92.00	84.33	87.62	84.18	77.03	18.41	2
			RHICL	73.31	58.95	55.50	48.99	51.04	59.98	86.03	86.48	89.20	95.68	97.24	72.95	18.57	3
			STAR	0.00	1.14	2.27	13.00	23.70	35.91	47.21	44.63	52.21	79.36	74.12	33.96	28.42	4
			APOLLO	0.00	657.17	520.40	303.67	189.30	132.45	72.27	64.86	88.01	125.12	81.27	203.14	208.28	1
			Mean	39.88	203.46	164.13	104.69	78.88	68.06	73.80	71.99	78.44	96.95	84.20	96.77		
			SD	46.35	305.01	239.64	133.87	74.75	44.08	19.24	21.68	17.61	19.93	9.66	84.71		





Sl. No.	CARMEL Parameter	Ratio	Insurer	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	Mean	SD	Rank	
1.	Management Efficiency	Operating Expenses to Gross Premium Ratio	MBHICL	16.97	19.95	16.85	15.99	16.95	16.60	98.83	99.12	99.21	99.27	99.33	54.46	42.80	2	
			RHICL	21.81	22.86	22.10	22.51	20.45	19.21	98.11	98.75	99.08	99.01	99.05	56.63	40.39	3	
			STAR	20.67	12.30	9.68	7.39	18.69	37.04	96.56	78.34	53.10	51.46	43.91	39.01	29.26	1	
			APOLLO	1066.67	150.35	85.73	47.14	36.64	30.51	58.95	55.50	48.99	51.04	59.98	153.77	304.51	4	
			Mean	281.53	51.37	33.59	23.26	23.18	25.84	88.11	82.93	75.10	75.20	75.57	75.97			
			SD	523.43	66.14	35.13	17.08	9.08	9.60	19.46	20.70	27.82	27.65	28.06	71.29			
2.	Earnings and Profitability	Loss ratio	MBHICL	78.38	85.35	88.85	95.61	101.46	84.32	98.83	99.12	99.21	99.27	99.33	93.61	7.93	4	
			RHICL	66.81	71.91	73.59	79.14	77.10	72.43	98.11	98.75	99.08	99.01	99.05	85.00	13.56	3	
			STAR	76.21	85.74	87.11	91.19	95.76	63.18	55.50	48.99	51.04	59.98	86.03	72.79	17.38	2	
			APOLLO	89.29	114.28	85.39	61.95	58.20	59.25	66.92	51.04	51.25	51.95	87.85	70.67	20.61	1	
			Mean	77.67	89.32	83.74	81.97	83.13	69.80	79.84	74.48	75.15	77.55	93.07	80.52			
			SD	9.23	17.84	6.91	15.05	19.61	11.15	22.01	28.26	27.71	25.14	7.11	17.28			
		Expense ratio	MBHICL	35.81	34.38	25.32	23.80	24.60	25.39	23.27	25.34	19.82	20.79	51.25	28.16	9.13	2	
			RHICL	36.67	31.66	29.11	30.06	27.16	26.29	1.68	2.43	0.95	1.14	0.29	17.04	15.31	1	
			STAR	39.41	20.80	15.25	10.92	25.08	62.33	19.47	19.25	18.70	17.90	158.04	37.01	42.64	3	
			APOLLO	314.29	334.47	140.51	89.59	57.93	42.79	3.71	4.61	2.48	1.85	18.37	91.87	122.94	4	
			Mean	2856.55	105.33	52.55	38.59	33.69	39.20	12.03	12.91	10.49	10.42	56.99	293.52			
			SD	5638.50	152.87	58.93	34.92	16.20	17.37	10.92	11.16	10.16	10.38	70.59	548.36			
		Combined ratio	MBHICL	114.18	119.73	114.17	119.41	126.06	109.71	51.46	43.91	89.67	92.00	84.33	96.78	27.83	3	
			RHICL	103.49	103.57	102.70	109.20	104.26	98.72	51.04	59.98	86.03	86.48	89.20	90.42	19.03	2	
			STAR	115.62	106.54	102.36	102.11	120.84	125.50	23.70	35.91	47.21	44.63	52.21	79.69	38.62	1	
			APOLLO	1140.36	448.75	225.90	151.55	116.14	102.04	189.30	132.45	72.27	64.86	88.01	248.33	314.95	4	
			Mean	368.41	194.65	136.28	120.57	116.83	108.99	78.88	68.06	73.80	71.99	78.44	128.81			
			SD	514.66	169.55	60.00	21.84	9.31	11.93	74.75	44.08	19.24	21.68	17.61	87.69			
		Investment income ratio	MBHICL	10.19	15.53	17.17	10.73	9.54	12.33	15.99	16.95	16.60	98.83	99.12	29.36	34.53	1	
			RHICL	10.80	8.75	9.37	10.07	11.34	12.72	22.51	20.45	19.21	98.11	98.75	29.28	34.52	2	
			STAR	1.95	1.94	1.17	1.50	1.50	2.75	7.39	18.69	37.04	96.56	78.34	22.62	34.10	4	
			APOLLO	3.57	8.13	5.77	4.67	-3.21	5.43	47.14	36.64	30.51	58.95	55.50	23.01	23.24	3	



			Mean	6.63	8.59	8.37	6.74	4.79	8.31	23.26	23.18	25.84	88.11	82.93	26.07		
			SD	4.52	5.56	6.76	4.43	6.84	4.99	17.08	9.08	9.60	19.46	20.70	9.91		
		Return on equity ratio	MBHICL	30.64	6.26	35.70	-19.90	-2.91	70.04	131.16	115.22	111.75	110.61	102.67	62.84	54.65	2
			RHICL	95.82	86.33	109.62	39.25	112.17	267.69	0.47	1.40	0.65	14.03	17.11	67.69	80.33	1
			STAR	1.18	1.13	3.20	3.64	-52.93	-38.42	114.30	115.16	104.22	51.25	51.95	32.24	59.48	3
			APOLLO	-28.18	-67.23	-69.37	-40.65	-18.63	1.65	7.22	15.41	7.77	0.29	11.36	-16.40	31.06	4
			Mean	24.87	6.62	19.79	-4.42	9.43	75.24	63.29	61.80	56.10	44.05	45.77	36.59		
			SD	53.05	62.82	74.27	34.27	71.61	135.89	69.04	61.92	60.06	49.32	41.96	64.93		
3.	Liquidity Ratio	Current Assets to Current Liabilities Ratio	MBHICL	46.24	56.55	56.34	49.77	45.09	39.42	7.39	18.69	37.04	96.56	78.34	48.31	24.77	3
			RHICL	27.34	33.25	34.35	26.01	28.68	28.39	47.14	36.64	30.51	58.95	55.50	36.98	11.61	4
			STAR	460.81	318.30	297.46	404.25	299.93	308.50	47.14	36.64	30.51	58.95	15.99	207.13	169.40	1
			APOLLO	369.30	190.08	72.22	75.12	124.35	207.41	113.77	106.50	84.18	81.69	22.51	131.56	94.88	2
			Mean	225.92	149.55	115.09	138.79	124.51	145.93	53.86	49.62	45.56	74.04	43.09	106.00		
			SD	221.70	132.03	122.57	178.11	124.18	135.85	44.12	38.85	25.93	18.45	29.18	97.36		

Source: Compiled from Annual Reports of Select Private Sector Health Insurance Companies and IRDA.



Table 2: ANOVA Results

Sl. No	CAMEL Parameter	Ratio	Source of Variation	df	Sum of squares	Mean square	F	P-value	F-Critical
1.	Capital Adequacy	Net Premium to Capital Ratio	Between groups	3	318015.6	106005.2	30.99*	0.00	2.83
			Within groups	40	136786.5	3419.663			
			Total	43	454802.1				
		Capital to Total Assets Ratio	Between groups	3	47625.15	15875.05	1.61	0.20	2.83
			Within groups	40	392918.7	9822.967			
			Total	43	440543.8				
2.	Asset Quality	Equities to Total Assets Ratio	Between groups	3	17569.9	5856.633	6.968*	0.000	2.838
			Within groups	40	33617.99	840.4497			
			Total	43	51187.89				
		Real Estates + Debtors Ratio	Between groups	3	17569.9	5856.633	6.968451*	0.000701	2.838745
			Within groups	40	33617.99	840.4497			
			Total	43	51187.89				
3.	Reinsurance & Actuarial Issues	Net Premiums to Gross Premiums Ratio	Between groups	3	926.5232	308.8411	0.196728	0.898007	2.838745
			Within groups	40	62795.41	1569.885			
			Total	43	63721.93				
		Net Technical Reserves to Average claims Ratio	Between groups	3	178381.9	59460.62	5.30047*	0.00358	2.83874
			Within groups	40	448719	11217.98			
			Total	43	627100.9				
4.	Management Efficiency	Operating Expenses to Gross Premium Ratio	Between groups	3	90813.2	30271.07	1.24767	0.30527	2.83874
			Within groups	40	970478.8	24261.97			
			Total	43	1061292				
5.	Earnings and Profitability	Loss ratio	Between groups	3	3829.859	1276.62	5.2435*	0.0038	2.8387
			Within groups	40	9738.649	243.4662			
			Total	43	13568.51				
		Expense ratio	Between groups	3	36491.52	12163.84	2.820674	0.051024	2.838745
			Within groups	40	172495.5	4312.387			
			Total	43	208987				
		Combined ratio	Between groups	3	211161.7	70387.24	2.765212	0.054304	2.838745
			Within groups	40	1018182	25454.56			
			Total	43	1229344				





		Investment income ratio	Between groups	3	466.461	155.487	0.152181	0.92768	2.838745
			Within groups	40	40868.89	1021.722			
			Total	43	41335.35				
		Return on equity ratio	Between groups	3	49306.79	16435.6	4.7151*	0.00655	2.838745
			Within groups	40	139428	3485.699			
			Total	43	188734.8				
6.	Liquidity Ratio	Current Assets to Current Liabilities Ratio	Between groups	3	208706.4	69568.8	7.2377*	0.00054	2.83874
			Within groups	40	384475.5	9611.888			
			Total	43	593181.9				

Source: Compiled from table 1.

### 7.5 Earnings and Profitability

It is observed from the table that the P value (0.00) is less than the critical value (0.05). Hence, the null hypothesis is rejected. It is inferred that there is a significant difference in the Loss Ratios of select Private Sector Health Insurance Companies over a period of study. It is observed from the table that the P value (0.051) is more than the critical value (0.05). Hence, the null hypothesis is accepted. It is inferred that there is no significant difference in the Expenses Ratios of select Private Sector Health Insurance Companies over a period of study.

It is observed from the table that the P value (0.054) is more than the critical value (0.05). Hence, the null hypothesis is accepted. It is inferred that there is a no significant difference in the Combined Ratios of select Private Sector Health Insurance Companies over a period of study. It is observed from the table that the P value (0.927) is more than the critical value (0.05). Hence, the null hypothesis is accepted. It is inferred that there is no significant difference in the Investment Income Ratios of select Private Sector Health Insurance Companies over a period of study. It is observed from the table that the P value (0.00) is less than the critical value (0.05). Hence, the null hypothesis is rejected. It is inferred that there is a significant difference in the Return on Equity Ratios of select Private Sector Health Insurance Companies over a period of study.

### 7.6 Liquidity Ratio

The P value (0.00) for liquidity ratio is less than critical value (0.0%) and the hypothesis is rejected. A significant difference was found in this ratio of private sector health insurance companies.

### 8. CONCLUSION

Based on the results obtained from the analysis using means, the investigator ranked the companies which are stood first rank are RHICL for the ratios: (i) Net premium to capital, (ii) net

premium to gross premium, (iii) expense ratio and (iv) return to equity ratio; STAR Health Insurance Company for the ratios (i) capital to total assets, (ii) operating expenses to net premium, (iii) combined ratio and (iv) current assets to current liabilities; APOLLO for the ratios: (i) equity to total assets ratio, (ii) real estates + debtors to total assets ratio, (iii) net tech reserves to average claims paid ratio and (iv) loss ratio; and MBHICL for investment income ratio.

The overall ranking of select private sector health insurance companies in India are the STAR Health & Allied Insurance Company Limited stood first rank and it is followed by the APOLLO Munich Health Insurance Company Limited. The Religare Health Insurance Company Limited stand in third place and the Max Bhupa Health Insurance Company Limited got fourth rank.

### 9. REFERENCES

- Jansirani P. and Muthusamy A. (2019), "Caramel Analysis of Financial Efficiency of Public Sector Non-Life Insurance Companies in India", *International Journal of Business Economics & Management Research*, Vol.9 (6), pp. 16-34.
- Krishna Veni, L. and Kartteek Chedadeepu (2018), "Application of Caramel Model to Life Insurance Companies in India - A Comparative Analysis", *International Journal of Research in Social Sciences*, Vol. 8, Issue 8(1), pp.381-390.
- Sharda Pandey Lohani (2017), "Nepalese Insurance Market, Role of Regulator and Financial Soundness", *Osmania Journal of International Business Studies*, Vol.12(1), pp.295-303.
- Maraboina Sreedhar Babu (2015), "A Comparative Study of Public and Private Insurance Sector Performance", *International Journal of Arts and Science Research*. Vol.2(2), pp.56-62.
- Parthiban V.N (2014), "Evaluation of Financial Position and Performance of Selected Life Insurers in India through the CAMEL Model", *Splint International Journal of Professionals*, Vol.-2, No.4.