

Extension of CAMEL Model by Customer Satisfaction Factor for Indian Private Life Insurance Companies in India

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ABSTRACT

This paper explores the efficiency of private life insurance companies in India. The study employed the CAMEL model to gauge the technical proficiency of Indian life insurance providers. However, the CAMEL model has ignored the customer satisfaction factor, which is nowadays an essential factor for measuring efficiency. So, in this study, the CAMEL model is extended by another factor: customer satisfaction. Customer satisfaction is measured by the persistency ratio, claim settlement ratio, and number of grievances reported. Compare the ranks of private life insurance companies according to the CAMEL model without customer satisfaction score and with customer satisfaction score. Correlation coefficient and t-test was used to find out whether there is any significant association between the ranks according to the CAMEL model without customer satisfaction and with the customer satisfaction factor. The data used in this study, which spans the last ten years from 2013-14 to 2022-23, was entirely secondary and was gathered from the IRDA official website.

Ageas Federal Life Insurance Company ranked 1st according to CAMEL model without customer satisfaction and ICICI Prudential Life Insurance Company ranked 1 with customer satisfaction factor. Spearman's Rank correlation coefficient shows that there is an insignificant association between the CAMEL model ranks with customer satisfaction and without customer satisfaction factors. When there is no significant association between ranking without customer satisfaction factors and with customer satisfaction factors, we extend the CAMEL model by the customer satisfaction factor.

KEYWORDS: Private Life insurance sector, CAMEL model, Customer satisfaction, Rank Correlation, T-Test.

JEL Classification code: C61, C67, D24, G22.

1. INTRODUCTION

To reduce the risk to life and property insurance is used as a social device [1]. Life Insurance, Insurers safeguard the policyholder against a regular payment termed as a premium [2]. When a policyholder gets a safeguard against non-life i.e. fire, accidents burglary, etc., it is called non-life insurance [3].

In India, life insurance has a long history that began in the early 1800s [4]. Europeans founded the Oriental Life Insurance firm, India's first life insurance firm, in Calcutta in 1818 [5]. However, this firm only provided a restricted range of services to Indians, mostly serving European consumers [6].

In order to control the life insurance market in India, the Indian Life Assurance Companies Act was established in 1870 [7]. As a result, other Indian life insurance firms were established. The "Bombay Mutual Life Assurance Society" was founded in 1871 and covered the lives of Indians [8].

In this study we consider 21 private life insurance companies out of 23 private life insurance companies in India. 2 private life insurance companies i.e. "Exide Life Insurance Company" and "Sahara Life Insurance Company" are excluded because "Exide Life Insurance Company" is taken over by "HDFC Life Insurance Company". "Sahara Life Insurance" is excluded due to the future of "Sahara Life Insurance" is still unclear, as the firm is still directly supervised by the IRDAI.

For the analysis, the following private life insurance providers are taken into account:

	Private Life insurer
1	"Aditya Birla Sunlife Insurance Company Ltd". (ABSLIC)
2	"Aegon Life Insurance Company Ltd". (AGLIC)

3	“Ageas Federal Life Insurance Company Ltd”. (AGFLIC)
4	“Aviva Life Insurance Company India Ltd”. (AVLIC)
5	“Bajaj Allianz Life Insurance Company Ltd”(BALIC)
6	“Bharti AXA Life Insurance Company Ltd”. (BAXLIC)
7	“Canara HSBC Life Insurance Company Ltd”. (CHSBCLIC)
8	“Edelweiss Tokio Life Insurance Company Ltd”. (ETLIC)
9	“Future Generali India Life Insurance Company Ltd”. (FGLIC)
10	“HDFC Life Insurance Company Ltd”. (HDFCLIC)
11	“ICICI Prudential Life Insurance Company Ltd”. (ICPLIC)
12	“IndiaFirst Life Insurance Company Ltd”. (IFLIC)
13	“Kotak Mahindra Life Insurance Ltd”. (KMLIC)
14	“Max Life Insurance Company Ltd”. (MLIC)
15	“PNB Metlife India Insurance Company Ltd”. (PNBLIC)
16	“Pramerica Life Insurance Company Ltd”. (PALIC)
17	“Reliance Nippon Life Insurance Company Ltd”. (RNLIC)
18	“SBI Life Insurance Company Ltd”. (SBILIC)
19	“Shriram Life Insurance Company Ltd”. (SRRLIC)
20	“Star Union Dai-ichi Life Insurance Company Ltd”. (SUDLIC)
21	“TATA AIA Life Insurance Company Ltd”. (TATAALIC)

Before 1999 ordinary people used to depend on the only public life insurance company i.e. LIC for life insurance. But after 1999 private life insurance companies entered into the insurance market [9]. In the public sector, people have no option to choose a life insurance company, due to the monopoly of LIC as a public life insurance company [10]. However, the situation is juxtaposed in the case of selecting a private life insurance company [11]. There people will get multiple options to choose. People should know which life insurance company is working efficiently. This study will help us to understand which private life insurance companies are efficient and which are inefficient [12]. Not only that it will also help us to know which private life insurance company is working most efficiently [13].

Our study will not only help the general public but will also assist private life insurance companies in identifying their weaknesses.

1.1. Purpose of the study

U.S.Das, N. Devis, and R.Podperia framed the CAMEL model in an IMF working paper in July 2003 [14]. However, after that, the model was not modified. At that time the world business concept is centred on the producer being king. But later the situation changed and now the consumer is king. The CAMEL model emphasizes almost all factors like capital, assets, return, management efficiency, reinsurance, and liquidity. But does not consider any factor like customer satisfaction or claim settlement factors.

So in the modern concept, we want to intercept the customer satisfaction factor in the CAMEL model. Whether the insurance firms will remain in the same rank position with customer satisfaction factor or not.

1.2. Novelty of the study

In the study, all the private life insurance firms are considered at a stage. All the private life insurance firms are ranked according to the CAMEL model. Extended the CAMEL model with the customer satisfaction factors.

Primary data are avoided for the biases and secondary data are used for the study. We used Spearman’s rank correlation test and T-test to find the association between the ranks without customer satisfaction factor and ranks on the CAMEL model. R software has been used as a tool for the study.

2. LITERATURE REVIEW

The following are some literature reviews based on recent publications.

Rohila R.L.(2023) researched to determine the size of the life insurance market in India. ANOVA and the F test were two of the statistical tests utilized in the study, along with CAMEL's framework ratios. The analysis reveals that the earnings and profitability of all the life insurance businesses declined over the study period [15].

Singh, A. K., & Fatima, S. (2017) In this study financial performance is analysed through the CAMEL model for a study period from 2009 to 2018. The various ratios are evaluated and statistical tests to find whether there is any significant difference in the ratios over the study period or not [16].

Surya, M., & Sudha, B. (2020) This research paper's main goal is to thoroughly examine the CAMEL's framework's fundamental components in the insurance industry. To assess the financial stability of Indonesian life insurance businesses [17].

Widati. T.A. and Anas E.P. (2019) analyze three models: the Financial Strength Rating (FSR), the CAMEL model, and the Risk-based model (RBM). Using three models, the CAMEL model has been used to assess performance and has determined that life insurers are in good financial standing [18].

Dr. R. Jayanthi (2019) made an effort to investigate the performance and financial stability of India's Life Insurance Corporation (LIC). Insurance businesses' financial performance is examined using CAMEL criteria [19].

Jansirani, P., & Muthusamy, A. (2019) This study's primary goal is to elucidate one of the most current CAMEL models that have been used to the analysis of the stability and financial performance of public general insurance firms in India. This analysis leads to the conclusion that, in contrast, the whole research unit for FSI characterization shows normal results [20].

Dr. Rao S. et.al. (2019) Utilizing ratios and One Way ANOVA, the CAMEL method will evaluate the financial performance of Indian life insurance companies. During the research period, there was a significant difference for CAMEL markers at a significance level of 5% [21].

Dr. L. Krishna Veni, Kartek Chedadeepu (2019) The purpose of the current study is to use the CAMEL Model to compare the financial performance of LIC and ICICIPLIC, BALIC, HDFCSLIC, and SBILIC between 2007–2008 and 2016–2017. According to the analysis, there are no appreciable differences in overall profits or profitability among the chosen life insurers [22].

Chakraborty. J and Sengupta P.P (2018) The four top life insurers in India are compared and evaluated based on their market concentration, solvency, and financial results. Model CAMEL. The performance of the selected life insurance (FSIs) has been evaluated using the CAMEL model, which is based on the Financial Soundness Indicators [23].

Parthiban, V. N. (2015) In the study financial performance is evaluated of some selected life insurers based on the CAMEL model. The results show that there is a significant difference between the various parameters of the CAMEL model [24].

3. RESEARCH GAP

In various literature, we found the application of the CAMEL model in the life insurance sector. However, in recent scenarios, customer satisfaction is a major factor for any service sector. In the CAMEL model, they considered Capital adequacy, Asset quality, Reinsurance issues, management soundness, earning efficiency, and liquidity factors only but there is a lack of consideration for the customer satisfaction factor.

There are some studies on the life insurance sector on customer satisfaction, which are based on the primary data. However, there are many drawbacks to relying on primary data. So, in our study, customer satisfaction is measured based on secondary data.

Surprisingly there has been no modification of the CAMEL model for the last 20 years. So, there is a need to modify the CAMEL model with customer satisfaction factors.

4. OBJECTIVE OF THE STUDY

1. Ranked the private Life Insurance Companies according to CAMEL model.
2. Ranked the private life insurance companies on customer satisfaction factors.
3. Is there any significant association between the ranks according to the CAMEL model with customer satisfaction and without customer satisfaction?
4. Extension of CAMEL model with customer satisfaction factor.

5. RESEARCH METHODOLOGY

5.1. **Data source:** Secondary Data has been used for the last 10 years i.e., from 2013-14 to 2022-23 from IRDA.

5.2. **Research Variables:** To examine financial efficiency, we use the CAMEL model. In CAMEL financial soundness is judged through capital adequacy, and earnings and profitability. Whereas financial sector vulnerability is judged by asset quality, management soundness, liquidity, reinsurance, and accrual issues.

Table 1 Aspects of Financial System and selected indicators for CAMEL model.

TYPES OF FSI	Aspects of Financial System	Selected Indicators
Financial Soundness	Capital Adequacy	Capital/ Mathematical Reserves Capital/Total Assets
	Earnings & Profitabilities	Expense Ratio= Expense/Net premium
		Shareholder Investment Income/Shareholder Investment
		Policyholder Investment Income/Policy holder Investment
		ROE
Insurance Sector Vulnerabilities	Asset Quality	Equity / Total Assets
	Reinsurance & Actuarial Issue	Risk Retention Ratio
		Mathematical Reserve/ Avg Net Premium
	Management Soundness	Gross Premium / No of Agents Total Assets / No of agents
	Liquidity	Net Assets / Net Premium Undertaken

CAMEL model is extended by the customer satisfaction factor. Customer satisfaction is measured by the persistency ratio, Claim settlement ratio, and number of grievances [25].

Table 2 Customer Satisfaction and selected indicators for extended CAMEL model.

Customer Satisfaction	Persistency ratio	Number of Policies Receiving Premium timely
		Number of Active Policies
	Claim Prevention ratio	Number of Claims settled
		Number of Claims received
	Number of grievances per '000 policies	Number of grievances
		per '000 policies

6. HYPOTHESIS

H₀: No significant association exists between ranking with and without customer satisfaction.

H₁: A significant association exists between ranking with and without customer satisfaction.

7. DATA ANALYSIS

Table 3. Details statistics of various parameters of Private Life Insurance Companies for the CAMEL Model

	CAPITAL ADEQUACY		ASSET QUALITY	MANAGEMENT SOUNDNESS		EARNING AND PROFITABILITY			LIQUIDITY
	CA/T A	CA/M R	EQUITY/TA	GROSS PREMIUM / NO OF AGENTS	TOTAL ASSETS / NO OF AGENTS	EXP RATIO	INV IN/INV ASSETS	ROE	SOLVENCY
ABSLIC	0.06	0.91	0.05	0.10	0.53	0.21	0.20	8.14	1.93
AGLIC	0.78	11.57	0.06	0.64	5.87	0.48	0.15	-1.46	2.43
AFLIC	0.12	0.95	0.45	0.22	1.25	0.22	0.28	11.21	3.72
AVLIC	0.20	2.18	0.08	0.15	1.26	0.25	0.31	-3.76	2.95
BALIC	0.15	2.89	0.52	0.10	0.67	0.22	0.11	1.61	6.77
BAXALIC	0.52	5.83	0.78	0.06	0.21	0.46	0.18	2.83	1.86
CHSBCOLIC	0.08	0.26	0.09	0.80	0.90	0.18	0.18	-6.13	3.49
ETLIC	0.65	3.64	0.12	0.02	0.09	0.72	0.18	21.12	2.28
FGLIC	0.45	7.04	0.20	0.17	0.67	0.47	0.11	10.74	2.09
HDFCFLIC	0.05	0.52	0.14	0.30	1.36	0.17	0.19	-11.37	1.92
ICICIPLIC	0.05	0.96	0.11	0.16	0.94	0.14	0.19	9.25	2.60
IFLIC	0.06	-1.96	0.07	1.50	6.44	0.16	0.13	2.85	1.97
KMLIC	0.08	0.93	0.05	0.08	0.34	0.23	0.11	1.53	2.97
MXLIC	0.05	0.35	0.07	0.27	1.22	0.22	0.11	16.94	2.88
PNBMILIC	0.11	1.20	0.14	0.47	2.25	0.27	0.14	19.09	2.03
PALIC	0.39	2.32	0.15	0.14	0.45	0.40	0.10	7.23	6.18
RNLIC	0.09	-1.68	0.24	0.07	0.35	0.29	0.13	3.60	2.79
SILIC	0.24	0.42	0.05	0.01	0.13	0.39	0.17	20.10	7.32
SBILIC	0.05	0.70	0.05	0.25	1.17	0.11	0.33	7.45	2.11
SUDCLIC	0.07	0.68	0.39	5.55	20.89	0.24	0.21	-1.05	2.35
TATAIALIC	0.07	0.86	0.06	0.17	0.86	0.29	0.19	-5.20	2.87

The above is the last 10 years' averages i.e. from 2013-14 to 2022-23 statistics for various parameters of the CAMEL model.

Table 4. Ranking of private life insurance companies according to CAMEL Model

	CAPITAL ADEQUACY	ASSET QUALITY	MANAGEMENT SOUNDNESS	EARNING & PROFITABILITY	LIQUIDITY		

	RANK	RANK	RANK	RANK	RANK	TOTAL MEAN RANK	COMP RANK
AFLIC	9	3	9	2	3	5.2	1
BALIC	6	2	15	13	1	7.4	2
SUDCLIC	15	4	1	8	13	8.2	3
PNBMILIC	8	8	4	5	17	8.4	4
AVLIC	7	13	11	9	6	9.2	5
CHSBCOLIC	13	11	12	3	11	10	6
ICICIPLIC	5	7	16	20	2	10	6
PALIC	16	12	7	12	4	10.2	8
FGLIC	1	17	3	21	12	10.8	9
AGLIC	2	6	14	18	16	11.2	10
ETLIC	2	10	21	10	14	11.4	11
MXLIC	21	15	8	6	7	11.4	11
BAXALIC	11	13	5	19	10	11.6	13
SBILIC	2	1	20	15	21	11.8	14
SHRLIC	11	17	12	13	8	12.2	15
TATAAIALIC	19	8	5	10	20	12.4	16
RNLIC	20	15	2	7	18	12.4	16
HDFCFLIC	16	5	18	15	9	12.6	18
IFLIC	18	19	10	1	15	12.6	18
KMLIC	10	19	18	17	5	13.8	20
ABSLIC	13	19	16	4	19	15.8	21

In the above table, 21 private life insurance companies are ranked according to the CAMEL model. We ignored the reinsurance and accrual issue factors because reinsurance is not a justifiable factor in the life insurance sector.

The above table shows that Ageas Federal Life Insurance Company Ltd. ranked 1 and was followed by Bajaj Allianz Life Insurance Company according to the CAMEL model.

Now we ranked the private life insurance companies based on customer satisfaction score.

Table 5. Ranking of 21 private life insurance companies according to customer satisfaction factor.

CUSTOMER SATISFACTION								
	PERSISTENCY RATIO	RANK	GRE/000 POLICIES	RANK	CL SET RATIO	RANK	MEAN RANK	COMP RANK
ICICIPLIC	47.94	1	14.43	6	96.65	3	3.33	1
MXLIC	44.67	4	15.86	7	97.96	1	4.00	2
KMLIC	46.92	2	11.89	5	94.19	10	5.67	3
HDFCFLIC	44.65	5	20.62	12	96.81	2	6.33	4

SBILIC	36.35	10	6.66	2	94.64	9	7.00	5
AFLIC	46.24	3	9.26	3	91.68	17	7.67	6
ETLIC	36.70	9	11.50	4	93.59	12	8.33	7
TATAAIALIC	36.21	11	21.65	14	96.53	4	9.67	8
CHSBCOLIC	40.45	6	45.63	18	95.19	7	10.33	9
ABSLIC	32.67	14	31.93	16	96.07	5	11.67	10
AGLIC	39.84	7	64.50	20	95.18	8	11.67	11
PALIC	35.90	13	16.28	8	92.56	15	12.00	12
IFLIC	37.37	8	18.33	10	88.95	20	12.67	13
AVLIC	28.16	19	29.63	15	95.46	6	13.33	14
BALIC	36.15	12	60.76	19	93.73	11	14.00	15
RNLIC	21.60	20	1.98	1	80.84	21	14.00	16
SUDCLIC	32.34	17	20.71	13	93.42	13	14.33	17
SHRLIC	32.41	16	20.58	11	92.15	16	14.33	18
PNBMILIC	30.14	18	17.20	9	91.66	18	15.00	19
BAXALIC	32.45	15	40.30	17	91.08	19	17.00	20
FGLIC	21.18	21	79.84	21	93.10	14	18.67	21

Customer satisfaction is based on 3 parameters, persistence ratio, claim settlement ratio, and number of grievances received per thousand claims.

In the above table, it is found that ICICI's prudential life insurance company followed by Max Life Insurance Company is the most efficient in the customer satisfaction factors.

Table 6. Ranking of 21 private life insurance companies with the CAMEL Model and customer satisfaction factor.

	CAPITAL ADEQUACY RANK (C)	ASSET QUALITY RANK (A)	MANAGEMENT SOUNDNESS RANK (M)	EARNING & PROFITABILITY RANK (E)	LIQUIDITY RANK (L)	TOTAL MEAN RANK	CAMEL RANK	CUSTOMER SATISFACTION RANK
ABSLIC	13	19	16	4	19	15.8	21	10
AGLIC	1	17	3	21	12	10.8	9	11
AFLIC	9	3	9	2	3	5.2	1	6
AVLIC	7	13	11	9	6	9.2	5	15
BALIC	6	2	15	13	1	7.4	2	14
BAXALIC	2	1	20	15	21	11.8	14	20
CHSBCOLIC	16	12	7	12	4	10.2	8	9
ETLIC	2	10	21	10	14	11.4	11	7
FGLIC	2	6	14	18	16	11.2	10	21

HDFCFLIC	19	8	5	10	20	12.4	16	4
ICICIPLIC	13	11	12	3	11	10	6	1
IFLIC	20	15	2	7	18	12.4	16	13
KMLIC	10	19	18	17	5	13.8	20	3
MXLIC	21	15	8	6	7	11.4	11	2
PNBMILIC	8	8	4	5	17	8.4	4	19
PALIC	5	7	16	20	2	10	6	12
RNLIC	16	5	18	15	9	12.6	18	17
SILIC	18	19	10	1	15	12.6	18	5
SBILIC	11	13	5	19	10	11.6	13	16
SUDCLIC	15	4	1	8	13	8.2	3	18
TATAIALIC	11	17	12	13	8	12.2	15	8

The above table shows the overall ranking of 23 private life insurance companies in India. It is found that Ageas Federal Life Insurance Company Ltd ranked 1 in the overall ranking.

We make a ranked correlation test to find the association between the ranked without customer satisfaction factor and with customer satisfaction factor in CAMEL based model.

Table 7. Spearman’s Correlation Matrix for CAMEL Rank and Customer Satisfaction Rank

Correlations				
			CAMEL RANK	CUSTOMER SATISFACTION RANK
Spearman's rho	CAMEL RANK	Correlation Coefficient	1.000	-0.201
		Sig. (2-tailed)		0.359
		N	21	21
	CUSTOMER SATISFACTION RANK	Correlation Coefficient	-0.201	1.000
		Sig. (2-tailed)	0.359	
		N	21	21

The above table shows the correlation between CAMEL rank and Customer Satisfaction Rank. We used Spearman’s Rank correlation to measure the relations between the above two parameters.

Spearman’s Rank Correlation (r) = $1 - 6 \sum d^2 / n(n^2 - 1)$ where n is the number of data pairs and d is the square of the difference in the ranks [26].

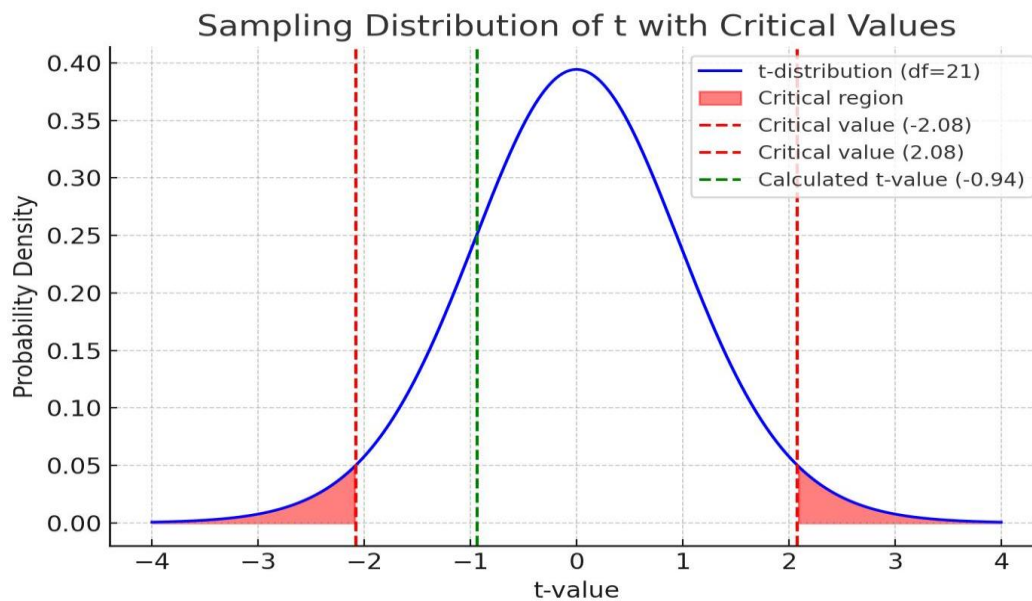
Here we find $r = (-) 0.201$. So, there is a negative relation between the CAMEL model and customer satisfaction factors.

We have done a T-test (sample size less than 30) to know the significance of the relationship between the CAMEL model ranking and the customer satisfaction model [27].

$$T = r \sqrt{(n - 2) / (1 - r^2)}$$

$T = 0.9403$ and this is the calculated value of T . whereas the tabulated value of T at 19 ($n-2$) degrees of freedom is ± 2.08

Calculated value < tabulated value. So H_0 accepts that there is no significant association between CARMEL ranking and customer satisfaction factors ranking.



The plot above shows the sampling distribution of the t-statistic with 21 degrees of freedom. The critical values are labeled at ± 2.08 degrees of freedom for a two-tailed test at the 95% confidence level, with the critical regions shaded in red. The calculated t value of -0.94 is marked in green, which falls outside the critical regions, indicating that the result is not statistically significant at the 0.05 level.

As there is no significant association between the ranking according to the CARMEL model and customer satisfaction factor, so we can extend the CARMEL model with customer satisfaction score and rank the private insurance companies according to the extended CARMEL model.

Table 8. Extended CARMEL Model ranking of private life insurance companies

	CARMEL Model		Customer satisfaction		Extended CARMEL Model	
	TOTAL RANK	MEAN	TOTAL MEAN RANK	Final RANK	Overall Mean rank	Final Rank
Pvt Life Insurance Companies		Final RANK				
AFLIC	5.2	1	7.67	6	6.43	1
ICICIP LIC	10	6	3.33	1	6.67	2
MXLIC	11.4	11	4.00	2	7.70	3
HDFCFLIC	12.4	16	6.33	4	9.37	4
KMLIC	13.8	20	5.67	3	9.73	5
SBILIC	12.6	18	7.00	5	9.80	6
ETLIC	11.4	11	8.33	7	9.87	7
CHSBCOLIC	10.2	8	10.33	9	10.27	8
BALIC	7.4	2	13.33	14	10.37	9
TATAAIALIC	12.2	15	9.67	8	10.93	10
PALIC	10	6	12.00	12	11.00	11

AGLIC	10.8	9	11.67	11	11.23	12
SUDCLIC	8.2	3	14.33	18	11.27	13
AVLIC	9.2	5	14.00	15	11.60	14
PNBMILIC	8.4	4	15.00	19	11.70	15
IFLIC	12.4	16	12.67	13	12.53	16
SHRLIC	11.6	13	14.00	16	12.80	17
RNLIC	12.6	18	14.33	17	13.47	18
ABSLIC	15.8	21	11.67	10	13.73	19
BAXALIC	11.8	14	17.00	20	14.40	20
FGLIC	11.2	10	18.67	21	14.93	21

From the above ranking it is found that Ageas Federal Life Insurance Company Ltd ranked 1 in the extended CAMEL model.

8. FINDINGS

- 1) Ageas Federal Life Insurance Company Ltd ranked 1 according to the CAMEL Model.
- 2) ICICI Prudential Life Insurance Company ranked 1 on customer satisfaction factor.
- 3) There is no significant association between ranks according to the CAMEL model with customer satisfaction factors and without customer satisfaction factors.
- 4) Extension of CAMEL model with customer satisfaction factor and Ageas Federal Life Insurance Company Ltd ranked 1 according to extension CARTAMEL Model.

9. CONCLUSION

21 private life insurance companies' data have been analyzed for the last 10 years. The ranking has been done according to the CAMEL model. Separate ranking has been done for every factor of the CAMEL model, i.e. ranked 23 private life insurance companies according to capital adequacy, asset quality, Reinsurance and accrual issue, management soundness, earning and profitability, and liquidity factors. Mean rank is calculated from the above rank and ranked all the private life insurance companies according to composite mean rank. This is the ranking of life insurance companies according to the CAMEL model.

Ageas Federal Life Insurance Company Ltd ranked 1 according to the CAMEL Model.

CAMEL model ignores the customer satisfaction factor. So customer satisfaction factor has been included in the CAMEL model and extended the CAMEL model on an additional factor i.e. customer satisfaction.

Customer satisfaction has been judged based on persistency ratio, claim settlement ratio, and number of grievances reported per 1000 claims. Based on customer satisfaction factors ICICI Prudential Life Insurance Company ranked 1. Spearman's rank correlation shows that there is no significant association between ranking on the CAMEL model and customer satisfaction rank.

Extended the CAMEL model with customer satisfaction factor and Ageas Federal Life Insurance Company Ltd ranked top based on extended CAMEL Model.

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