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EFFICIENCY RANKING OF SELECTED LIFE INSURERS IN INDIA USING TOPSIS

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Abstract

This study employs the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) to evaluate and rank the performance of selected life insurance providers in India. The assessment incorporates multiple dimensions of performance, encompassing financial strength, solvency, liquidity, and operational efficiency. Through normalization, weighting, and calculation of proximity to an ideal benchmark, the framework identifies insurers that demonstrate best practices within the sector. The resulting rankings provide meaningful insights to regulators, investors, and policymakers, enabling evidence-based benchmarking and strategic decision-making. To ensure the robustness of the outcomes, a sensitivity analysis was conducted, confirming the stability of rankings under varying weight scenarios. The proposed framework thus offers a systematic, quantitatively rigorous approach to performance appraisal in the Indian life insurance industry.

Keywords: Life insurance, Performance Measurement, Efficiency Ranking, TOPSIS, Financial Evaluation, Indian Insurance Sector.

INTRODUCTION

Over the years, India's life insurance sector has undergone substantial expansion, evolving into a key pillar of the nation's financial architecture. Alongside this growth, competition among market participants has intensified, increasing the demand for a comprehensive and methodologically sound system of performance evaluation.

Traditional assessment approaches, which rely predominantly on individual financial ratios, often fail to capture the sector's multidimensional nature—encompassing not only financial viability but also operational efficiency, service quality, and regulatory adherence.

This research addresses these limitations by applying the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS), a widely recognized tool within the field of multi-criteria decision-making (MCDM). The methodology facilitates the simultaneous appraisal of heterogeneous indicators, standardizes diverse datasets, and arranges alternatives according to their relative closeness to a notional "ideal" benchmark.

The evaluation framework integrates critical performance parameters, including solvency, claim settlement efficiency, premium growth, policy persistency, and expense management. This holistic approach not only reveals each insurer's comparative advantages and weaknesses but also generates insights beneficial to regulators, investors, and policymakers.

Furthermore, by incorporating statistical dimensionality reduction techniques, the study addresses important methodological gaps in existing literature, thereby enhancing the precision and interpretive value of the rankings generated.

REVIEW OF LITERATURE

Since 2020, there has been an increase in the application of TOPSIS (Hwang and Yoon, 1981) as a key tool for assessing the performance of insurance companies. Its enduring appeal stems

from its capacity to integrate diverse and at times conflicting evaluation parameters into a consistent ranking structure, while maintaining comparability across heterogeneous datasets.

Studies by Rahmati and Avakh Darestani (2021) demonstrated the combined use of the Balanced Scorecard, the Best–Worst Method, and TOPSIS as an effective model for integrating service quality with financial growth in the Iranian insurance sector. Similarly, Mimović (2021) enhanced the technique's robustness by incorporating rough set theory for the treatment of uncertainty in Serbian insurers' evaluations.

Earlier contributions, particularly from Tsai et al. (2008) and Akhisar (2015), enhanced the methodology by integrating it with Analytic Network Process (ANP) and Analytic Hierarchy Process (AHP), paving the way for contemporary hybridization.

More recent applications include Lukić (2023), who applied an AHP–TOPSIS framework to Serbian firms, and Bilbao-Terol et al. (2022), who confirmed TOPSIS's role as a global benchmarking standard through comparative reviews of best–worst reference-point methods. In India, Srivastava and Tripathi (2021) as well as Shahid and Hassan (2021) demonstrated its utility for ranking insurers on financial, operational, and service-related criteria.

Additionally, studies such as AB Academies (2023) have illustrated the benefits of applying factor analysis and principal component analysis to refine the underlying evaluation metrics. Although not widely represented in international literature, studies focused on India are becoming more common, using IRDAI data and annual reports. Similar methodologies applied in Turkey (Işık, 2024) further affirm the adaptability of the approach to varied regulatory and market contexts.

OBJECTIVES

1. To assess the performance of leading life insurance companies in India using the TOPSIS methodology.
2. To establish a ranking framework based on each company's relative proximity to an ideal performance benchmark derived from multiple weighted criteria.

METHODOLOGY

This study assesses the performance of eight selected life insurance companies in India for the financial year 2023–2024. Selection was based on two prerequisites: total premium income during the period and sustained profitability.

The sample comprises one public sector entity, the Life Insurance Corporation of India (LIC), and seven major private sector players, which have gradually reduced LIC's market share since liberalization—highlighting the need for a rigorous multi-criteria comparative analysis.

Topsis

TOPSIS remains one of the most versatile and interpretable tools for ranking decision-making units in complex, multi-criteria environments. Its capacity to generate intuitive, scalar rankings from diverse datasets, combined with the ability to conduct sensitivity testing by varying criterion weights, makes it particularly suitable for robust performance evaluation in the insurance sector.

The application of TOPSIS followed these procedural stages:

1) **Data collection and preparation** from the IRDAI handbooks and the annual reports of the selected companies.
2) **Normalization of the decision matrix** enabling direct comparison of heterogeneous criteria.
3) **Assignment of criterion weights** based on their strategic and financial relevance.
4) **Determination of positive and negative ideal solutions** as performance benchmarks.
5) **Calculation of separation measures** for each company relative to both benchmarks.
6) **Computation of the relative closeness coefficient** producing a final ranked list where higher values correspond to superior performance.

Table 1: Input-Output of the Selected Life Insurers for the year 2023-24

	Premium	Commission	Operating Expenses	Benefits Paid	Profit	current assets
BIRLA SUN LIFE	1726012	122600	196483	774235	18514.01	94140
BAJAJ LiFE	2304304	205932	383033	1201161	56257.6	71442
HDFC	6307648	525632	690106	3784131	156885.59	152924
ICICI Life	4323564	372196	412598	3974590	85238.56	83691
KOTAK Life	1770838	138630	200580	726514	68862.25	92269
LIC	47575192	2595912	4812168	38594915	4067579	3452105
MAX LIFE	2952897	239827	408607	1331770	35967.6	151842
SBI LIFE	8143064	325531	398190	4272435	189377.82	474589
Source: IRDA Handbook						

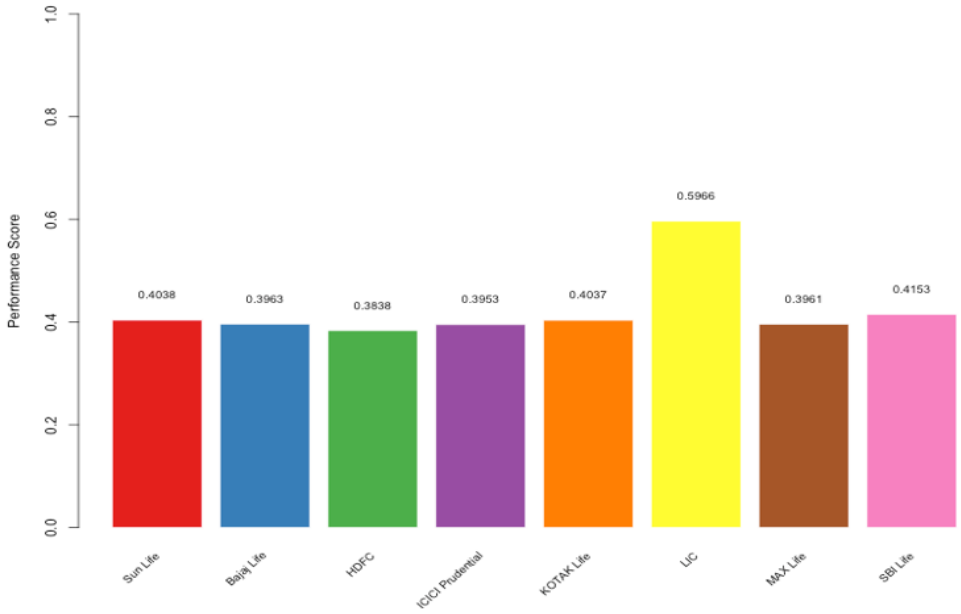

Figure 1: Efficiency of selected Life Insurers obtained with TOPSIS

RESULTS AND DISCUSSION

The application of the TOPSIS method to evaluate and rank the performance of eight selected life insurers in India for the financial year 2023–2024 has produced differentiated results, offering a clear picture of their relative standings. The **relative closeness coefficients (Ci)**—

where higher values indicate closer proximity to the ideal performer—were computed for each company based on selected performance criteria.

The Life Insurance Corporation of India (LIC) secured the highest score of 0.5966, indicating it is the closest to the ideal solution among all the insurers evaluated. This reflects LIC's strong financial base, extensive market reach, and consistent operational performance. SBI Life secured a score of 0.4153, holding a clear second position, supported by its strong growth in its premium income.

The next cluster includes Birla Sun Life (0.4038), Kotak Life (0.4037), Bajaj Life (0.3963), Max Life (0.3961), and ICICI Life (0.3953)—all with marginal score differences, indicating a highly competitive performance band where small differences in individual criteria could easily shift individual rankings. HDFC Life, with a score of 0.3838, ranks lowest among the selected insurers in this study, suggesting comparatively lesser closeness to the ideal on the chosen performance indicators despite being a major private sector player.

The results show that TOPSIS offers a more discriminating ranking of insurers than methods which classify multiple companies as equally efficient. Here, even insurers with similar operational and financial strengths are differentiated based on their exact closeness to the positive ideal solution. For example, while Birla Sun Life and Kotak Life have very close scores, the method still allows for a fine-grained ordering.

Such granularity in performance ranking is valuable for market stakeholders, as it allows identification of subtle performance variations that may be masked in binary efficiency assessments. The clustering of most private insurers in the middle band also highlights a competitive equilibrium in the sector, with LIC and SBI Life maintaining a distinct lead.

CONCLUSION

The TOPSIS-based performance evaluation provides a detailed and nuanced ranking of the selected life insurers in India, effectively distinguishing between companies with otherwise similar performance profiles. LIC emerges as the clear leader, followed by SBI Life, both of which benefit from strong financial fundamentals and market positioning.

By translating multiple performance criteria into a single closeness coefficient, TOPSIS enables precise measurement of comparative advantage and reveals performance gaps that traditional efficiency models might overlook. While the public sector giant LIC continues to dominate, the private insurers are concentrated in a competitive mid-tier range, where targeted strategic improvements in specific financial or operational dimensions could significantly impact rankings.

This method demonstrates its usefulness as a decision-support tool for regulators, investors, and company management, enabling informed benchmarking and strategic planning in the insurance industry. The discriminative capacity of TOPSIS ensures that even among closely matched competitors, leadership positions and improvement priorities can be clearly identified.

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