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Measuring Intellectual Capital Performance of Indian Private Sector Banks Using WASPAS

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Abstract. Indian private sector banks are currently showing excellent performance. Their success is largely attributed to strong management practises, customer-centric strategies, technical breakthroughs, and risk management techniques. Indian private sector banks are quickly adopting digital transformation, responding to shifting market circumstances, and providing cutting-edge banking solutions. This has aided in expanding their customer base and raising client contentment. To inspire client confidence, they have also concentrated on enhancing service quality, offering individualised services, and putting in place robust security measures. Policy makers, regulators, and business experts can benefit from studies regarding the performance of Indian private sector banks and a knowledge of the elements that contribute to their growth and success. This makes it possible for them to locate best practises and methods that may be used repeatedly to enhance the general wellbeing and effectiveness of the banking industry. Comparative evaluations with public sector banks are possible by investigating the efficiency of private sector banks. The usefulness of various ownership structures and management philosophies in promoting financial performance, client satisfaction, and general competitiveness is evaluated through this comparison. The Weighted Aggregate Product Assessment (WASPAS) approach is a making decisions methodology which employs the Weighted Sum Model (WSM) as well as the Weighted Product Model (WPM) to rank and evaluate alternatives based on many criteria, each of which is weighted to reflect its relative relevance. An overall rating for each alternative is then determined by evaluating and combining the criteria utilising either additive or multiplicative techniques. This strategy enables decision-makers to consider both the advantages and disadvantages of each criterion among the possibilities. KAL has got first ranking and KMB has got lowest ranking in the Indian private sector banks. In this paper, The Performance of Indian private sector banks KAL has got first ranking and KMB has got lowest ranking.

1. INTRODUCTION

Private sector banks within India have done well in recent years and have made important contributions to the nation's banking industry. These banks have shown excellent financial growth and stability, which is a result of their effective operations and careful risk management procedures. India's private sector banks continue to be quite profitable, thanks to increased asset quality, excellent net interest margins, and fee income. While keeping a balanced risk profile, they have concentrated on growing their retail and corporate lending portfolios. Private banks are also making use of technological developments to provide cutting-edge goods and services and improve the customer experience via digital banking platforms. These banks have proven to have a solid capital basis and have kept enough reserves for any hazards. Investor trust has increased as a result of their compliance with stringent regulatory requirements and governance norms. In order to access new market segments and investigate development potential, private sector banks are also embracing strategic partnerships and collaborations. In general, the success of Indian private sector banks highlights their adaptation and resilience to the shifting banking environment. In addition to fostering economic growth and meeting changing client expectations, their ongoing performance helps the Indian financial industry expand and remain stable.

2. INDIAN PRIVATE SECTOR BANKS

In regard to overall assets and profitability, public sector banks surpass private sector banks in India's banking industry. However, banks in the private sector are progressively growing. In regards to deposits, overall assets, operating profit, and in particular non-performing assets (NPAs), private banks do better than their public counterparts. Strong research interest has been shown in the private banking sector. The Indian banking industry has seen greater productivity, efficiency, and profitability because of increasing rivalry from fresh private-sector banks, claim Sanyal and Shankar (2011). It should be emphasised that the ownership structures of public and private sector banks were different. Despite the fact that they work in identical contexts and have comparable possibilities, their guiding philosophies and operational strategies could be different [1]. Their research revealed that there was only a minimal effect of ownership on the profitability of private banks and public sector banks (PSBs). Commercialised private banks were more profitable than PSBs, but there was no discernible difference between the two on the basis of performance indicators. When compared to PSBs, non-trading private banks fail to demonstrate any appreciable differences in profitability or performance. Foreign banks outperformed private banks across the board, although a significant ownership effect between foreign and private banks was seen. The authors come to the conclusion that in a developing economy, private enterprises do not always have a definite advantage over state firms [2]. For the years 2007–08 to 2009–10, this research investigation generated technical efficiency ratings both public sector banks and private sector banks throughout India. Significant reforms are being made in the Indian banking industry, and recent worries have focused on how the global financial crisis could affect Indian banks. In the midst with the global financial crisis, the Indian banking system shown its resilience. According to the study's conclusions, Indian Public Sector Banks performed better on performance metrics than Indian Private Sector Banks. According to the study, public sector banks in India in general and Indian banks specifically have survived the global financial crisis. The achievement ratings for 2009–10 are better than the results for the preceding two years, despite the fall of performance scores between 2007–08 to 2008–09 [3]. When evaluating a banking institution's entire creditworthiness, the risk of concentration is a critical factor. Maintaining a diverse portfolio is a key component of a successful credit risk management plan in order to prevent becoming overly reliant on any one industry or group of businesses. The strategy to managing credit risk has significantly changed in the post-liberalization era, as shown by the concentrated level of risk of banks in the public sector. Industry- and industry-wise concentrations have significantly decreased over the study period, pointing to a change in portfolio management techniques. The concentrated hazards of private sector banks, however, show the exact opposite pattern. Particularly, industry-wise concentration risk has significantly increased, increasing from 37% in 1999 to 59% in 2003. This suggests a move away from broad portfolio strategies towards exposures that are increasingly concentrated within particular industries [4]. The banking sector is crucial for a nation's economy since it serves as its backbone. Banks are crucial in fostering rapid economic growth in developing nations like India. High demand for financial services has been generated by rising population and disposable income. Public sector banks once controlled the market. Private sector banks, on the other hand, were given the chance to enter the market and increase their influence in the Indian economy as a result of their inefficiencies and lack of technical innovation. Private banks' entry into the market brought technological breakthroughs to the banking industry, which improved operations all around. Key performance measures for evaluating the performance of banks include the return on assets (RoA) as well as return on equity (RoE). When contrasting Public Sector Banks with Private Sector Banks for the financial year 2018–2019, it is evident that Private Sector Banks' RoA were 0.63 and that of Public Sector Banks was -0.65. Similar to this, the RoE for the private sector banks were 5.45 while the RoE for public sector banks was -11.44 (Source: RBI). These data unequivocally show that private sector banks have developed into a key engine for the expansion of the Indian economy, reiterating their vital role in that expansion [5]. After 1991, changes were made to the Indian banking industry with the goal of diversifying ownership through the introduction of private equity investment in public sector banks. The goal of this was to increase efficiency and productivity while fostering competitiveness. As a consequence, public sector banks' proportion in the Indian banking industry's total assets decreased from 90% in 1991 to 75% in 2004. Twelve fresh private-sector banks were founded during this time, and starting in 1993, up to 74 percent of private sector banks became open to foreign participation. Additionally, Development Finance Institutions (DFIs) and their corresponding commercial banking companies were merged in an effort to consolidate the banking industry. These consolidation steps were done as a tactical move to expand the range of services provided by Indian banks and boost performance [6]. In India, between 2004 and 2013, there was a ten-year comparison of the non-performing assets (NPAs) of public sector banks and private sector banks. The results showed that although the percentage of net NPAs in banks in the private sector ranged from 2.4 to 0.4, it varies between 3.1 to 0.9 in public sector banks. To determine the correlation among net advances and net NPAs in the two sectors, a regression analysis was done. The findings unmistakably show that private sector banks outperform public sector banks in terms of lowering the level of non-performing loans. The Indian economy is affected by this performance gap, necessitating fast and effective action on the part of public sector banks to recover debts.

They must quickly and thoroughly implement a "war footing" strategy in order to meet the challenges posed by the NPAs. This suggests that public sector banks must work quickly to implement efficient debt recovery strategies in order to lessen the effect on the national economy [7]. Private banks have had a significant impact on the development, efficiency, and customer-focused practises of the Indian banking industry. By introducing cutting-edge Information Technology (IT) solutions, they have significantly altered the environment. New private sector banks have entered the market, bringing with them cutting-edge technology, cutting-edge infrastructure, and a vast branch network. These banks have implemented international best practises and established rigorous productivity requirements. Private banks make a significant contribution by concentrating on addressing the credit needs of all societal groups. Government-backed microsavings programmes and other kinds of bank deposits, including savings accounts, fixed deposits, and time deposits, are some of the alternatives available to regular people for protecting their resources. It offers people a number of different strategies for earning money and safely storing their resources. In general, private banks are providing cutting-edge technology and client-focused services, creating healthy competition, and aiding in the expansion of the Indian banking industry [8]. India started a phase of economic liberalisation in 1991 in response to a serious economic crisis, which resulted in the removal or decrease of restrictions in a number of industries. This will make it possible for the private sector to participate in activities that were before prohibited or restricted. The banking sector has seen tremendous liberalisation as have the financial sector. The Narasimha Committee was established by the government in 1992 to research and recommend banking industry reforms. The committee's recommendations led to the implementation of a number of reforms that completely changed the banking industry. The government started allowing new private sector banks to operate in 1993, while international banks started operating in the sector in 1994. In keeping with the Narasimham Committee's recommendations, the Reserve Bank of India (RBI) permitted the establishment of fresh banks in the private sector. As a result, between 1994 and 2005, a number of new private sector banks (PrSBs) were founded, and foreign banks either increased their existing branch network or opened new offices in the nation. These developments brought about increased competition and increased client choice, which represented a fundamental shift in the banking sector [9]. The Indian government has taken strong steps to improve the country's telecom infrastructure, which has resulted in quick and significant growth. The banks have benefited enormously from this development, particularly in the last four years, which has allowed them to establish reliable data communication networks spanning throughout more than 200 cities and towns nationwide. In the previous three to five years, numerous banks have benefited from these advancements by putting in place centralised core banking software and reliable telecommunications networks. They developed a number of distribution channels using these technologies, such as online banking, automated teller machines (ATMs), call centres, and mobile banking. New private sector banks in the nation have established themselves at the forefront of technological breakthroughs and shown their capacity to quickly adapt new technology. The development of these creative alternative delivery methods has significantly slowed the expansion of physical places of business. As a result, there have been much fewer typical bank branch openings than in the past [10]. In order to give banks a competitive advantage in the market, mobile banking has become a strategic innovation. Banks may increase and maintain their effectiveness in serving their consumers by embracing mobile banking. Utilising technological innovation effectively enables banks to gain a competitive edge and provide higher returns. This invention removes time and space restrictions from a variety of financial transactions, enhancing client convenience and improving their banking experiences. Bill payment, movie ticket booking, and mobile recharge services are all included in mobile banking, in addition to more conventional banking tasks. Banks can interact with their consumers more regularly thanks to this range of tasks, and they can also make money from consumer transactions made through their mobile banking services. Mobile banking enables users to execute banking activities quickly and conveniently without having to go to a physical bank branch by offering a seamless and user-friendly interface [11]. Due to their size, public sector banks must contend with the difficulty of modernising their operations and implementing cutting-edge technologies to maintain their market dominance. On the other hand, brand-new private sector banks were introduced with a novel strategy, utilising state-of-the-art technology and putting best practises into place from the beginning. However, because foreign banks and "old private sector banks" have very small market shares, the study's conclusions can be generalised. "New private banks" frequently adopt cross-selling tactics that have been shown in the literature to be successful, including employee development programmes, promotions, hiring cross-selling experts, putting the client first, and making greater use of databases and customer relationship management (CRM) software. On the other hand, "public sector banks" frequently have gaps in these areas [12]. This study examines the connection between employee engagement and job satisfaction in several Indian private sector banks. It experimentally investigates managers in these banks at various levels of the hierarchical structure. According to research, executives of private sector banks have more intrinsic as opposed to extrinsic job satisfaction. These findings are in line with earlier research by Ncube and Samuel (2014), which demonstrated the importance of internal and extrinsic factors in determining job satisfaction. The results highlighted the high level of intrinsic motivation amongst bank employees, are also supported by the findings of this study. Overall, the study finds that intrinsic characteristics, rather than extrinsic ones, have a greater impact on managers' work satisfaction in private sector banks [13]. Using a variety of financial measures, Khandawala

(2004) and Ketkar et al. (2004) examined the profitability of Indian banks. The results show that new private sector and foreign banks have become more well-known, whereas public sector banks have performed worse. The present study's decision to concentrate on the three biggest private banks in India was motivated by this observation. Based on this, Satye (2003) assessed the productivity of Indian banks and recommended that commercial banks diversify their product lines, employ new marketing techniques, roll out cutting-edge items, and give both tangible and intangible service features top priority. In the current study, we looked at three important product categories in retail banking based on this justification [14]. According to this study, customer service at private sector banks has been more sophisticated than at public sector banks. The 'Overall Satisfaction' of customers is the dependent variable taken into account in this study. In the case of private sector banks, 'overall satisfaction' is positively impacted by elements like product knowledge, demand responsiveness, query resolution, quick service, quick connection to the proper person, and efforts to cut down on queue time. On the other hand, elements like appearance, follow-through, and the desire to assist you negatively affect "overall satisfaction." 'Responsiveness to Demands' (0.778) has the greatest positive beta value among private sector banks. Private sector banks in India confront fierce competition, thus it is only normal for them to promote their goods and notify clients about their services regardless of whether the customer does not require or desire them. Customers specifically want bankers to be sensitive to their unique requirements and wants, as indicated by a high beta value for "responsiveness to needs" [15].

3. WASPAS METHOD

The WASPAS technique, which was established in 2012, is a reliable and cutting-edge Multi-Criteria Decision Making (MCDM) method. It brings together the benefits of the weighted sum model (WSM) and the weighted product model (WPM). The WASPAS technique was proposed by Zavadskas, Turskis, Antucheviciene, and Zakarevicius (2012), who claimed that it offers higher accuracy compared to WPM and WSM. They showed that this combination technique works better than other strategies in terms of accuracy. The WASPAS approach has been applied in several investigations since its debut. For instance, Staninas, Medineckien, Zavadskas, and Kalibatas (year) used WASPAS for the eco-economic assessment of the modernisation of multiple residential structures, while Bagoius, Zavadskas, and Turskis (year) used it to choose a deep-water port. Furthermore, Bitarafan, Zolfani, Arefi, Zavadskas, and Mahmoudzadeh (year) evaluated actual time intelligent sensors for structural health surveillance of bridges using WASPAS, and Dêjus In conclusion, the WASPAS technique rose to popularity in MCDM research following its proposal, proving its usefulness in numerous applications across numerous fields [16]. In the WASPAS technique, we merge interval type-2 fuzzy sets (IT2FSs) using ideas and arithmetic operations associated with IT2FSs. The normalisation and weighted product models have been modified to take IT2FSs into account. Furthermore, we present a novel method for criterion weight determination, which combines subjective weights provided by decision makers with objective weights generated from the entropy method. This combination enhances the consistency of weight distribution across many criteria as well as the reality of criterion weights in decision making. We create an integrated strategy that applies the WASPAS method and IT2FSs to tackle multi-criteria decision-making issues in interval type-2 fuzzy settings using the suggested weighting procedure. The proposed method can be used to generic decision-making scenarios that involve both objective and/or subjective evaluations even though it only depends on subjective evaluations of alternatives [17]. Every criteria (j) and each alternative (i) must be given performance values (x_{ij}) in order to be included in a decision or assessment matrix. The matrix has m options and n requirements. The result matrix is then normalised to guarantee consistency across criteria. The next step is to calculate the overall significance of each choice. A weighted accumulation of additive and multiplicative approaches is used in a joint generalised scale to assess overall relative importance. This method offers a more complete equation for determining the relative significance of each option. To improve the analysis, ideal lambda values are calculated. Calculating and incorporating the variance into Eq. To account for volatility in the estimation process, estimates of variance for normalised initial criteria are also computed [18]. It might not be suitable to utilise smoother figures or ranges to evaluate alternatives when decision-makers' assessments and preferences are unknown. Fuzzy MCTM (FMCMTM) methods—a mixture of multi-criteria decision-making (MCTM) and fuzzy set theory—have been offered as a solution to this issue. In FMCDM approaches, linguistic terms connected to fuzzy sets are largely used to determine evaluations and preferences. Van Laerhoven and Pedrycz (1983), for instance, were the authors of the method's inaugural publication on the fuzzy analytical hierarchy procedure (AHP). Then, the fuzzy MCDM approaches are introduced. These include the Fuzzy Technique for Order of Priority by Similarity to Ideal Solution (TOPSIS), the Fuzzy Multimura method, and the Fuzzy Weighted Aggregate Product Assessment (WASPAS) method (Turskis, Zavadcievas, 2050) [19]. The selection issue for time and attendance software is addressed using a combination application of the Inter-Criteria Interaction (CRITIC) technique and the Weighted Aggregate Product Assessment (WASPAS) method. The CRITIC technique is an impartial method for choosing criterion weights that takes into account the degree of conflict in the decision issue structure as well as its variability. It

falls under the genre of interaction approaches and entails studying a decision matrix to discover the standards by which choices are assessed. The WASPAS method, on the other hand, integrates the weighted sum model (WSM) with its weighted product model (WPM) to offer a thorough rating of options [20]. The need for a thorough evaluation of the project that takes into account both qualitative and quantitative factors and makes use of decision-making tools has been acknowledged by researchers. To statistically assess and rank outsourced solutions, they suggested using multi-criteria decision-making (MCTM) techniques. Previous research and others have proven the value of MCDM and its applicability in the discipline of economics. It is advised to use the recently created Weighted Aggregate Product Assessment (WASPAS) method in this particular study. By utilising the suggested technique to optimise the weighted integral function, WASPAS enables attaining the best estimation accuracy. This approach has been employed in the past with effectiveness in decision-making procedures involving commercial issues, especially where foresight is involved, like when choosing the optimal construction plans [21]. The precision of the rank was improved as the main goal of the WASPAS method development. This strategy achieves higher ranking accuracy compared to utilising the Weighted Sum Model (WSM) plus the Weighted Product Model (WPM) independently. It is assumed that criterion values affect the relative importance of an alternative while evaluating correctness. As a result, initial criterion values have an impact on disparities in the relative importance of alternatives. Probability theory and quantitative statistics are employed to overcome errors in calculating the initial parameter values, which are assumed to be random [22]. The Weighted Aggregate Product Assessment (WASPAS) approach to resolving multicriteria decision-making issues was first proposed by Zavadskas et al. In this study, a WASPAS-SVNS extension that takes into account the composition of a single-valued neutrosophic set is constructed. The algebra connected to the single-valued neutrosophic set is described in the Supplementary Materials section. It should be noted that the WASPAS-SVNS normalisation method uses a different methodology than the smooth WASPAS method. This modification is required to take into account particular computing issues related to neutrosophic algebra. It is obvious from comparing the outcomes of various methods that smoothing methods such WASPAS and COPRAS produce comparable outcomes. The fuzzy approach ARAS-F and the suggested method WASPAS-SVNS, however, take into consideration many aspects of the initial information's degree of uncertainty, which results in less fluctuation in the final ranking of options than the crisp methods [23]. The purpose of this work is to present an integrated strategy for evaluating multicriteria decision making (MCDM) problems with hesitant fuzzy sets (HFSs) that combines the WASPAS method with information measures. The normalisation and weighted product techniques are changed, and HF-aggregation operators are utilised to extend the WASPAS methodology to mixing HFSs. The method is used to solve a group support system (GSS) issue in order to illustrate how well it works in actual MCDM scenarios. A sensitivity analysis is carried out using the proposed WASPAS approach's criteria weights and variables to offer more insights. The scale weight is determined using a novel approach that is included in the suggested method. It entails integrating the weights derived from the choice expert assessments with the weights derived from the HF-variance and HF-entropy measurements. The presented method generates scale weights that are more meaningful by including these many sources of weighting [24]. This paper introduces the Fermatean fuzzy WASPAS (FF-WASPAS) framework for group decision making. This framework's goal is to resolve multi-criteria decision-making (MCDM) issues in which the decision-makers' weights and criteria are fully unknown. In a fuzzy set setting, the FF-WASPAS approach integrates the WASPAS method, entropy measurement, and score function. In the suggested framework, the criteria weights for the choice of high-efficiency water distribution lines (HCWDL) are estimated using an innovative scoring function and entropy measure. The purpose of these new metrics is to manage unpredictability in fuzzy set situations. An empirical study on the HCWDL test in Uttarakhand, India, was undertaken to show the efficacy and applicability of the FF-WASPAS technique. From a sustainability standpoint, a thorough evaluation index system has been created for this case study. Sensitivity analysis is done to evaluate how reliable the developed approach is. The analysis's findings show that the FF-WASPAS model, when compared to other methods used in the fuzzy set environment, is more efficient, dependable, and stable. The FF-WASPAS model also has a low level of computational complexity [25].

4. ANALYSIS AND DISCUSSION

TABLE 1. The performance of Indian private sector banks

The performance of Indian private sector banks
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PBBanks	C1	C2	C3	C4	C5	C6
AXIS	20.06	68.74	15.46	8.3	4.89	1.96
HDFC	20.41	70.54	16.91	9.27	5.02	2.5
ICICI	18.44	50.29	11.19	7.73	4.62	1.76
KMB	12.75	52.62	8.72	10.99	6.36	3.48
FBL	6.14	73.66	5.87	8.89	6.01	2.02
IIBL	19.74	60.88	13.21	9.32	5.69	2.83
RBL	10.65	78.74	9.78	8.28	5.81	2.17
DCB	11.45	76.99	11.17	9.66	6.14	2.62
SIBL	5.99	122.89	8.98	9.11	6.63	1.77
KAL	8.31	114.27	11.25	9.22	6.81	1.75

Table 1 Shows the Performance of Indian private sector banks by using WASPAS approach which incorporates the Alternative Parameter: AXIS, HDFC, ICICI, KMB, FBL, IIBL, RBL, DCB, SIBL, KAL. And the Evaluation parameter include benefit criteria of C1,C2, C3, C4 and Non benefit criteria is C5, C6.

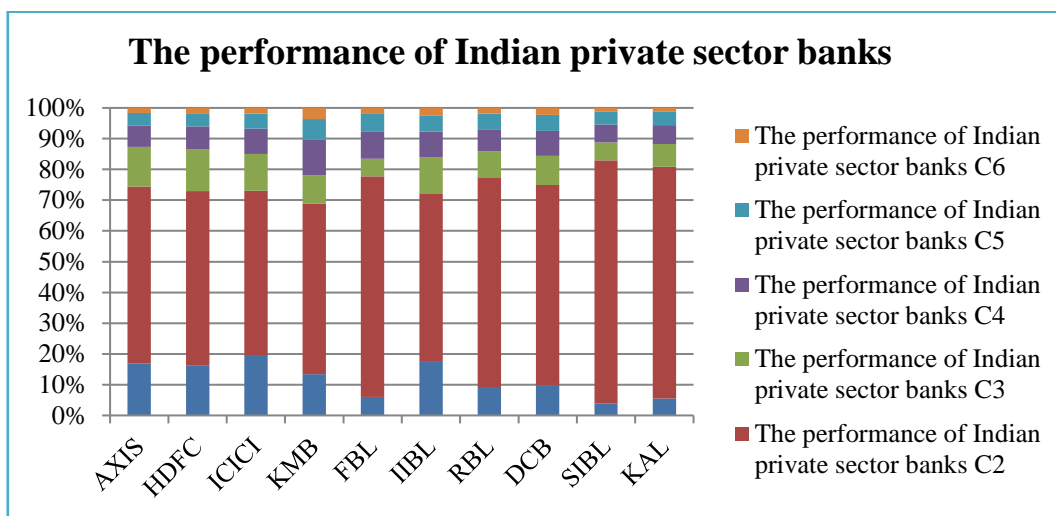


FIGURE 1. the Performance of Indian private sector banks

Figure 1 Shows the graph of Performance of Indian private sector banks by using WASPAS approach which incorporates the Alternative Parameter: AXIS, HDFC, ICICI, KMB, FBL, IIBL, RBL, DCB, SIBL, KAL. And the Evaluation parameter include benefit criteria of C1,C2, C3, C4 and Non benefit criteria is C5, C6.

TABLE 2. Normalized Data

	Normalized Data					
AXIS	0.982852	3.367957	0.757472	0.406663	0.944785	0.892857
HDFC	1	3.456149	0.828515	0.454189	0.920319	0.7
ICICI	0.903479	2.463988	0.548261	0.378736	1	0.994318
KMB	0.624694	2.578148	0.427242	0.538462	0.726415	0.502874
FBL	0.300833	3.609015	0.287604	0.435571	0.768719	0.866337
IIBL	0.967173	2.982852	0.647232	0.456639	0.811951	0.618375
RBL	0.521803	3.857913	0.479177	0.405683	0.795181	0.806452
DCB	0.561	3.772171	0.547281	0.473297	0.752443	0.667939
SIBL	0.293484	6.021068	0.43998	0.44635	0.696833	0.988701
KAL	0.407153	5.598726	0.5512	0.451739	0.678414	1

Table 2 Shows the normalized Value for all the alternate parameter with the evaluaton parameter with considering both benefit and non benefit criteria.

TABLE 3. Weight matrix

Weight					
0.166667	0.166667	0.166667	0.166667	0.166667	0.166667
0.166667	0.166667	0.166667	0.166667	0.166667	0.166667
0.166667	0.166667	0.166667	0.166667	0.166667	0.166667
0.166667	0.166667	0.166667	0.166667	0.166667	0.166667
0.166667	0.166667	0.166667	0.166667	0.166667	0.166667
0.166667	0.166667	0.166667	0.166667	0.166667	0.166667
0.166667	0.166667	0.166667	0.166667	0.166667	0.166667
0.166667	0.166667	0.166667	0.166667	0.166667	0.166667
0.166667	0.166667	0.166667	0.166667	0.166667	0.166667
0.166667	0.166667	0.166667	0.166667	0.166667	0.166667

Table 3 shows the Weight matrix for the Performance of Indian private sector banks by using WASPAS approach which have the same value as 0.166667

TABLE 4. Weighted Normalized matrix (WSM)

	Weighted Normalized matrix (WSM)					
AXIS	0.163809	0.561326	0.126245	0.067777	0.157464	0.14881
HDFC	0.166667	0.576025	0.138086	0.075698	0.153386	0.116667
ICICI	0.15058	0.410665	0.091377	0.063123	0.166667	0.16572
KMB	0.104116	0.429691	0.071207	0.089744	0.121069	0.083812
FBL	0.050139	0.601503	0.047934	0.072595	0.12812	0.144389
IIBL	0.161195	0.497142	0.107872	0.076106	0.135325	0.103062
RBL	0.086967	0.642985	0.079863	0.067614	0.13253	0.134409
DCB	0.0935	0.628695	0.091213	0.078883	0.125407	0.111323
SIBL	0.048914	1.003511	0.07333	0.074392	0.116139	0.164783
KAL	0.067859	0.933121	0.091867	0.07529	0.113069	0.166667

Table 4 shows the Weighted Normalized matrix in Weighted sum method (WSM) for the Performance of Indian private sector banks which is obtained by multiplying the Normalized data and Weight matrix.

TABLE 5. Weighted Normalized matrix (WPM)

	Weighted Normalized matrix (WPM)					
AXIS	0.997121	1.224319	0.95476	0.860741	0.990578	0.981289
HDFC	1	1.229604	0.969133	0.876744	0.986256	0.942287
ICICI	0.983225	1.162179	0.904686	0.850595	1	0.999051
KMB	0.92458	1.170985	0.867852	0.901971	0.948122	0.89175
FBL	0.818567	1.238506	0.812455	0.870649	0.957109	0.97637
IIBL	0.994452	1.19979	0.930058	0.87753	0.965877	0.923015
RBL	0.897259	1.252349	0.884605	0.860395	0.962523	0.964783
DCB	0.908156	1.247667	0.904416	0.882787	0.953701	0.934952
SIBL	0.8152	1.348794	0.872112	0.874204	0.941575	0.998108
KAL	0.860914	1.332544	0.905493	0.875954	0.93738	1

Table 4 shows the Weighted Normalized matrix in Weighted product method (WPM) for the Performance of Indian private sector banks which is obtained by calculating Normalized matrix Power the weight matrix.

TABLE 6. Preference Score

	Preference score (WSM)	Preference score (WPM)
AXIS	1.225431	0.975203

HDFC	1.226529	0.970944
ICICI	1.04813	0.878485
KMB	0.899639	0.716541
FBL	1.04468	0.670147
IIBL	1.080703	0.868144
RBL	1.144368	0.794202
DCB	1.129022	0.806649
SIBL	1.481069	0.787819
KAL	1.447872	0.852949

Table 6 shows the Preference score for both WSM and WPM method for the Performance of Indian private sector banks by using WASPAS approach.

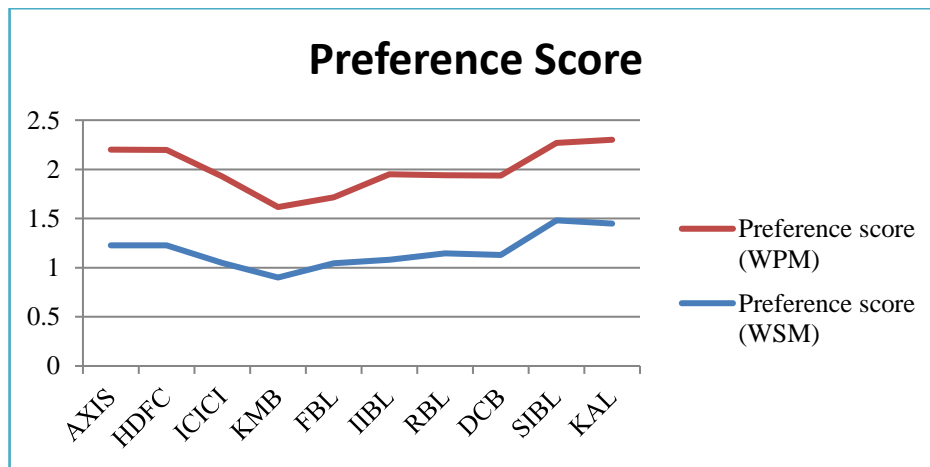


FIGURE 2. Preference Score (WPM & WSM)

Figure 2 shows the Graphical representation of Preference score for both WSM and WPM method for the Performance of Indian private sector banks by using WASPAS approach.

TABLE 7. WASPAS Coefficient and Rank

	WASPAS Coefficient	RANK
AXIS	1.100317	3
HDFC	1.098737	4
ICICI	0.963308	8
KMB	0.80809	10
FBL	0.857414	9
IIBL	0.974424	5
RBL	0.969285	6
DCB	0.967835	7
SIBL	1.134444	2
KAL	1.150411	1

Table 7 Shows the Values of WASPAS coefficient and Rank for the Performance of Indian private sector banks in which lambda value is considered as 0.5 and completed using WASPAS method

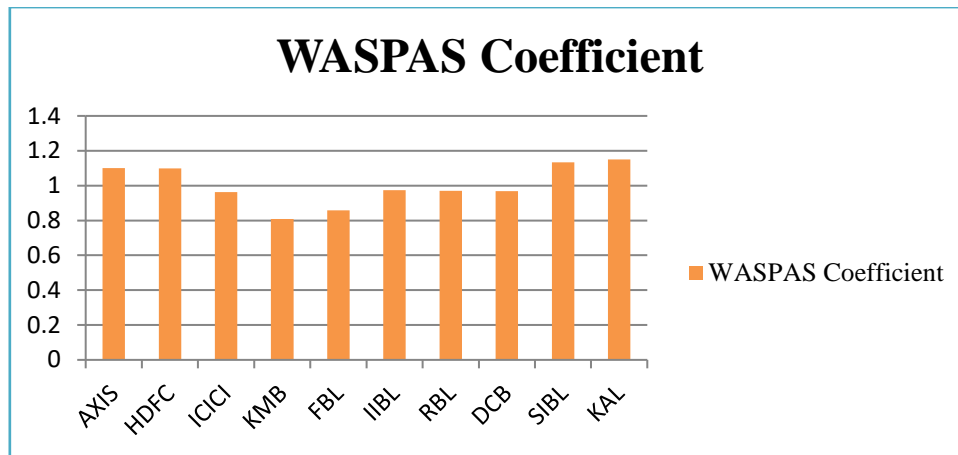


FIGURE 3. WASPAS Coefficient

Figure 3 shows the graphical representation of WASPAS coefficient for the Performance of Indian private sector banks by considering lambda value as 0.5.

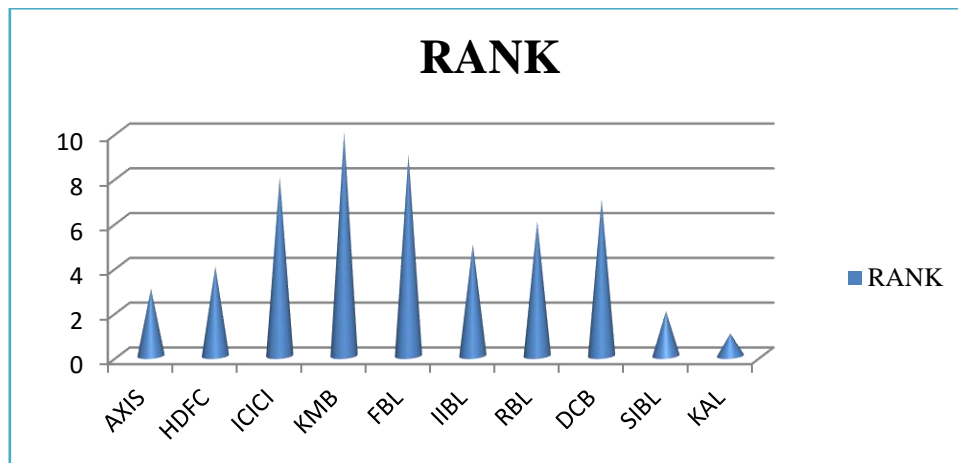


FIGURE 4. Rank

Figure 4. shows the Rank for Performance of Indian private sector banks by using WAPSAS method. KAL is got first ranking and KMB is got lowest ranking.

5. CONCLUSION

However, banks in the private sector are progressively growing. In regards to deposits, overall assets, operating profit, and in particular non-performing assets (NPAs), private banks do better than their public counterparts. Strong research interest has been shown in the private banking sector. Commercialised private banks were more profitable than PSBs, but there was no discernible difference between the two on the basis of performance indicators. When compared to PSBs, non-trading private banks fail to demonstrate any appreciable differences in profitability or performance. Foreign banks outperformed private banks across the board, although a significant ownership effect between foreign and private banks was seen. When evaluating a banking institution's entire creditworthiness, the risk of concentration is a critical factor. Maintaining a diverse portfolio is a key component of a successful credit risk management plan in order to prevent becoming overly reliant on any one industry or group of businesses. The strategy to managing credit risk has significantly changed in the post-liberalization era, as shown by the concentrated level of risk of banks in the public sector. Industry- and industry-wise concentrations have significantly decreased over the study period, pointing to a change in portfolio management techniques. The concentrated hazards of private sector banks, however, show the exact opposite pattern. Particularly, industry-wise concentration risk has significantly increased, increasing from 37% in 1999 to 59% in 2003. This suggests a move away from broad portfolio strategies towards exposures that are increasingly concentrated within particular industries. The need for a thorough evaluation of the project that takes into account both qualitative and

quantitative factors and makes use of decision-making tools has been acknowledged by researchers. To statistically assess and rank outsourced solutions, they suggested using multi-criteria decision-making (MCTM) techniques. Previous research and others have proven the value of MCDM and its applicability in the discipline of economics. It is advised to use the recently created Weighted Aggregate Product Assessment (WASPAS) method in this particular study. By utilising the suggested technique to optimise the weighted integral function, WASPAS enables attaining the best estimation accuracy. This approach has been employed in the past with effectiveness in decision-making procedures involving commercial issues, especially where foresight is involved, like when choosing the optimal construction plans

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