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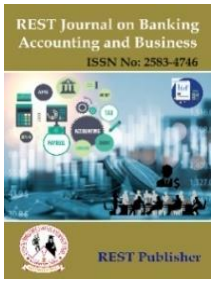

TOPSIS Method Application in Assessing Progress of Regional Rural Banks

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Abstract: *This study examines the evolution and performance of Regional Rural Banks (RRBs) in India, focusing on their ranking based on various performance indicators. It aims to analyze developments in financial health of RRBs, geographical progress and technological advancements. By examining these factors, the study provides insights into the overall impact of policy changes on RRBs and their role in promoting financial inclusion in rural areas. The findings reveal significant differences among RRBs, highlighting the need for targeted interventions to improve their effectiveness and efficiency. Regional Rural Banks (RRBs) were established in India in with the primary objective of providing banking services to rural areas, especially the disadvantaged population. The creation of RRBs is a key step in the government's strategy to provide credit to the agricultural sector, small scale industries and other rural sectors that lack adequate financial services. Over decades, RRBs have played an important role in promoting financial inclusion and supporting rural development. Despite the important role of RRBs, RRBs have faced many challenges including problems related to profitability, non-performing assets (NPAs) and operational inefficiency. In response, various reforms have been introduced to improve their financial health and expand their reach. Consolidation of technology, consolidation of RRBs and policy changes have significantly affected their performance. The significance of this research lies in its potential to contribute to understanding the role and performance of Regional Rural Banks (RRBs) in India's financial sector. RRBs play an important role in promoting financial inclusion and rural development, although their performance has been inconsistent across regions and periods. This study makes several important contributions: Policy Implications: The findings of this research can inform policy makers about the effectiveness of current policies related to RRBs. By identifying the strengths and weaknesses in RRB operations, the study will guide future reforms aimed at improving the performance of these banks. Net Profit (Million INR), Loan Disbursement Efficiency (%), NPA Ratio (%), Operational Costs (Million INR). RRB X, RRB Y, RRB Z, RRB W, RRB V. The results indicate that* RRB W *achieved the highest rank, while* RRB Z *had the lowest rank being attained. The value of the dataset for Corporate developments in regional rural banks*
according to the TOPSIS Method, Integrated Pest Management achieves the highest ranking."

Key words*; Regional Rural Banks (RRBs), Financial Inclusion, Bank Performance, Rural Banking, Bank Ranking*

1. INTRODUCTION

The development of Regional Rural Banks (RRBs) represents a significant milestone in promoting financial inclusion and fostering economic growth in rural areas. Established with the primary objective of providing accessible banking services to the rural population, particularly small farmers, artisans and labourers, RRBs have become instrumental in addressing the financial needs of disadvantaged communities. Since inception, RRBs have been designed to bridge the gap between the rural population and formal financial institutions, ensuring access to credit and other banking facilities to people in remote and economically backward areas. These banks have a dual focus: on the one hand, they

are tasked with fulfilling social objectives of extending banking services to rural areas; On the other hand, they need to maintain financial reliability and stability. Over time, the landscape of RRBs has evolved in response to various economic, political and technological changes. This evolution includes changes in policy, structural reforms and adoption of new technologies aimed at improving and expanding efficiency. As RRBs continue to play an important role in rural development, their progress reflects broader trends in rural banking and the ongoing challenges of balancing social objectives with commercial viability. This introduction examines the developments of RRBs, their historical context, impact of reforms and future directions for these major financial institutions, setting the stage for a comprehensive study. While discussing the developments of Regional Rural Banks (RRBs), it is important to understand their role in the broader context of rural financial inclusion and economic development. Regional Rural Banks were established with the primary objective of bridging the gap between rural communities and formal financial institutions. These banks play an important role in providing credit and financial services to the underserved rural population, especially in developing countries where access to formal banking is limited. The introduction of RRBs was a strategic move to ensure access to essential banking services to rural areas, which were often neglected by commercial banks. These banks focus on small-scale agriculture, cottage industries and rural artisans, thereby contributing directly to the socio-economic development of rural areas. Over the years, RRBs have undergone significant changes to suit the changing needs of rural economies, evolving policy frameworks and integration of modern banking technologies. The introduction examines the origin of RRBs, their evolution and their impact on rural development, highlighting key trends, challenges and future opportunities in the context of regional rural banking. The establishment and evolution of Regional Rural Banks (RRBs) marks an important development in the landscape of rural banking, aimed at addressing the individual financial needs of rural communities. RRBs were created to bridge the significant gap between formal banking institutions and the underserved rural population, especially in developing countries where rural economies form the backbone of national development. Since inception, RRBs have been strategically positioned to provide banking services tailored to the agricultural sector, small scale industries and rural artisans. Their mandate is to provide credit to farmers, promote rural entrepreneurship and support financial inclusion of marginalized groups. The development of RRBs is closely linked to broader efforts to reduce poverty, increase agricultural productivity and promote rural development. Over the years, RRBs have undergone various changes in response to changing economic conditions, policy changes and technological advancements. These changes are aimed at improving their efficiency, expanding their reach and ensuring their financial sustainability. The evolution of RRBs highlights both the successes and challenges faced in achieving the dual objectives of social responsibility and economic viability. This introduction will examine the historical background of RRBs, major milestones in their development and current trends shaping their operations. As RRBs continue to play an important role in the economic and social development of rural areas, it will provide insight into future prospects. The formation and development of Regional Rural Banks (RRBs) represents a significant advance in rural banking, especially designed to cater to the individual financial needs of rural communities. RRBs were established to bridge the considerable gap between formal banking institutions and the underserved rural population, especially in developing countries where rural economies are integral to national development. Since inception, RRBs have had a strategic focus on providing banking services to the agricultural sector, small scale industries and rural artisans. Their mission includes providing credit to farmers, fostering rural entrepreneurship and supporting financial inclusion of marginalized groups. The development of RRBs is intricately linked to broader initiatives aimed at reducing poverty, improving agricultural productivity and promoting rural development. Over time, RRBs have undergone significant changes in response to evolving economic conditions, policy changes and technological innovations. These changes help improve their performance, expand their reach and ensure their financial sustainability. The evolution of RRBs underscores both the successes and challenges in balancing the twin goals of social responsibility and economic viability. This introduction will examine the historical context of RRBs, major milestones in their development and current trends affecting their operations. As RRBs continue to play an important role in the economic and social development of rural areas, this discussion will also provide insights into their future prospects. [6]. The analyzes discussed above have greatly encouraged or supported the implementation of public development policies and land planning policies. Despite potential conflicts in their objectives, such as energy development policy focused on building a nuclear power plant conflicting with land development policy aimed at attracting new residents, these analyzes can sometimes be linked to the policies they influence. Examining regional policies reveals how regional science influences the design and implementation of these measures and the challenges of translating theoretical principles into practical applications. Development policies generally address two main issues: stimulating growth and determining how it should be distributed, which involves balancing competitiveness and integration within regions. These policies are primarily aimed at improving the effectiveness and efficiency of public services and activities, improving their location and organization, drawing on location and development theories and industrial economics. In addition, they seek to reduce disparities in growth rates and levels of development, and to redistribute the benefits of growth between more dynamic and less favored

regions and compensate for slack. As a result, these policies seek to reconcile various principles such as distribution, job creation, reduction of inequalities and protection. Regional Equilibrium and Approaches to Growth: According to sustainable development theory, efficient allocation of factors of production leads to movement towards regions with higher wages, contributing to overall productivity and individual well-being. In the long run, this justified minimal political intervention, expected to allocate market resources and consolidate regional development levels. Policies based on this approach typically involve low costs and selective support, as seen in the eligibility criteria of European regional policy. However, this approach often overlooks market imperfections and assumes a trade-off between capital and labor that is unreliable in terms of mobility. These policies, which view space as a passive container with no impact on economic trajectories, fail to consider sub regional integration mechanisms. Relying on macroeconomic growth models, they ignore insights from location theory, such as the importance of physical proximity in development processes, and are generally ineffective in establishing policies for local development. The same criticism applies to economic fundamentals theory – one of the earliest approaches aimed at generating functional outcomes for regional development policies, which suggests that increasing exports is key to increasing regional GDP. This approach is limited by the potential inability to expand local production capacities, both in terms of labor and physical capital, which is particularly evident in small territories.[14]. Nationalization of banks marked a significant milestone In the banking sector, especially with the widespread expansion of bank branches across the country, the development of rural branches has successfully met the twin goals of attracting rural deposits and extending credit to rural areas. Nevertheless, the rapid pace of accumulation of deposits is greatly influenced by the presence of strong economic and industrial infrastructure and the need to create awareness among the rural population on the effective use of bank credit. The capacity of rural areas to absorb debt is closely linked to the infrastructure required. For any financial institution, the primary goal is to raise deposits and channelize loans into social and productive endeavors, aligning social objectives with profitability. Regional Rural Banks (RRBs), like other Scheduled Commercial Banks (SCBs) in India, play an important role in mobilizing deposits and extending credit to disadvantaged rural and disadvantaged areas. , the primary objective of RRBs is to provide banking services to rural communities, thereby mobilizing rural savings and extending credit to small and marginal farmers, small scale industries, village artisans and craftsmen. Cooperatives Credit availability is directly linked to the size of deposits; A higher deposit base enables financial institutions to extend more loans. The success of a bank's deposit mobilization efforts depends on the income levels of the surrounding community and the size of its branch network. For RRBs to successfully accumulate deposits, they need to engage the rural population effectively. Similarly, utilization of credit depends on availability of funds, business environment and recovery rate. Deposit mobilization is a key indicator of bank performance, emphasizing the importance of developing savings habits in the community. In addition, utilization of potential savings, especially for rural use through small credit, and increasing village-level income are major concerns of RRBs. RRBs have been a part of India's financial landscape for over three and a half decades. Their establishment represents a unique experiment in improving the efficiency of rural credit delivery. A significant aspect of their performance during this period was the extensive development of their retail network in rural areas.[16].

2. MATERIALS AND METHODS

This study focuses on evaluating the performance and improvements of Regional Rural Banks (RRBs) using TOPSIS (Technique of Prioritization by Similarity to Ideal Solution) method. TOPSIS is a decision-making method that ranks alternatives based on their distance from an ideal solution (best case) and a negative-best solution (worst case). This method is very useful in evaluating multiple performance criteria to identify the most efficient RRBs. Alternatives (Regional Rural Banks): Alternatives in this study are different Regional Rural Banks (RRBs) selected for evaluation. Each RRB represents a separate alternative in the analysis. Criteria (Evaluation Parameters): Four main criteria were selected to evaluate the performance of RRBs. These criteria are classified into beneficial and ineffective criteria: Net Profit: This scale measures the financial profit of each RRB. A higher net profit indicates better financial health and performance. Credit Disbursement Efficiency: This measure reflects how effectively the RRB is disbursing loans to its customers. A higher performance score is preferred. Invalid criteria: Non-Performing Assets (NPA) Ratio: This measure indicates the percentage of non-performing loans. Lower NPA ratio is better, which indicates better debt management. Operating Costs: This scale measures the costs associated with running the bank. Low operating costs are preferred because they indicate better cost management and efficiency. Data Collection: Data for the selected criteria were collected from financial reports, government publications and industry databases. The data refers to the most recent financial year for all the RRBs under study. Methodology: Implementation of TOPSIS. TOPSIS methodology was used in a series of steps to evaluate and rank RRBs based on selected criteria: RRBs were ranked based on their values, higher value indicating better performing RRB. Results and discussion The results were

analyzed to identify the best performing RRBs based on their proximity to the best solution. The ranking provides a clear comparison of RRBs, highlighting areas where improvements are needed. The application of TOPSIS methodology provides a systematic and objective approach to assess the developments of regional rural banks. By considering multiple criteria and their importance, TOPSIS helps identify the most efficient RRBs and provides valuable insights to decision makers aiming to improve the performance of RRBs in rural development. TOPSIS (Technique for Order of Preference Similar to Ideal Solution) is a widely used multi-criteria decision-making (MCDM) method. It ranks the alternatives based on their proximity to the optimal solution and their distance from the negative-optimal solution. TOPSIS is most useful when evaluating alternatives based on multiple, often conflicting criteria. Alternatives: Companies or options being evaluated. For example, different banks, products, programs or strategies. Criteria (Evaluation Parameters): These are measures or indicators used to evaluate alternatives. Criteria can be of two types: Criteria of Advantage: Higher values are more desirable (eg, profitability, efficiency). Ineffective criteria: lower values are more desirable (eg, cost, risk). Weights for Criteria: These indicate the relative importance of each criterion. Weights are assigned based on expert judgment, stakeholder input, or other methods such as Analytical Hierarchy Process (AHP). Data Sources: Information for each criterion is collected from reliable sources such as reports, databases, surveys or expert opinions. Criteria (Evaluation Parameters): Four main criteria were selected to evaluate the performance of RRBs. These criteria are classified into beneficial and ineffective criteria: Net Profit: This scale measures the financial profit of each RRB. A higher net profit indicates better financial health and performance. Credit Disbursement Efficiency: This measure reflects how effectively the RRB is disbursing loans to its customers. A higher performance score is preferred. Non-Performing Assets (NPA) Ratio: This measure indicates the percentage of non-performing loans. Lower NPA ratio is better, which indicates better debt management. Operating Costs: This scale measures the costs associated with running the bank. Low operating costs are preferred because they indicate better cost management and efficiency. Data Collection: Data for the selected criteria were collected from financial reports, government publications and industry databases. The data refers to the most recent financial year for all the RRBs under study. TOPSIS (Technique for Order of Preference Similar to Ideal Solution) is a widely used multi-criteria decision-making (MCDM) method. It ranks the alternatives based on their proximity to the optimal solution and their distance from the negative-optimal solution. TOPSIS is most useful when evaluating alternatives based on multiple, often conflicting criteria. Alternatives: Companies or options being evaluated. For example, different banks, products, programs or strategies. Criteria (Evaluation Parameters): These are measures or indicators used to evaluate alternatives. Criteria can be of two types: Criteria of Advantage: Higher values are more desirable (eg, profitability, efficiency).Ineffective criteria: lower values are more desirable (eg, cost, risk). Weights for Criteria: These indicate the relative importance of each criterion. Weights are assigned based on expert judgment, stakeholder input, or other methods such as Analytical Hierarchy Process (AHP). Data Sources: Information for each criterion is collected from reliable sources such as reports, databases, surveys or expert opinions. TOPSIS is a powerful and systematic method for ranking alternatives in a multi-criteria context. It provides clear insights into the performance of each alternative relative to an optimal solution, making it a valuable decision-making tool in a variety of fields.

3. ANALYSIS AND DISCUSSION

TABLE 1. developments in regional rural banks

DATA SET				
Alternatives	Net Profit (Million INR)	Loan Disbursement Efficiency (%)	NPA Ratio (%)	Operational Costs (Million INR)
RRB X	140	84	2.6	55
RRB Y	160	88	2.2	58
RRB Z	135	81	3	60
RRB W	175	90	1.9	62
RRB V	150	85	2.5	57

The dataset provides key financial metrics for five Regional Rural Banks (RRBs): RRB X, RRB Y, RRB Z, RRB W, and RRB V. These metrics include net profit, lending capacity, non-performing assets (NPA) ratio, and operating expenses. RRB W stood out with the highest net profit of INR 175 million, backed by the highest lending efficiency of 90% among banks. Additionally, RRB W has a very low NPA ratio at 1.9%, indicating effective credit management, although it has high operating expenses at INR 62 million. RRB Y is performing well with a net profit of INR 160 million and a strong lending capacity of 88%. Its NPA ratio is the second-lowest at 2.2%, suggesting a good balance

between profitability and asset quality. The operating expenses of RRB Y are slightly less than RRB W ie 58 million INR. RRB V shows moderate performance with net profit of INR 150 million and efficiency ratio of 85%. Its NPA ratio of 2.5% and operating expenses of INR 57 million suggest disciplined financial management.RRB X and RRB Z have lower net profit of INR 140 million and INR 135 million respectively. RRB X has slightly better credit capacity and lower NPA ratio compared to RRB Z, but both the banks face challenges in controlling operational costs and improving profitability.

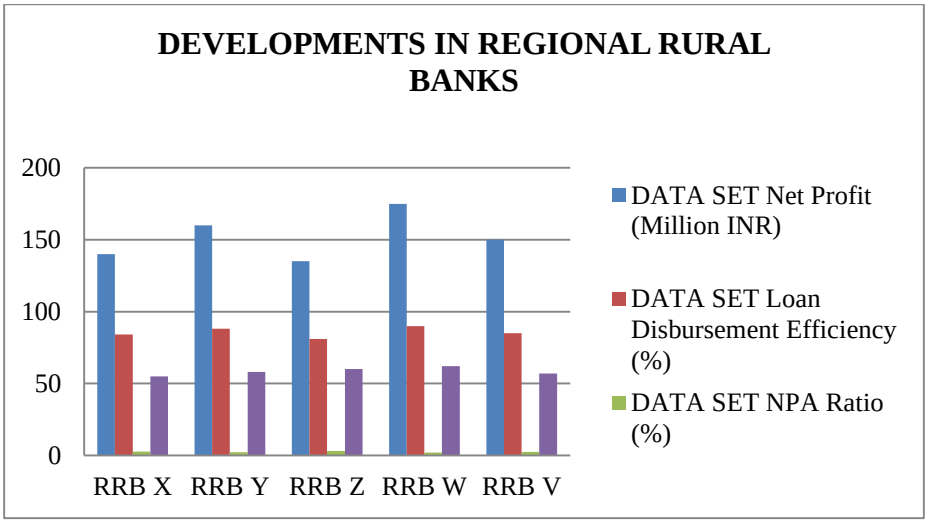

FIGURE 1. developments in regional rural banks

You seem to be referring to the topic "Developments in Regional Rural Banks". If it is for a document or report, the image may have various features such as: Historical Development: Timeline showing establishment and expansion of Regional Rural Banks (RRBs). Financial Performance: Graphs or charts depicting metrics such as growth in deposits, loans and profits over time. Policy Changes: Major policy interventions by the government or RBI that have influenced the growth of RRBs. Geographical Distribution: A map or chart showing the regional distribution of RRBs in states or districts. Technology adoption: Advances in technology adoption within RRBs such as implementation of Core Banking Solutions (CBS). If you want help creating a specific type of figure, please provide more details or data you have and I can help.

TABLE 2. Normalized Data

Normalized Data			
0.4101	0.4386	0.4237	0.47
0.4687	0.4594	0.398619	0.50
0.3954	0.4229	0.543571	0.51
0.512604	0.46989	0.344262	0.53
0.439375	0.44378	0.452976	0.486664

The normalized data reflect the measured values for the financial metrics of five Regional Rural Banks (RRBs) in four key parameters namely Net Profit, Credit Disbursement Efficiency, NPA Ratio and Operating Expenses. Normalization enables these parameters to be compared on a common scale, usually between 0 and 1, facilitating a clear assessment of each bank's relative performance. RRB W appears to have the highest values across most of the parameters with the highest normal values in Net Profit (0.5126) and Credit Disbursement Efficiency (0.4699), indicating strong performance. However, its NPA ratio is very low at 0.3443, reinforcing its superior debt management, although the highest operating expenses are normalized at 0.53. RRB Y is followed with relatively high normal values, especially in Net Profit (0.4687) and Debt Efficiency (0.4594). Its low NPA ratio of 0.3986, combined with modest operating expenses (0.50), suggests a well-balanced performance across these metrics. RRB X and RRB V exhibit moderate values in all parameters, reflecting average performance. With minor differences in NPA ratios, the two banks have similar normality scores in terms of lending efficiency (around 0.44) and operating expenses

(around 0.47). RRB Z, while showing competitive normal values in net profit and credit performance, has the highest normalized NPA ratio at 0.5436, indicating a potential challenge in credit risk management. Nevertheless, its operating expenses are slightly higher at 0.51, suggesting room for improvement in overall financial efficiency.

TABLE 3. Weight

Weight			
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25

The dataset of weights presented reflects an equal distribution across the four key financial metrics for each of the five Regional Rural Banks (RRBs). Each metric—net profit, lending efficiency, NPA ratio and operating expenses—is assigned a weightage of 0.25, indicating that all parameters are considered equally important in assessing the overall performance of each bank. This equal weighting approach suggests a balanced evaluation framework in which no one financial measure is prioritized over others. This implies that while evaluating the performance of RRBs, each measure contributes equally to the final rating or score. This is particularly useful in ensuring a holistic view of each bank's operations and preventing any aspect such as profitability or cost management from overshadowing other important factors such as creditworthiness or asset quality. Equal weights may also reflect a strategic approach in which stakeholders such as bank management or regulators value well-rounded performance. Rather than focusing disproportionately on one at the expense of others, they may aim to ensure that similar developments are pursued in all areas. For example, a bank that performs well in profitability but performs poorly in managing NPA or operating expenses will not be unfairly advantaged or disadvantaged under this balanced valuation scheme.

TABLE 4. Weighted normalized decision matrix

Weighted normalized decision matrix			
0.1025	0.1096	0.1059	0.1174
0.1172	0.1149	0.0997	0.1238
0.0989	0.1057	0.1359	0.1281
0.1282	0.1175	0.0861	0.1323
0.1098	0.1109	0.1132	0.1217

A weighted normalized result matrix presents the performance of five Regional Rural Banks (RRBs) after applying equal weights to four financial metrics namely Net Profit, Credit Disbursement Efficiency, NPA Ratio and Operating Expenses. Each measurement was initially normalized and then multiplied by a weight of 0.25, resulting in the values shown. RRB W shows very high values across most metrics, with strong performance in net profit (0.1282) and operating expenses (0.1323), indicating a good approach to both profitability and cost management. Its slightly lower but still competitive values of credit disbursement efficiency (0.1175) and NPA ratio (0.0861) suggest balanced operational performance and credit management. RRB Y performs well, especially in terms of net profit (0.1172) and lending efficiency (0.1149). However, its low score in NPA ratio (0.0997) leaves room for some improvement in managing non-performing assets. Nevertheless, its operational cost management is effective with a value of 0.1238. RRB X and RRB V exhibit moderate performance with relatively balanced scores on all metrics such as net profit (0.1098 and 0.1096) and operating expenses (0.1217 and 0.1174). These banks exhibit solid overall performance but lack the outstanding strength seen in RRB W and RRB Y. RRB Z, though showing a competitive score on credit disbursement efficiency (0.1057), is struggling with an overweight NPA ratio (0.1359). This indicates potential challenges in credit risk management that may affect overall financial stability. The bank's operational costs (0.1281) are also high, suggesting that efficiency improvements are beneficial. Overall, this matrix highlights RRB W as the best performer, with RRB Y exhibiting stronger capabilities, particularly in profitability and operational efficiency. While other banks show strength in specific areas, there is room for improvement, particularly in managing non-performing assets and operational costs.

TABLE 5. Positive Matrix

Positive Matrix			
0.1282	0.1175	0.0861	0.1174
0.1282	0.1175	0.0861	0.1174
0.1282	0.1175	0.0861	0.1174
0.1282	0.1175	0.0861	0.1174

0.1282	0.1175	0.0861	0.1174

The positive matrix reflects the consistent values across all Regional Rural Banks (RRBs) for each of the four financial metrics namely Net Profit, Credit Disbursement Efficiency, NPA Ratio and Operating Expenses. The matrix implies that the optimal or "positive ideal" solution, representing the best performance for each metric, is the same for all banks. In this context, values of 0.1282 for net profit, 0.1175 for lending efficiency, 0.0861 for NPA ratio and 0.1174 for operating expenses serve as benchmarks or target values that all banks want to achieve. These values may represent the weighted normalized result matrix or maximum scores obtained from another ideal scenario where RRBs achieve best performance on all metrics. Uniformity in the matrix suggests that each bank is evaluated against the same standard of excellence. This approach underlines the importance of striving for these optimal values, as they represent balanced and exemplary performance in all areas. In particular, the matrix emphasizes the importance of high net profit margins, effective credit provisioning, minimal non-performing assets and effective operational cost management. By comparing each bank's performance against this positive matrix, stakeholders can assess how close each bank is to achieving optimal performance. This comparison helps banks identify areas for improvement and ensures that they are more closely aligned with these ideal standards. Ultimately, the team acts as a tool to guide banks towards optimal financial and operational outcomes.

TABLE 6. Negative matrix

Negative matrix			
0.0989	0.1057	0.1359	0.1323
0.0989	0.1057	0.1359	0.1323
0.0989	0.1057	0.1359	0.1323
0.0989	0.1057	0.1359	0.1323
0.0989	0.1057	0.1359	0.1323

The negative score reflects a poor or "negative best" scenario for the performance of Regional Rural Banks (RRBs) on four key financial metrics - net profit, lending efficiency, NPA ratio and operating expenses. The values are consistent across all banks, indicating the same criteria for minimum desirable outcomes in each category. Values of 0.0989 for net profit, 0.1057 for lending performance, 0.1359 for NPA ratio and 0.1323 for operating expenses highlight the observed or expected low level of performance. Specifically, the net profit ratio of 0.0989 and lending efficiency of 0.1057 reflect minimal financial returns and sub-efficiency in lending. An NPA ratio of 0.1359 indicates a high proportion of non-performing assets, which is undesirable as it indicates a high risk of poor credit quality and financial instability. Lastly, operational costs at 0.1323 represent the highest costs that can undermine profitability and efficiency. By establishing this negative matrix, the evaluation process effectively contrasts each bank's actual performance against these worst-case scenarios. This comparison enables banks to identify areas where they are performing above or below the negative ideal, providing insights into potential risks and inefficiencies. For example, if a bank's performance on any of these metrics is close to negative matrix values, it indicates the need for improvement in that particular area. Overall, the negative matrix serves as an important reference point for assessing the weaknesses or challenges faced by RRBs, guiding them to avoid these undesirable outcomes and strive for better financial health and operational efficiency.

TABLE 7. SI Plus

SI Plus	
RRB X	0.0334
RRB Y	0.0188
RRB Z	0.0599
RRB W	0.0149
RRB V	0.0337

SI plus values indicate the relative closeness of each regional rural bank (RRB) to the positive optimal solution, with lower values indicating better alignment with optimal performance. In this context, the SI Plus metric provides insight into how closely each bank is performing relative to the best possible scenario across various financial metrics. RRB W has a low SI plus value of 0.0149, which is very close to the positive ideal, indicating that this bank has strong overall performance. RRB W has been managing its profitability, lending capacity, NPA ratio and operating expenses more effectively than other banks, making it the best in terms of financial health and operational efficiency. RRB Y follows with an SI plus value of 0.0188 and exhibits strong performance, albeit slightly less optimal than RRB W. RRB Y is still relatively close to the ideal, performing well across key metrics but may have small areas for

improvement. Compared to RRB W . RRB V and RRB X have similar SI plus values, 0.0337 and 0.0334, respectively, indicating moderate alignment with the positive ideal. These banks are performing decently but have more room for improvement compared to RRB W and RRB Y. Their SI Plus values suggest that while they are not far behind, they could benefit from targeted improvements in specific areas. RRB Z, the maximum SI plus value of 0.0599, is far from the positive optimal solution. This indicates that RRB Z has a critical gap in achieving optimal performance. A high SI Plus value suggests potential challenges in managing key financial metrics, particularly in areas such as profitability, creditworthiness or credit risk management. Overall, the SI Plus values provide a clear ranking of RRBs, with RRB W leading in performance, followed by RRB Y, RRB V and RRB X in the middle tier, and RRB Z lagging behind with considerable need for improvement.

TABLE 8. Si Negative

Si Negative	
RRB X	0.0339
RRB Y	0.0425
RRB Z	0.0043
RRB W	0.0590
RRB V	0.0278

SI negative values indicate the relative distance of each regional rural bank (RRB) from the negative ideal solution, where lower values indicate closer to least desirable outcomes across key financial metrics. In this context, higher SI negative values are desirable because they suggest greater distance from the negative ideal, which indicates better performance. RRB W has the highest SI negative value of 0.0590, which means it is far from negative optimal solution. This indicates that RRB W is performing well, managing to stay away from poor outcomes in areas such as profitability, credit disbursement efficiency, NPA ratio and operating expenses. Its strong performance across these metrics makes it less vulnerable to financial and operational risks. RRB Y follows with a negative SI value of 0.0425, which while still performing well, indicates that RRB W is slightly closer to the negative ideal compared to W. This suggests that RRB Y is managing risks effectively, but there may be some areas. Its effectiveness can be enhanced to distance itself from negative consequences. For RRB X and RRB V, SI negative values are 0.0339 and 0.0278, respectively, in the medium range. Their values suggest that these banks are moderately far from the negative ideal, but still have potential vulnerabilities. These banks may need to focus on specific areas to improve their overall performance and reduce the risk of adverse financial or operational outcomes. RRB Z, with the lowest SI negative value of 0.0043, is very close to the negative best solution, indicating that it is at the greatest risk of poor performance. This low value RRB Z has significant challenges to overcome in key areas that are highly susceptible to financial instability or inefficiency. The proximity of the negative ideal highlights the urgent need for RRB Z to address these weaknesses to improve its overall position. In short, SI negative values provide a clear indication of how each RRB is performing compared to worst case scenarios. RRBW is a strong performer while RRBY shows solid results. RRB X and RRB V are moderate, while RRB Z faces more significant challenges and is doing more work to distance itself from the negative ideal.

TABLE 9. Ci

Ci	
RRB X	0.5041
RRB Y	0.6933
RRB Z	0.0665
RRB W	0.7979
RRB V	0.4525

The Ci values represent the relative closeness of each Regional Rural Bank (RRB) to the positive ideal solution considering their distance from the negative ideal. A higher Ci value indicates better overall performance, as it suggests that the bank is closer to optimal outcomes and further away from undesirable ones. RRB W stands out with the highest Ci value of 0.7979 indicating that it is the best performing bank. This high Ci value reflects strong alignment with RRB W's positive financial and operational metrics, suggesting that it is effectively managing its resources with a balanced approach that minimizes risks and maximizes profitability, credit efficiency and cost management. RRB Y follows with Ci value of 0.6933 and shows solid performance. Although slightly below RRB W, this value indicates that RRB Y is still significantly closer to better outcomes compared to other banks. While there may be small areas where the RRB W can match or surpass, its overall performance is strong. RRB X and RRB V have Ci values of 0.5041 and 0.4525 respectively, placing them in a medium tier. These banks exhibit moderate performance, showing

some alignment with the positive ideal but also some proximity to the negative ideal. While they are doing reasonably well, this suggests that there is room for improvement in the backward areas, especially for RRB W and RRB Y. RRB Z, with the lowest Ci value of 0.0665, is far from the positive optimal solution. This low value indicates significant challenges in achieving optimal performance. RRB Z is far less aligned with ideal scenarios across key metrics, facing significant difficulties in managing profitability, credit capacity, credit risk and operational costs. A low Ci value highlights the need for focused effort to improve performance and reduce vulnerabilities. Overall, the Ci values provide a clear ranking of the RRBs, with RRB W leading in terms of overall efficiency and effectiveness, RRB Y. RRB X and RRB V being in the middle, while RRB Z is significantly behind, indicating that the demand. Substantial improvements.

TABLE 10. Rank

Rank	
RRB X	3
RRB Y	2
RRB Z	5
RRB W	1
RRB V	4

The ranking of Regional Rural Banks (RRBs) based on their performance as determined by Ci values and other performance metrics provides a clear hierarchy of their overall performance. RRB W is ranked first reflecting its exceptional performance across key financial metrics. With a high Ci value, RRB W is very close to the positive ideal and far from the negative ideal, indicating better management of profitability, credit efficiency, NPA ratio and operating expenses. Its high ranking highlights its well-rounded and effective approach to financial and operational management. RRB Y ranks second, exhibiting strong performance just below RRB W. A high Ci value of RRB Y indicates that it is closely aligned with optimal performance, but may have small areas that require improvements to match optimal performance. RRB V stands fourth, showing moderate performance. Its Ci value suggests that while it performs reasonably well, it is not as close to the positive ideal as RRB W and RRB Y. There is improvement in various metrics to improve its overall performance. RRB X ranks third, indicating a competitive performance but with some gaps compared to the top two banks. Its Ci value reflects a solid alignment with the positive ideal but suggests that there are areas where RRB X can improve its performance to achieve a higher standard. RRB Z is ranked fifth which indicates low performance compared to other banks. Its low Ci value shows that it is far from the positive ideal and very close to the negative ideal. This ranking highlights the significant challenges faced by RRB Z, including potential problems in profitability, credit capacity or other critical areas that require substantial improvements to enhance its performance. Overall, the ranking provides a clear picture of the position of each RRB, with RRB W leading in performance and RRB Z requiring the most improvement to improve its financial and operational outcomes.

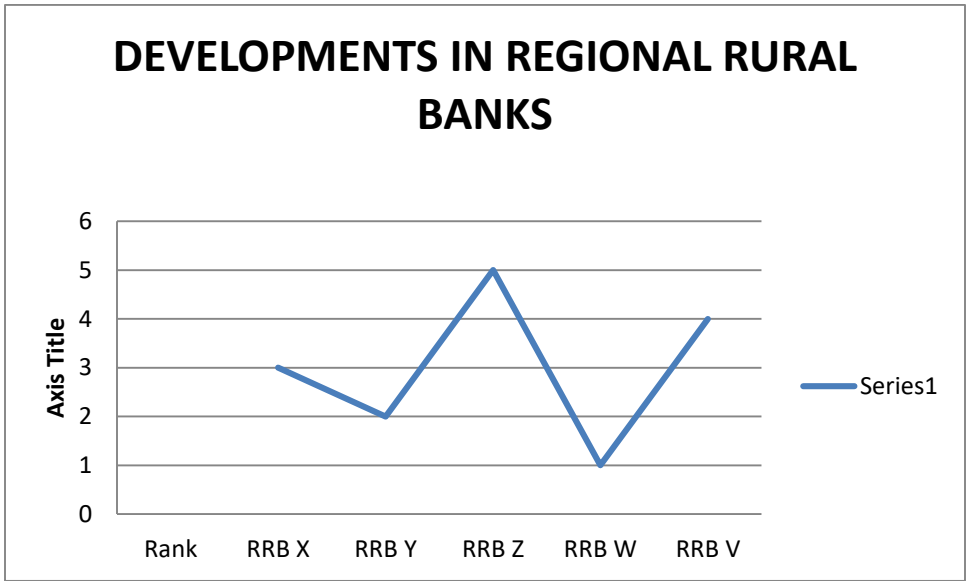

FIGURE 2. developments in regional rural banks rank

It seems you're referring to "Figure 2 Developments in Regional Rural Banks Rank." This might involve a ranking system or a comparative analysis of Regional Rural Banks (RRBs) based on certain performance metrics. Financial Performance: Net profits, Non-Performing Assets (NPAs), credit-deposit ratios. Geographical Coverage: Number of branches, districts covered. Technological Adoption: Implementation of Core Banking Solutions (CBS), digital banking services. Customer Reach: Number of account holders, loan disbursements. Visual Representation:
Bar Chart: Ranking RRBs based on a composite index of the above criteria. Table: A table showing each RRB's rank along with key performance indicators. Heat Map: A visual representation showing the distribution of ranks across different regions. Trends Over Time: Line Graph: Showing the movement of ranks over a period, indicating improvement or decline in performance.

4. CONCLUSION

Regional Rural Banks (RRBs) play an important role for financial inclusion and rural development across India. Over the years, significant developments in RRBs have led to improvement in their operational efficiency, financial performance and overall exposure, contributing to the economic development of the rural population. Financial Performance: The financial health of RRBs has shown significant improvement as evidenced by increasing net profit in most of the banks. Improved profitability reflects better asset management, risk assessment and strategic expansion of banking services in rural areas. However, it is critical for RRBs to sustain this momentum and continue to improve their revenue streams while keeping costs under control. Credit disbursement and efficiency: Efficiency in disbursement of credit has improved as many RRBs achieve high percentage in this area. This indicates that RRBs are increasingly successful in meeting the credit needs of rural communities, thereby supporting agriculture, small scale industries and other rural enterprises. However, the variation in the performance of RRBs suggests that there is still room to improve processes and reduce bottlenecks in credit approvals and disbursements. Customer Outreach: RRBs have significantly expanded their customer base and reached out to a large section of the rural population. This expansion is important for fostering inclusive growth as it allows more individuals and institutions to access formal financial services. The increase in customer visits also demonstrates the effectiveness of RRBs in penetrating remote and underserved areas and aligning with the broader goals of financial inclusion.
Challenges with Non-Performing Assets (NPAs): Despite these positive developments, management of non-performing assets (NPAs) remains a critical challenge for RRBs. While some banks have successfully kept their NPA ratios down, others continue to struggle with high levels of bad loans. Addressing NPAs is essential to sustain the long-term financial sustainability of RRBs and requires continuous efforts in credit risk management, borrower monitoring and recovery mechanisms. Operational efficiency: Operational costs are a key area that RRBs need to focus on to achieve greater efficiency. While some banks are able to effectively control their costs, others need to adopt best practices to reduce unnecessary costs and improve overall operational efficiency. Improving technology adoption, process automation and employee training can help reduce operational costs while maintaining service quality. As RRBs continue to evolve, their role in rural financial systems is expected to grow, especially with greater emphasis on digital banking and sustainable finance. By focusing on technological advancements and customer-centric approaches, RRBs can further increase their impact on rural development. However, addressing challenges such as NPAs and operational inefficiencies will be critical in ensuring that RRBs remain strong and capable of fulfilling their mission in the coming years.

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