PERFORMANCE EVALUATION OF REGIONAL RURAL BANKS (RRBS) IN INDIA: A SYSTEMATIC REVIEW OF THE LITERATURE

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Abstract

Regional Rural Banks (RRBs) are the government owned Commercial Banks operating at regional level were created with a view of developing the rural economy by providing for the purpose of agriculture, trade, commerce, industry and other productive activities in rural areas, credit, and other facilities, particularly to small and marginal farmers, agricultural laborers, artisans, and small entrepreneurs and for matter connected therewith and incidental thereto. In order to improve the viability of RRBs, the reforms and mergers introduced by Government since 1994-95 have yielded positive results. With the process of amalgamation, the number of RRBs has come down from 196 to 43 with the consequential increase in the area of operation and volume of business for each bank. Out of the 43 RRBs, 16 carried accumulated losses of Rs.9062 crores which is a matter of concern and the government initiatives in respect of RRBs to raise capital from sources other than governments/sponsor banks emphasised the need for the study of performance of RRBs and to identify the existing research gaps on the topic. This paper tries to examine performance of RRBs and to identify research gaps, if any, since there was virtually no study which was undertaken to study the performance of RRBs through a systematic review of the literature. The study concluded that the performance has significantly improved over time during post-amalgamation and is not same in case of all the RRBs. The profit making RRBs made a significant contribution for the overall growth. It also identified few research gaps on the topic for further investigation.

Key words: amalgamation, merger, viability.

Introduction

Regional Rural Banks (RRBs) are the government owned commercial banks operating at regional level. RRBs combined the local feel and the familiarity with rural problems which the cooperatives possess and the degree of business organization, ability to mobilize deposits, access to money markets and modernized outlook which the commercial banks had (Sabitha Devi, N,2014). RRBs were created with a view to developing the rural economy by providing, for the purpose of agriculture, trade, commerce, industry and other productive activities in rural areas, credit, and other facilities, particularly to small and marginal farmers, agricultural laborers, artisans, and small entrepreneurs and for the matter connected therewith and incidental thereto (referred as ‘Target group’: Pal & Jasvir, 2006). In order to improve the viability of these banks, the reforms and mergers introduced by government since 1994-95 have yielded positive results in terms of the number of bank branches, capital composition, deposits, loans, loans and the trend of investments, number of profit making RRBs and so on. Initially, RRBs of the same sponsor banks within a state were amalgamated (Phase-I: Sept. 2005-Mar. 2010) and subsequently RRBs across sponsor banks within a State were amalgamated (Phase-II: Oct 2010 onwards) to have just one RRB in medium-sized states and 2 or 3 RRBs in large states (Das, P.K., 2016). With the process of amalgamation, the number of RRBs has come down from 196 to 43 (Deb, R, 2020) with consequential increase in the area of operation and volume of business for each bank. However, out of 43 RRBs, 16 RRBs carried accumulated losses of Rs.9062 crores (NABARD, 2022) which is a matter of concern and the government initiatives in respect of RRBs to raise capital from sources other than governments and sponsor banks emphasised the need for study of performance of RRBs and to identify the existing research gaps, if any on the topic. To the authors’ knowledge, there was no study which was undertaken to study the performance of RRBs through a systematic review of literature.

This study is done with the objective:

(1) To examine the performance indicators and to identify the factors that affect the performance of RRBs;
(2) To evaluate the performance of RRBs and to identify research gaps, if any.

Literature review

The meaning of 'performance' differed depending on the framework and applications (Syed Ibrahim, 2010; Brahma, 2014; Barot & Japee, 2021). In addition to agreeing with this statement, Ravikumar Kuranal & Ravikumar K. (2022) argued that even though RRBs operate with a rural concentration, they are banks with a commercial orientation. Performance measurement is crucial because it allows an organization to keep track of the key elements of its business operations (Sulagna Das, 2021).

While Pal & Jasvir (2006) analysed performance of RRBs and concluded that it was quite encouraging, Reddy, A.A. (2006) revealed RRBs showed significant economies of scale in terms of assets and number of branches under each bank. Banks located in economically developed areas have exhibited significantly higher productivity growth. The exploratory analysis made by Misra (2006) found that the problem of the loss making RRBs is neither confined to some specific states nor to a group of sponsor banks. Further, with the help of econometric analysis, he found the operation of the umbilical cord hypothesis and the result indicted that the sponsor bank contributed positively to the financial health of profit making RRB and negatively to that of the loss making RRBs.

Few studies (Sathye, M, 2008; Syed Ibrahim, 2010) revealed that performance of RRBs has significantly improved post-amalgamation. A study conducted by Vinod Kumar (2012) on performance of RRBs based on review of literature concluded that RRBs has significantly improved rural economy through credit dispersal to target people. Another similar study by Vanani, L.J. (2019) revealed that many earlier studies focused at all-India level while there were studies reported in the context of various states like Gujarat, Rajasthan, and Karnataka also. Though there were 6 review papers (table 1), there is virtually no study which was undertaken to explore the performance of RRBs through a systematic review of literature.

Methodology

The study is exploratory and descriptive in nature and is based on secondary data. This paper is a systematic review of literature on the topic. The scholarly research papers/articles were identified using Google Scholar by search with key words as mentioned in the title: Performance Evaluation of Regional Rural Banks/RRBs/Grameen Banks/Gramin Banks and performance/ amalgamation/ merger/ productivity & efficiency of RRBs as it is a freely accessible web search engine for the purpose of review. Out of 117 articles/papers/theses were identified, based on the inclusion and exclusion criteria, 37 papers were excluded (table 1). As the study considered only research papers on performance of RRBs in India,

Table 1. Inclusion and exclusion criteria

Data House	Total Papers	Excl.1 Irrelevant papers	Excl. 2 Country of Study out of India	Excl. 3 Studies related to banks other than RRBs	Excl.5 Papers prior to year 2011	Excl.5 Review papers	Relevant papers
Google Scholar	117	12	7	4	8	6	80

Source: prepared by the author

12 irrelevant papers including 2 Phd theses (to avoid duplication) and 10 papers on themes other than performance were excluded. Since RRBs in India differ from rural banks in other counties, 7 studies conducted outside India were excluded. Next, 4 studies related to banks other than RRBs were also excluded. In order to avoid duplication, 6 review papers were not considered. For the purpose of this study, papers spreading over 12 years (2011-2022) only considered and hence 8 papers published prior to 2011were excluded. Finally, 80 papers spreading over

12 years (2011-2022) were selected for the review and the publication year-wise distribution of papers is presented in chart 1.

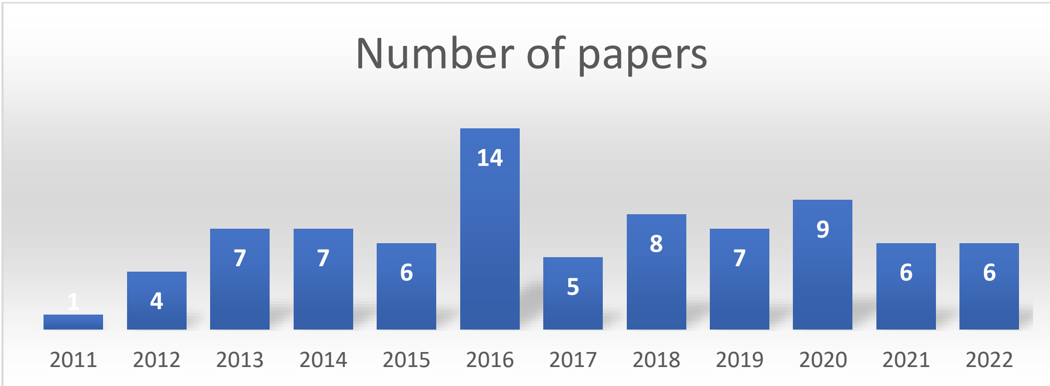

Chart 1. Year-wise distribution of papers

For examining performance of RRBs and to identify the factors influencing it, 20 papers were reviewed. All relevant (80) studies were considered for the review performance of RRBs and to identify research gaps.

Results and discussion

Performance Indicators and Their Determinants

The performance indicators and the factors influencing the performance of RRBs identified through literature review is presented in table 2. The studies on the performance of RRBs were undertaken through the physical analysis by considering the number of branches, district coverage including the state-wise distribution of RRBs and/or the business analysis including profitability and financial performance of RRBs at individual, banks, district-wise and state-wise comparison (Suresh. R, 2015). As banking operations primarily are deposit mobilization, credit deployment and prompt recovery of credit, Chakraborty & Das (2018) measured operational performance through deposit, credit deployment, CD ratio and NPA.

The profitability is the most important indicator of financial performance and bank's profit, which is viewed as a composite index of level of efficiency, productivity, and cost effectiveness (Ahmed et al.,2013; Brahma, 2014; Mohanty, Anoop et al.,2015; Girija Nandini et al.,2021). The efficiency of the banks can be assessed using a variety of metrics, including deposits, advances, working funds, incomes, expenditure, profits, number of accounts, number of branches etc. Bank employees are regarded as the corporate assets because they have a direct impact on the workplace attitude, culture, and motivation. Employee productivity measures the bank's productive potential (Shashikant D.H.& Sujatha Susanna Kumari D,2017).

The literature (Bhattacharya & Dutta,2016; Dhanraj. N, & Saikumar, R.,2016) also reveals that the financial performance of RRBs (Net Income) depends on upon two broad sets of factors of both internal and external to the RRBs. As lending and investment are primary sources of income of RRB, the percentage of RRB's investments in securities and loans and advances relative to total assets are important factors determining RRB's performance. Since banks are in the business of converting short-term deposits into long-term lending, they are continuously exposed to the risks associated with the maturity mismatch in terms of liquidity management. Banks including RRBs maintain liquid assets, which may be converted into cash, as a hedge against liquid deficiencies, which might result in bankruptcy issues. However, the lower rates of return are frequently linked to liquid assets and high liquidity will be correlated with reduced profitability. The effect of liquidity on profitability can be captured by the bank and cash balances as percentage of assets of RRBs. The efficiency in expenses management is another factor that can be expected to have significant impact of the financial health of the RRBs. The total expenses listed in the RRBs' P& L accounts are made up of both interest and operating expenses. While it is normal for operating expenses to increase in order to support expanding business operations, the ratio of increasing operating expenses to non-operating expenses is a matter of concern and indicates ineffective expense management. The variable operating expenses as a percentage of total expenditure is an added factor to assess the impact of expense management on balance sheet health of RRB. In addition to internal factors, the influence of the sponsor bank on a RRB's health through what is termed as the umbilical cord is acknowledged in the literature by Malhotra, 2002 as cited in Dhanraj.N, & Saikumar, R. (2016). According to the umbilical cord hypothesis, the attitude of the sponsor bank would have an impact on the performance of the RRB, given their close relationship. The impact of the sponsor bank has been grouped under a single indicator, namely its financial health (reflected through its net income a percentage of its total assets), because it is difficult to measure its attitude towards the concerned RRB. Since it is highly conceivable that past year's performance has an impact on current year's performance, Dhanraj.N, & Saikumar, R. (2016) employed lagged value of net income as a percentage to total assets in the extended model. This is in line with previous study of Misra (2006).

Nair & Thirumal (2012) used profitability in terms of return on assets as indicators of performance of RRBs and identified 33 independent variables under different ratios (table 2). In addition to ROA, Chaudhary, S. & Kaur, M. (2021) employed return on equity as performance indicator. In order to examine the impact of amalgamation on performance of RRBs, many studies compared productivity & efficiency of RRBs. In addition to amalgamation, bank specific variables such as risk, diversification, size, efficiency, liquidity, and capitalization were identified as factors determining financial performance (Chaudhary, S. & Kaur, M.,2021).

Table 2. Performance indicators and factors influencing the performance of RRBs identified through literature review

Performance Indicator	**Factors**	**Literature supported**
Profitability: ROA	Independent variable: **capital adequacy ratio**: advances to total assets, debt to equity resources, **resources deployment ratio**: deployment ratios, investment to total assets, other assets to total asset, credit to deposit, investment to deposit, credit and investment to deposit, fixed assets to total assets, fixed assets to net worth, **asset quality ratio**: returns on advances, interest income to total assets, other liabilities to total assets, net worth to capital employed, **management efficiency ratio**: return on net worth, wage bill to total income, operating expenses to total expenses, interest expended to interest earned, interest expended to total expenses, equity paid up to capital employed, **earning quality ratio**: spread to working fund, burden to working fund, operating profit to total assets, return on total assets , interest income to total income, non-interest income to working fund, non-operating expenses to total assets, return on capital employed, equity paid up to net worth, **liquidity ratio**: deposit to total assets, liquid assets to total assets, provision and contingencies to total assets, cash to deposits, investments to advances, interest coverage	Nair& Thirumal (2012)
Profit	Priority sector lending, CD ratio, operating expenses, spread, Total deposit, NPA	Ahmed et al. (2013)
Profit/Loss	Investment (Impact of Investment on Profitability) Capital, total income, deposits, investments, investments in India, interest earned, interest expended, other income	Brahma (2014)
Growth (CAGR)	Physical Analysis: number of RRBs, branches, districts covered, staff employed Business analysis: sources of funds, advances, investments, applications, deposits, CD ratio	Suresh. R (2015)
Profit	Investment, other income and credit	Mohanty, Anoop et al. (2015)
Financial ratios (financial return, financial margin	Business ratios (Interest income, NII, operating profit, ROA, business, profit per employee)	Joshi V. & Jain, S.C. (2016)

operating profit, misc. income, net margin)		
Net income	Internal: Loans and advances, Investments, Liquidity External: Net income of sponsor banks	Bhattacharya & Dutta (2016), Dhanraj. N, & Saikumar, R. (2016)
Productivity of RRB	branch productivity and employee productivity	Shashikant D.H.& Sujatha Susanna Kumari D. (2017)
Growth rate	Number of branches, deposits mobilised, capital deployed, investment made, bank credits offered, credit-deposit ratio, income, expenditure, net profit, net NPA and total asset	Veerakumar, K. & Suresh, R.V. (2017)
Performance	Capital adequacy, asset quality, management, earnings, liquidity system and control	Anoop Kumar & Ravi Agarwal (2017)
Net profit	Number of branches, total deposits, and total advances	Girija Nandini et al. (2021)
Profitability: ROA, ROE	Amalgamation: dummy 0 for period prior amalgamation and 1 for post-amalgamation Risk: loans and advances/total assets Diversification: Non-interest income or other income/ total assets Size: Natural logarithm of total assets Efficiency: cost to income ratio Liquidity: liquid assets/total assets Capitalization: total capital/total assets.	Chaudhary, S., & Kaur, M. (2021)
Interest income and other income	Interest expended and operating expenses	Arora, P. & Arora, H. (2016)
Interest earned, investment, loans and advances, other income	Operating expenses, interest expended, deposits, number of branches, fixed assets	Ayekpam & Das (2016)
Financial efficiency:(total income per branch)-production approach Inclusion efficiency (total business per branch)-intermediation approach	Model 1(Financial efficiency): fixed assets per branch, gross advances per branch, gross investment per branch, staff per branch Model 2(Inclusion efficiency): fixed assets per branch, gross investment per branch, staff per branch	Galab. S. & Vedam, B. (2018)
Model 1: Technical Efficiency Model2: Cost Efficiency Model3: Allocative Efficiency	salary, total assets, non-interest income, net interest income and location	Purkayastha (2019)
Interest income, non-interest income and net loans	deposits, staff numbers, interest expenses and non-interest expenses	Antil, et al. (2020)
Net worth and total business	Financial returns, employee efficiency, branch productivity	Roy & Roy (2020)

Net profit, branch expansion (no. of branches), and total business	operating expenditure, non-performing assets and interest costs	Abhirupa Roy et al. (2021), Sujit Das, (2020**)**
Indian poverty score	Bank branches and credit/ debt ratio	Gautam, Rahul Singh et al. (2022)
Financial performance: Total Income Total Loans	Total expenditure, Total staff, Owned fund, Total borrowings	Bharti & Kumari (2022)
Model 2: Priority sector efficiency; Output variables: Total loans to priority sector	Same as model 1	
Model 3: Weaker section efficiency: Output variables: Loans to weaker sections	Same as model 1	
Model 4: Priority sector and weaker section: Output variables: Total loans to priority sector and loans to weaker sections	Same as model 1	

Source: prepared by the author

In addition to studying KPI, Arora, P.& Arora, H. (2016), analyzed efficiency and productivity of RRBs by taking interest income and other income as performance indicators and interest expended & operating expenses as input variables, Ayekpam & Das (2016) employed operating expenses, interest expended, deposits, no. of branches, fixed assets as determinants of efficiency. Galab, S. & Vedam, B (2018) considered total income per branch for financial efficiency indicator as it represents commercial viability and total business per branch for inclusion efficiency as being the wholesome indicator variable of bank performance. Roy & Roy (2020) considered the net worth and total business as output decision drivers. It is challenging to measure banking efficiency as majority of services are jointly produced. Antil. et al. (2020) employed technical efficiency as performance indicator. The income, cost, and profit earned during a financial year is regarded as financial performance and was measured through other operating income, non-operating income, total income, interest expended on deposits, operating profit, and net profit (Selvakumar, & Abima, 2020).

Gautam, Rahul Singh et al. (2022) investigated the performance of RRBs in terms of their influence on poverty reduction and rural development and considered bank branches and credit/debt ratio as independent variables. Bharti & Kumari (2022) reported that the RRBs were criticized in the literature for not performing well, but analysis of their performance using a rigorous methodology is not available and they studied not only financial performance of RRBs but also performance in respect of priority sector lending, loans to weaker sections, and agriculture finance and employed total expenditure, total staff, owned fund, and total borrowing as input variables.

Galab, S. & Vedam, B. (2018) considered fixed assets per branch, gross advances per branch and staff per branch as input variables. While Purkayastha (2019) considered salary, total assets, non-interest income, net-interest income, and location (urban, others) as independent variables, Antil, et al. (2020) employed deposits, staff numbers, interest expenses and non-interest expenses.

While studying the performance of RRBs, Girija Nandini et al. (2021) treated the physical factors such as number of branches, total deposits, and total advances as independent variables, while others (Sujit Das, 2020; Abhirupa Roy et. al,2021) used operating expenditure, NPAs, and interest costs as input variables.

Performance Evaluation of RRBs And Identification of Research Gap/s

The summary of papers reviewed for evaluating the performance of RRBs is presented in table 3. The performance of RRBs has always been debatable. Some studies concluded that there were issues with the sustainability of RRBs whereas some questioned the objective of formulation of RRBs and argued that they need to be evaluated differently from commercial banks. In some specific cases (28), RRBs have shown good performance. In contrast to this, few studies (4) have found that the performance was not good/inefficient. The literature revealed that the amalgamation has impacted positively on the performance/efficiency/ productivity of RRBs (15) and avoided bank failure by making the weaker bank stronger (1 study). These results were in line with the findings of Sathye, M (2008) & Syed Ibrahim (2010). In contrast to this, few studies (4) did not confirm the improvement in performance post-amalgamation. Anoop Kumar & Ravi Agarwal (2017) argued that amalgamation alone is not enough for strengthening the financial performance of RRBs.

Ayekpam & Das (2016) indicated that the efficiency level was not same in case of all the RRBs of the country during their study period. There were wide variations in efficiency across the states (Antil, et al., 2020). The study conducted by Chaudhary, S., & Kaur, M. (2021) found that ROE increased significantly in the post-merger period in support of the theories of value creation of mergers and acquisitions, the diversification and credit risk have a positive and significant relationship with the profitability of RRBs; in contrast, cost inefficiency deteriorated RRBs' profitability.

The RRBs were set up for developing rural economy by providing credit and other banking facilities for productive activities particularly to the target group and from this angle, the performance of RRBs in financial inclusion and poverty alleviation is crucial. Two studies were focused on financial inclusion. While majority of papers on performance of RRBs focused on financial performance including impact of amalgamation (Bhattacharya & Dutta, 2016; Chaudhary, S. & Kaur, M.,2021), some of the papers pertaining to performance of RRBs also focused on the purpose for which RRBs were established. Gautam, Rahul Singh et al. (2022) found the significant impact of RRBs on poverty reduction and economic development. Bharti & Kumari (2022) depicted a strong positive significant relationship between agriculture and microenterprise finance on the financial performance of the RRBs. Few studies (11) underlined the importance of RRBs in credit delivery to the target group and social commitments and in turn rural development.

Table 3. Summary papers reviewed for evaluating the performance of RRBs

Findings in brief	Name of the study	No. of studies
Performance of RRB/s has significantly improved	Anil Kumar Soni & Abhay Kapre,2012; Anil Kumar Soni & Abhay Kapre,2012a; Ahmed, 2014; B. Venkata Rao G. & Sudarsana Rao, 2014; Elangbam Nixon Singh & C Vanlalkulhpuia, 2014; Gadhavi. B.K. & S.B. Vekariya, 2014; Joshi, V. & Jain S.C, 2015; Kingshuk Adhikari et al., 2015; Arora, P. & Arora, H., 2016; E. Hari Prasad & G.V. Bhavani Prasad, 2016; Jayaprakash, K. & Subba Reddy S. V., 2016; Joshi V.& Jain, S.C,2016; Mukesh B. Tagariya & Pritesh C. Panchal, 2016; Noor Basha Abdul &Vani Karlapudi, 2016; Das, P.K., 2016; Agarwal, Padmavathi & Reddy, Bhagavan B., 2017; Suneet Sureshchandra Kopra, 2017; Chakraborty & Das, 2018; Seena. P.C & Nirmala Devi, 2018; Shamshadali P et al., 2018; Srinivas & Srinivas,2018; Reddy, Lakshmi V. &. Reddy, Mohan, 2019; Tiwari, S.C.et al.,2019; Deb, Ratan,2020; S Selvakumar & D. Abima,2020; Sujit Das ,2020a; Ingale, D.,2021; Shetty, Megha D. & Bhat, S., 2022	28
Performance not improved/inefficient	Ahmed,2013; Ayekpam & Das, 2016; Suneet Sureshchandra Kopra & Anurag Shrivastava,2018; Niazi, Attaullah & Mulla, Nisar Ahmed, 2021	4
Positive impact of amalgamation on performance	Jorum & Mali, 2012; Kanika & Nancy, 2013; M. Syed Ibrahim,2013; Brahma,2014; Sulagna Das,2015; Raut, Karuna Nagnath,2016; Dhanraj N & Saikumar, 2016; Chinara, M., & Kamila, A.,2017; Kumar et al., 2017; Shashikant D.H & Sujatha Susanna Kumari D,2017; Akash Kumar, 2018; Antil et.al., 2020;	15

	Neha Singh, 2020; Chaudhary, S., & Kaur, M. ,2021; Sulagna Das,2021	
Amalgamation avoided bank failure by making the weaker bank stronger	Veerakumar, K. & Suresh, R.V. 2017	1
Decline in/low profitability of RRBs post-amalgamation	Taral Patel & Nisarg Shah, 2016; Bhattacharya & Dutta,2016	2
Standalone bank is better performing than amalgamated one	Anoop Kumar & Ravi Agarwal, 2017: Bharti & Kumari,2022	2
Financial ratios of M.P RRBs are useful as predictor of their business ratios	Joshi V.& Jain, S.C,2016a	1
Capital adequacy and asset quality were better, management was average, earning quality ratio & liquidity ratio not up to the mark	Sakshi Gupta & Surbhi Jain,2022	1
Number of branches & total advances of RRBs are statistically significant association among net profit of RRBs	Girija Nandini et al.,2021	1
Comparative analysis of Performance	Reddy & Prasad, 2011; Abhay Kumar Kapre & Anil Kumar Soni,2013	2
RRBs must focus on a few key factors	Nair & Thirumal,2012	1
High expectation of the customers from the amalgamated bank	B.C.M. Patnaik et al.,2014	1
Uniformity in the performance grades between the RRB units under study	Sujit Das, 2020a; Abhirupa Roy et al., 2021	2
Differences in operational effectiveness and the role of decisive factor in improving performance	Roy & Roy,2020	1
Selected branches are operating at 69% technical efficiency, 60% cost efficiency & 71% allocative efficiency level	Purkayastha,2019	1
Significant in the branch & employee productivity between loss making & profit making RRBs	NABARD,2022a	1
Competition with other banks with their limited resources & limitations	Suresh R ,2015	1
Priority sector lending, CD ratio, operating expenses, spread, deposits & NPA are to be considered as perfect determinants of profitability	Ahmed et al., 2013	1
Significant impact of RRBs on poverty reduction & economic development	Gautam, Rahul Singh et al.,2022	1
Contributed in Rural Development	Shenti Kumar & Bharat Bhushan, 2019; Sidharthi Sharma et al.,2019; Tigari & Gaganadeepa, 2019	3
Reduction in regional disparities, credit to poor in rural areas, encourage rural savings etc.	Nagendra Kumar, 2020	1

Credit delivery in rural areas to target group	D. Balamuniswamy, & G Erraiah, 2013; Sabitha Devi, N,2014; Mohanty, Anoop, 2015; Ram, J. & Subudhi, R.N., 2015; S.Chandra Sekhar,2018; Pattanashetti, R.,2019;Sujit Das,2020b	7
Financial inclusion	Joy Das, 2016; Galab, S. & Vedam, B.,2018	2
	Total	**80**

Source: prepared by the author

The research gap/s in a topic may arise in terms of dimensions which were not explored and the variables that were not considered in the previous studies. It may also arise in terms of location of study or target population or methodology used. The distribution of papers based on unit of analysis is presented in table 4. Majority of studies reviewed (46.25 percent) focused at all- India level RRBs, which is in line.

Table 4. Distribution of papers based on Unit of Analysis

Unit of Analysis	No.	Percentage
Single RRB	22	27.50
All India RRBs	37	46.25
Single RRB branch	1	1.25
State-RRBs	17	21.25
Region-RRBs	3	3.75

Source: prepared by the author

With India level RRBs, which is in line with the earlier study done by Vanani, L.J. (2019). Out of total papers, only few (27.70 percent) studies concentrated on the efficiency of a single regional rural bank (table 1) (Reddy & Prasad, 2011; Anil Kumar Soni & Abhay Kapre, 2012). The productivity performance of RRBs (Ahmed et al,2014: Meghalaya Rural Bank and Elangbam Nixon Singh & C Vanlalkulhpuia, 2014: Miziram Rural Bank) were studied from 2000-01 to 2010-11 confining areas such as number of branches, district coverage, deposits, advances, investments, and CD ratio etc. The labour and branch productivity in terms of deposits, advances, and business. The productivity of RRBs measured with ROI, ROA, and profit as percentage of volume of business. Even fewer (25.00 percent) studies concentrated on the performance evaluation of RRBs in a particular state/region (Ahmed et.al,2013; Ahmed 2014; Antil et al.,2020). Some of the studies are based on single year data (D.Balamuniswamy& G Erraiah,2013; Antil et al.,2020; Abhirupa Roy et al.,2021; Bharti & Kumari,2022). The approach involving exploratory analysis done for a single year or a single branch or a particular RRB or a group of RRBs has a serious limitation to draw inferences in that the findings are guided by the choice of the year or the RRB in question. There are limited studies which evaluated performance of RRBs based on primary data (table 5).

Table 5. Distribution of papers on Performance of RRBs methodology wise

Sr.No.	Methodology/Analysis Technique	No. of Papers
	Based on Primary data	4
	Based on Secondary data	
1	KPI (Key performance Indicators)	38
2	Ratios/accounting measures including CAMEL model	19
3	Economic Measures-Total Factor Productivity-Data Envelopment Analysis (DEA)/Stochastic Frontier Analysis (SFA) including panel regression	19
	Total	**80**

Source: prepared by the author

The choice of model or method used is one of the important concerns (Ahmad, Nisar et al.,2019) and table 3 lists distribution of papers methodology-wise. Though majority of studies reviewed (38 papers) employed key performance indicators (KPI), the financial ratio approach has been frequently used (19 studies) to examine the performance of RRBs using different variables related to CAMEL (Capital Adequacy, Assets Quality, efficiency of Management, quality of Earnings and Liquidity) model (Reddy & Prasad, 2011) and CRAMEL technique with an additional component of efficiency i.e., resource deployment (Nair & Thirumal,2012). As Nair & Thirumal (2012) studied the growth and progress of only the profit making RRBs considering a few KPIs, i.e., number of RRBs, branch expansion, deposits, CD ratio and net profit, it will not give complete picture of performance, hence there is scope to study and compare performance of loss making RRBs and to find out reasons for losses to explore solutions to improve loss making RRBs. Out of 19 papers which adopted economic measures to evaluate performance, 10 papers employed DEA and 9 papers used regression analysis (table 5).

Since the state government contributes 15 per cent of ownership (share capital) of RRB and the state in which RRB situated might be an important determinant of its performance. However, there are no studies except Antil et al. (2020) on cross state analysis. Hence there is scope for a comparative performance analysis of RRBs state wise (Chaudhary, S., & Kaur, M.,2021; Bharti & Kumari, 2022). Though Antil et al. (2020) analyzed state-wise efficiency performance of RRBs covering two phases viz., 1 and 2 of amalgamation periods, study was conducted before the third phase of amalgamation and thus the results do not provide the complete picture of the impact of reforms on efficiency of RRBs. Abhiropa roy (2021) studied efficiency and sensitivity efficiency of individual RRBs. There is scope for future research to examine the impact of amalgamation on individual RRB and to compare their peers and to examine the determinants of productivity change as technological change (Antil, et al.,2020).

Very few studies have established causality relationship between performance of RRBs and the explanatory variables. Most of the studies were restricted to the limited variables that indicate profitability and their influence on amalgamation (Chaudhary, S., & Kaur, M., 2021). Though many studies conducted covering different periods of amalgamation, they did not did not distinguish the performance of RRBs in different periods of amalgamation (Shashikant D.H. & Sujatha Susanna Kumari D.,2017) except Veerakumar, K. & Suresh, R.V. (2017). During the periods of amalgamation, the performance of RRBs, studied either studying post-amalgamation performance (Jorum & Mali, 2012; Abhay Kumar Kapre & Anil Kumar Soni,2013; B. Venkata Rao & G. Sudarsana Rao,2014; Mohanty, Anoop et al.2015; Kingshuk Adhikari et al.,2015; Noor Basha Abdul & Vani Karlapudi,2016) or comparing performance of selected standalone and amalgamated RRBs (Anoop Kumar & Ravi Agarwal, 2017) or performance of RRB pre- and post-amalgamation (Syed Ibrahim, 2013; Brahma, 2014; Suresh R.,2015; Bhattacharya & Dutta, 2016; Shashikant D.H. & Sujatha Susanna Kumari D.,2017; Veerakumar, K. & Suresh, R.V.,2017; Akash Kumar, 2018) or considering amalgamation as one of the independent variables along with other independent variables (Chaudhary S & Kaur M, 2021). Mohanty, Anoop et al. (2015) studied post-amalgamation performance considering parameters such as interest earned, interest expended provisions for operating profit, operating profit, total expenses, other income total income in addition number of RRBs, capital, deposit, investment, advances, and they also studied region wise performance of RRB only for a single year.

The method of comparing performance of standalone and amalgamated RRBs fails to nullify the effect of pre-amalgamation performance on post amalgamation. Further, while comparing the performance of RRBs, the age of RRBs is an important factor which was not considered in previous studies. The performance after amalgamation majorly depends on the sample period, institutional environment, and performance of amalgamating entities in the pre-amalgamation period (Chaudhary, S., & Kaur, M., 2021). Most of the studies taking variables to evaluate the impact of amalgamation of RRBs were confined to geographical coverage, branches, deposits, and credit. There are no studies conducted covering the whole range of banking activities of all RRBs in the country from the bankers' point of view as well as customers' point of view (Suresh R.,2015).

Conclusion and implications

The study revealed that the performance has significantly improved over time during post-amalgamation. The profit making RRBs made a significant contribution for the overall growth. It is not same in case of all the RRBs and found that there are wide variations across states. The study identified various indicators of performance and factors influencing performance of RRBs. Many of the studies were conducted on secondary data for all RRBs in India or specific state /location/ RRBs/specific time periods and very few studies included primary data. A comprehensive study of RRBs including both primary and secondary data including all the factors has been scarcely explored. There is scope for cross state analysis and to explore the impact of different phases of amalgamation and comparisons among them. Very few studies have established causality relationship between performance of RRBs and the explanatory variables. Most of the studies were restricted to the limited variables that indicate profitability and their influence on amalgamation (Chaudhary, S., & Kaur, M., 2021). This paper will add to the existing knowledge on the performance of RRBs with identification of factors influencing performance and identifying research gap will help in undertaking further research on the subject. All the inherent constraints of the review of literature particularly systematic review apply to the present study. Further, the study is limited to papers obtained from only google scholar and not included other data bases.

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