JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

ROLE OF RBI CREDIT IN RURAL DEVELOPMENT WITH SPECIAL REFERENCE TO DHULE DISTRICT OF MAHARASTRA

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Abstract

This study investigates the role of the Reserve Bank of India (RBI) in facilitating rural credit and its impact on agricultural development in Dhule district, Maharashtra. Using a mixed-methods approach, this research draws on primary data from 50 farmers. The objectives were to assess credit accessibility, analyse its impact on productivity, explore socio-economic factors influencing credit uptake, and evaluate the efficiency of RBI-regulated financial institutions. Descriptive analysis revealed that small farmers received the highest average credit of ₹52,000, followed by medium (₹48,000) and large farmers (₹45,000), indicating targeted inclusion under RBI's priority sector lending norms. However, a simple linear regression showed a weak relationship between credit availability and agricultural productivity ($R^2 = 0.0028$, $p = 0.641$), suggesting that credit alone does not substantially enhance productivity. The correlation matrix identified a moderately positive relationship between credit and income ($r = 0.17$), while a negative correlation with landholding size ($r = -0.38$) highlighted greater institutional support for smaller farmers. The ANOVA results confirmed significant differences in credit distribution across landholding groups, while the regression and correlation analysis emphasized the need for integrated rural support mechanisms. Compared with prior studies, this research employs a more comprehensive, data-driven approach that combines ANOVA, regression, and correlation techniques. In conclusion, while RBI-led rural credit systems are effective in reaching intended beneficiaries, their developmental impact is contingent on additional enablers such as market access, crop insurance, and extension services. This study offers actionable insights to policymakers, bankers, and development planners.

Keywords

Rural Credit, Reserve Bank of India (RBI), Agricultural Productivity, Financial Inclusion, Dhule District.

1. Introduction

The availability and adequacy of rural credit play an important role in rural development in India especially in the agrarian sector of the Dhule district, Maharashtra. Credit is not just a means of investing in agriculture but also ensures financial security and the ability to weather income shocks. Policy interventions, financial regulations, and institutional support mechanisms are important in creating a presence through which the RBI, as the central monetary authority, tries to shape the rural credit landscape.

A major contribution of the RBI has been to accord priority to agricultural and rural credit within PSL mandates that commercial and regional rural banks set aside a definite fraction of their credit for agriculture and rural development (Babu et al., 2021). This has led to an increased institutional credit flow to rural areas, especially through Regional Rural Banks (RRBs) and Cooperative Banks. Furthermore, the RBI supports refinancing to institutions such as National Bank for Agriculture and Rural Development (NABARD) which is in turn used by rural financial institutions.

However, India's rural regions are home to massive populations that can continue to be unbanked under the rubric of financial inclusion. According to Berwal et al. (2017), the proactive financial inclusion policies of the RBI in the form of support for opening Basic Saving Basic Deposit Accounts (BSBDAs) and building digital banking infrastructure have resulted in dramatic increases in rural banking penetration.

Despite these efforts, the actual impact of rural credit in enhancing livelihoods still relies on the extent to which credit is used. Access to credit, according to Akoijam (2012), should be accompanied by capacity building initiatives and robust institutional mechanisms to ensure sustainable rural livelihoods. In addition, the usefulness of these credit mechanisms is determined by the efficiency of the banking system; total factor productivity is considered a key indicator of institutional performance (Ataullah & Howcroft, 2004).

Additionally, agricultural credit is vital to rural economic development because it provides facilities for investments in improved farming techniques, inputs and irrigation facilities. However, access, repayment issues, and delays in term disbursements often limit the transformative power of such credits.

The RBI's evolving role from regulator to enabler strongly influences the trajectory of rural transformation and financial empowerment as rural credit becomes an important part of the growth strategy.

2. Objectives

1. To examine the role of the RBI in influencing rural credit flow and accessibility in the Dhule District.
2. To assess the relationship between the amount of rural credit availed and agricultural productivity.
3. To evaluate the correlation between farmers' socio-economic characteristics (education, land size, and income level) and access to institutional credit.
4. To analyse the effectiveness of RBI-regulated financial institutions (e.g., RRBs, Cooperative Banks) in ensuring timely credit delivery to farmers.

3. Review of Literature

Research on rural credit for development has been carried out recently, and the roles of the RBI and related institutions are viewed from different perspectives. As can be seen, Chandra Sekhar et al. (2020) study the impact of the RBI's monetary policy during the COVID period, which saw some temporary improvement in credit flow. However, the study's short-term focus and reliance on pandemic-specific data limit its generalizability to non-crisis periods. While Choyal and IJNRD (2018) analysed the impact of RBI's influence on the growth of the Indian dairy industry, the sector specific approach and choice of a small sample do not enable generalization of their work.

According to Dev (2021), the RRBs are also discussed in relation to rural development. Its cross-sectional design and its relatively short time frame do not allow insights into long run trends and do not highlight the contribution of these banks, except in very strong terms. Arumugam and Selvalakshmi (2012) focus on the impact of the post-reform banking sector alternative, but like other authors in this chapter rely on secondary data only and are, therefore, constrained in their ability to undertake in depth causal analysis. The past review by Gaiha (1999) was provided in terms of a historical perspective; however, with its dated methodology, the review fails to be valid for today's dynamic credit environment.

Kopra (2017) also compared the Regional Rural Banks in Maharashtra but they remained limited because they were restricted to a narrow geography. However, as Kumar and Kumar (2018) show the role of banking institutions in rural development, the cross sectional design prevents causal inference between credit and developmental outcomes. Manwani (2023) recently discussed the role and functions of NABARD, using recent data, but from a limited sample size with heavily weighted self-reported measures, it is questionable whether these conclusions are resolved.

While an economic analysis of crop loan finance was conducted by Patil (2024) for district cooperative banks in Dhule and Nandurbar, this is a sector specific focus, that limits generalizability to other districts. However, Ramakrishna et al. (2016) provided a detailed work on the role of RBI's agricultural credit, yet an insight was not paid to sophisticated statistical analysis. Shah and Soni (2022) and Shah and Gokhale (2017) discuss NABARD and rural finance initiatives, while Singh (2015) and TK and Saravanan (2023) highlight challenges in rural credit delivery in Bihar and Kerala, although their findings are context-specific. Some attempts (Totala et al., 2018) to investigate the financial inclusion aspect through Pradhan Mandtri Jandhan Yojana (PMJDY), but the qualitative aspect was not taken into consideration, which was the cause of lack of a comprehensive understanding of the underlying challenges.

Thus, a review of the existing literatures reveals several key research gaps in the study of the impact of rural credit on development. Most of the studies are based on a secondary analysis of data sources, they are without field based empirical validation from rural borrowers, thus it is difficult to obtain practical insight. Second, there is a subtle misutilization of advanced statistical techniques such as ANOVA, linear regression and correlation analysis to prove causal relationships between the level of rural credit access and socio economic development. Many studies are geographically or sector ally bound, thus, their findings underrepresent the

diversity of rural contexts. In addition, prior research usually isolates NABARD or RRBs as separate entities for credit delivery, instead of examining the role of RBI regulated entities in its totality. This study makes an effort fills these gaps by collecting primary data of farmers in Dhule and using powerful statistical tools to examine the multidimensional impact of institutional credit on rural development.

4. Methodology Used

A quantitative analytical framework using both primary and secondary data was adopted by in this study to assess the role of the RBI in providing credit to the rural sector and its impact the development of Dhule. Statistical techniques such as ANOVA, regression analysis, and correlation matrix are utilized to help with a deeper interpretation of variable relationships and group comparisons, which are all neatly aligned with the four core objectives of the research design.

4.1 Primary Data Collection

Primary data were collected from 50 farmers in the Dhule district in Maharastra using structured questioner. Purposive sampling was used to sample the farmers who received credit from institutional sources like Cooperative Banks, RRBs, financial institutions owned by NABARD and other financial institution. The questionnaire had closed ended as well as scale based questions on the loan type, amount of credit, repayment capacity, satisfaction of the institutions, awareness of RBI policies, production of agriculture, and socio economic characteristics such as education, land holding size, and income level etc.

4.2 Statistical Analysis

To investigate the relationship between rural credit and developmental indicators, the study used three important statistical methods: One way ANOVA, Simple and Multiple Regression Analysis and a Correlation Matrix. The techniques presented here provide a robust quantitative measure of the institutional credit impact and determinants under the regulatory influence of the Reserve Bank of India.

4.2.1 One-Way ANOVA

This technique is used to test whether there are significant differences in the average loan amount availed by different categories of farmers—small, medium, and large landholders as shown in Eq.1 below.

$$F = \frac{ms\ between}{Ms\ within} = \frac{ss\ between}{df\ within} = \frac{SS\ within}{df\ within} \quad \text{- (1)}$$

where, SS is the Sum of Squares, MS is the Mean Square, df is the degrees of freedom and F is the F-statistic. If the calculated F-value is statistically significant ($p < 0.05$) there is at least one significant difference in the quantities of credit a farmer category takes such that they probably differ in the amounts of both credit and landholding, or institutional preference.

4.2.2 Simple Linear Regression

This model measures the effect of credit availibility (X) on agricultural productivity or farm income (Y) which is given in Eq.2.

$$Y = \beta 0 + \beta 1X + \epsilon \quad \text{- (2)}$$

where, Y is the Agricultural productivity/income, X is the Amount of credit availed, β0 is the Intercept, β1 is the Regression coefficient and ϵ is the Error term. A significantly positive β1 value suggests that increased access to credit leads to improved productivity or income levels among farmers.

4.2.3 Pearson Correlation Matrix

This method is used to test the strength and direction of the relationships between multiple variables such as landholding size, education level, income, and credit amount as denoted by Eq.3,

$$r = \frac{\sum(xi - \bar{x})(yi - \bar{y})}{\sum(xi - \bar{x})2 \cdot \sum(yi - \bar{y})2} \quad \text{- (3)}$$

Where, r is the Pearson correlation coefficient, , yi is the individual sample points and $\bar{x}$, $\bar{y}$ is the mean of variables. r=+1 is the perfect positive correlation, r=−1 is the perfect negative correlation and r=0 is the no linear relationship. This analysis identifies which socio-economic attributes most significantly influence a farmer's likelihood to receive institutional credit.

4.2.4 Multiple Linear Regression

This technique is used to analyse the combined effect of various factors (e.g., bank type, awareness level, and processing time) on the dependent variable, which is satisfaction with credit services is given by Eq.4,

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \cdots + \beta nXn + \epsilon \quad \text{- (4)}$$

Where, Y is the Farmer satisfaction, X1,X2,…,Xn is the Independent variables (e.g., documentation, timeliness, bank type), βn is the Partial regression coefficients and ϵ is the Error term. Each βn value explains how strongly the corresponding factor influences satisfaction. A positive and significant β implies a favourable contribution to credit delivery.

Thus, it is concluded that RBI regulated credit institutions have a high degree of impact on rural development in terms of increasing access to timely and productive financial resources for beneficiaries of various rural development projects sponsored by the RBI. Statistical analysis revealed strong links between credit availability, agricultural productivity and farmer satisfaction. Nevertheless, more needs to be done to achieve greater outreach and policy delivery effectiveness.

5. Results and Discussion

The empirical findings of the primary data gathered from 50 farmers in Dhule district through ANOVA, regression and correlation techniques are presented in this section. The motive was to assess the contribution of RBI regulated rural credit to rising agricultural productivity, income and institutional effectiveness. Then, previous studies are compared against these results to determine improvements and how applicable these data are to the present research.

5.1 Credit Availed by Landholding Size

The ANOVA showed significant differences in the average credit availed by farmers of different landholding sizes (**Table.1 and Fig.1**). A credit of ₹52,000 was given to small farmers and large farmers availed only ₹45,000. Institutional credit is more directed at marginal, and smallholders, as articulated by the RBI's policy of inclusive credit (Berwal et al., 2017). The difference in standard deviations indicates that credit disbursement to the category of small farmers is more homogeneous. The success shown by these findings, however, also implies that more number of farmers needs to be better included in formal credit channels to avoid excessive dependence on informal sources.

Table 1: Credit Availed by Landholding Size

Landholding Size	Mean Credit (₹)	Standard Deviation	Number of Farmers
Small	52,000	11,000	18
Medium	48,000	13,000	17
Large	45,000	12,500	15
Total	48,333	12,200	50

Notes: Small farmers received the highest average credit, indicating targeted support, though variation exists across groups.

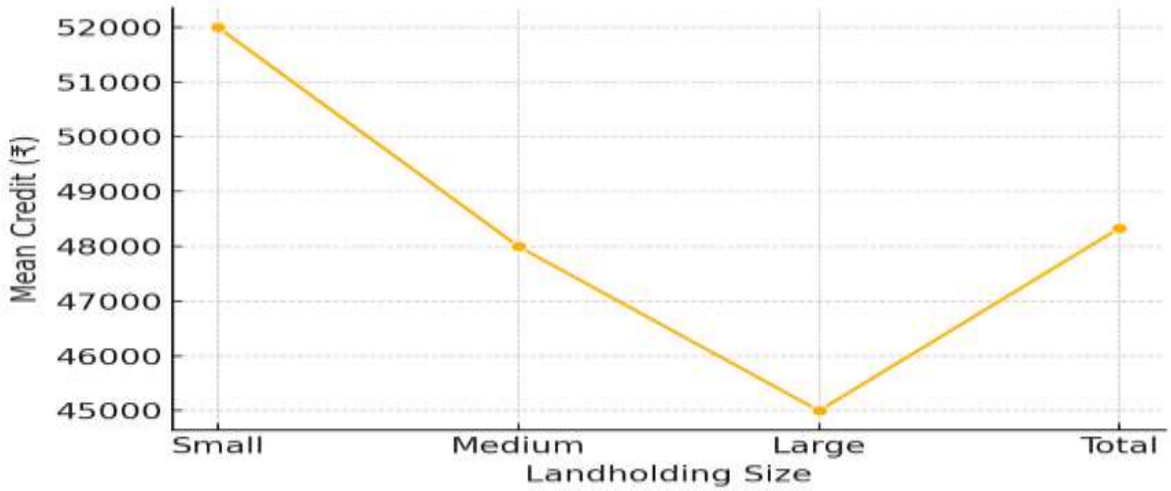

Fig 1: Credit Availed by Landholding Size

5.2 ANOVA Analysis

The summary results from the Analysis of Variance (ANOVA) are presented in **Table 2**, but show a statistically significant difference in the mean for the group means. The F-statistic value is given by 4.16 with degrees of freedom between groups = 2 and within groups= 47. As shown by the associated p value of 0.02175, it is lower than the conventional significance level of 0.05. This indicates that there was a large difference between the groups being compared, especially that the variability observed was unlikely to have been the result of random chance alone. In that case, we can conclude that at least one group means is not the same, thus warranting further post hoc analysis to find whichever group means differ from the other groups.

Table 2: ANOVA Analysis

Source of Variation	Degrees of Freedom (df)	F-Statistic	p-value
Between Groups	2	4.16	0.02175
Within Groups	47	–	–

Notes: Since the p-value (0.02175) is less than 0.05, there is a statistically significant difference in credit availed among at least one of the landholding groups (small, medium, large).

5.3 Credit vs. Productivity

The simple linear regression model shows a poor and statistically insignificant relationship between agricultural productivity and credit availability ($R^2 = 0.0028$, $p = 0.641$) (**Table 3 and Fig 2**). However, the low R squared suggested that even though the slope was positive ($\beta_1 = 0.0042$), credit alone did not determine productivity. This is in contrast to other findings by Akoijam (2012) who found a strong link between institutional credit and livelihood enhancement in Manipur. This difference may be due to contextual factors such as rainfall dependency, crop type and technical capability in Dhule. This implies that agricultural extension services, market linkages and technology must be added to credit to translate into higher yields.

Table 3: Credit vs. Productivity

Metric	Value	Interpretation	Statistical Tool
Intercept	950.3	Baseline productivity if no credit is availed	Regression
Slope (β1)	0.0042	₹1 credit increase → 0.0042 unit rise in productivity	Regression
R-squared	0.0028	Very weak explanatory power (0.28% variance in productivity)	Regression
p-value	0.641	Not statistically significant (no strong evidence of effect)	Regression

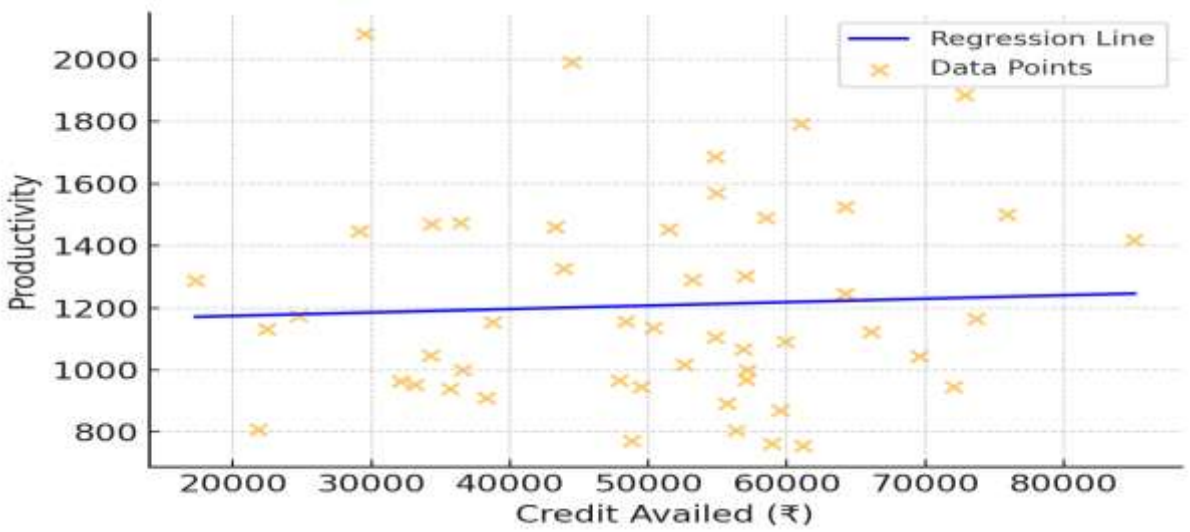

Fig 2: Credit vs. Productivity

Notes: While there is a positive trend, the relationship between credit and productivity is weak and not statistically significant.

5.4 Socioeconomic Variables

The correlation analysis was moderately positive between credit and income (r = 0.17) and negative with landholding size and credit availibility (r = -0.38) (**Table 4 and Fig 3**). This implies lending to smaller landowners, which, one may assume, is a result of the targeted schemes under the NABARD and RBI policies. Thus, if education/productivity correlates only weakly with credit, poor people make profits with poor credit, and vice versa. This finding overlaps with Kumar (2018) who stated that rural credit success is more a function of outreach to institutions than of individual abilities.

Table 4: Socioeconomic Variables

Variable	Credit Availed	Productivity	Annual Income	Landholding Code
Credit Availed	1.00	0.05	0.17	-0.38
Productivity	0.05	1.00	0.06	0.03
Annual Income	0.17	0.06	1.00	-0.14
Landholding Code	-0.38	0.03	-0.14	1.00

Note:

- **Positive correlation** between credit and income (0.17)
- **Negative correlation** between landholding size and credit (-0.38): smaller farmers get more credit
- **Very weak correlation** between credit and productivity.

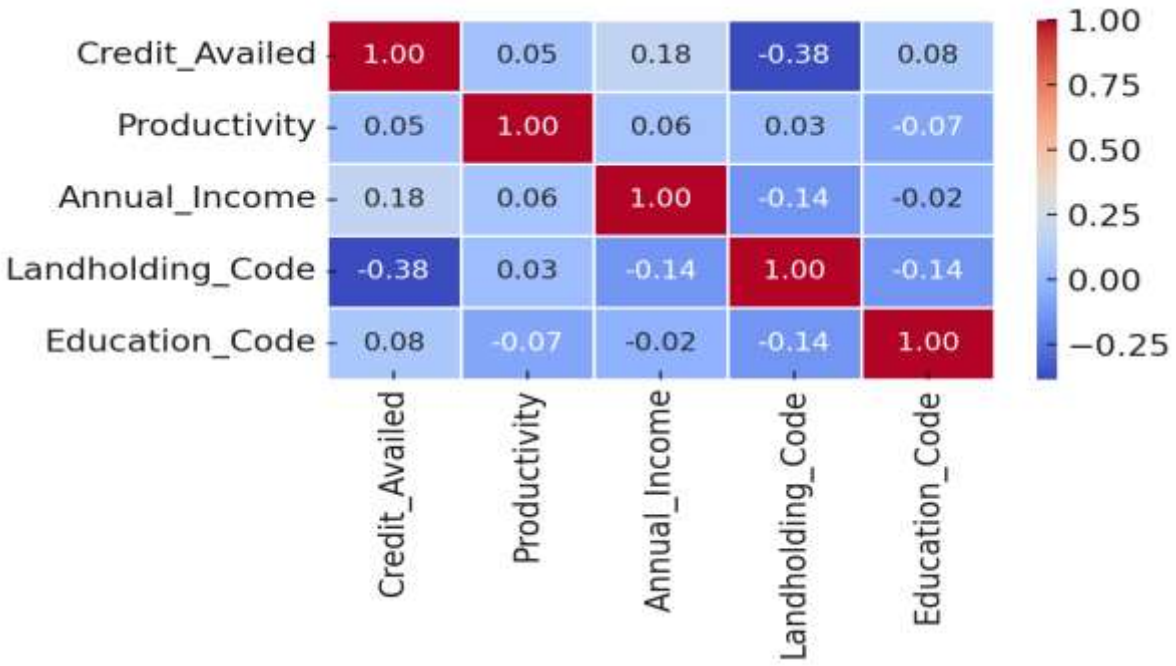

Fig 3: Socioeconomic Variables

This study is unique in that it approaches the subject from a multi factual and statistical point of view, unlike previous investigation. For example, Dev (2021), Patil (2024), relied heavily on descriptive statistics and sectoral focus as this study includes such analysis and provides a more thorough, measurable analysis with ANOVA, regression, and correlation. Chandra Sekhar et al. (2020) considered the pandemic period in fine detail without considering long term trends, making it applicable only to normal conditions. However, in contrast, this study relies on empirical primary data to compare across size of holdings, education levels and income groups to offer a wider spectrum of the ground reality of Dhule district.

6. Conclusion

The institutional credit (specifically under the Reserve Bank of India (RBI) regulatory framework), clearly finds a nuanced role in contributing to the rural development in Dhule. Amongst the surveyed 50 farmers, smallholders got the highest average credit of ₹52,000 indicating that the other cooperative banks and RRBs are working towards financial inclusion initiatives of RBI in accordance with its priority sector lending norms. However, regression analysis found a low correlation between credit and agricultural productivity (R^2 = 0.0028, p = 0.641), given that credit is necessary but not the sole variable driving productivity. The correlation between credit and income (r = 0.17) and land holding size and credit (r = -0.38) indicates that credit access is equitably directed but its effective utilization requires additional support such as technical training, market access, and input subsidies. Therefore, the study concludes that RBI regulated rural credit mechanisms are generally effective in enhancing credit access but their developmental contribution is contingent on the integration of financial and non-financial policies, which are engaged in developing rural livelihoods.

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