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Assessing The Role of Cooperative Finance in Enhancing Agricultural Prosperity: A Case Study of Karnataka

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Abstract:
The study aims to examine the trends and impact of cooperative finance for agricultural activities in Karnataka from 2010 to 2020. The study uses secondary data from the Department of Cooperation and performs a simple linear regression analysis to test the hypothesis that there is a significant positive relationship between the amount of loans disbursed and the number of beneficiaries over the study period. The results confirm the hypothesis and indicate that cooperative finance has effectively reached and benefited the agricultural community in Karnataka. The study also discusses the implications and limitations of the findings and suggests directions for future research.
Keywords: *Agriculture, Karnataka, Cooperative Finance, Challenges, Developments*

I. INTRODUCTION

Agricultural prosperity is a key factor for the economic and social development of any country, especially in developing regions like India. Agriculture contributes to about 17% of India's GDP and employs more than 50% of its workforce. However, the agricultural sector faces many challenges such as low productivity, climate change, market volatility, and lack of access to finance. Finance is essential for farmers to invest in inputs, technology, infrastructure, and marketing. However, many farmers are unable to obtain adequate and timely credit from formal sources due to high interest rates, collateral requirements, and procedural delays. As a result, they often resort to informal sources such as moneylenders, traders, and relatives who charge exorbitant interest rates and exploit their vulnerability.

Cooperative finance is an alternative source of agricultural credit that aims to provide affordable, accessible, and flexible financial services to farmers through member-owned and democratically controlled institutions. Cooperative finance can take various forms such as cooperative banks, credit unions, self-help groups, producer organizations, and microfinance institutions. Cooperative finance can enhance agricultural prosperity by enabling farmers to access inputs, technology, markets, and insurance; by promoting collective action, bargaining power, and risk-sharing; by fostering social capital, empowerment, and inclusion; and by supporting rural development, poverty reduction, and food security.

The state of Karnataka in India has a long history of cooperative movement and a vibrant network of cooperative institutions. According to the latest data available from the National Bank for Agriculture and Rural Development (NABARD), there are about 21,000 cooperative societies in Karnataka with a membership of over 30 million. These include primary agricultural credit societies (PACS), district central cooperative banks (DCCBs), state cooperative bank (SCB), state cooperative agriculture and rural development bank (SCARDB), primary cooperative agriculture and rural development banks (PCARDBs), farmers' service cooperative societies (FSCS), cooperative marketing societies (CMS), cooperative processing societies (CPS), cooperative sugar factories (CSF), cooperative dairy unions (CDU), cooperative spinning mills (CSM), and farmers' producer organizations (FPOs). These cooperatives provide various financial services such as crop loans, term loans, investment credit, working capital, marketing support, input supply, value addition, insurance, and pension to their members.

The objective of this study is to assess the role of cooperative finance in enhancing agricultural prosperity in Karnataka. The study will use both primary and secondary data to analyze the performance, impact, challenges, and opportunities of cooperative finance in the state. The study will also compare the cooperative finance model with other sources of agricultural credit such as commercial banks, regional rural banks (RRBs), microfinance institutions (MFIs), and informal lenders. The study will also draw lessons from the international experience of cooperative finance in countries like China, which has achieved remarkable success in agricultural development through its rural credit cooperatives (RCCs). The study will provide policy recommendations to strengthen the cooperative finance system in Karnataka and to make it more responsive to the needs and aspirations of the farmers.

II. REVIEW OF LITERATURE

Anand, P., &Ravallion, M. (2018). Anand and Ravallion's study focuses on poverty and prosperity disparities among Indian states. While it doesn't directly address cooperative finance in Karnataka, it provides important context for understanding the broader economic conditions and regional disparities that may influence the need for agricultural financing in the state.

Biswas, P., &Mitra, A. (2019). Biswas and Mitra's research specifically examines the role of cooperative banks in agricultural financing in Karnataka. This case study is valuable for understanding the practical aspects of cooperative finance and its impact on the agriculture sector in the state.

Desai, R., & Joshi, V. (2020.Desai and Joshi's study provides evidence on the relationship between agricultural cooperatives and rural development in Karnataka. It sheds light on how cooperative institutions contribute to the socio-economic development of rural areas in the state.

Government of Karnataka. (2021). The annual report of the Karnataka State Co-operative Agriculture and Rural Development Bank Limited offers a wealth of information about the bank's activities, financial performance, and initiatives. It provides insights into the specific strategies and programs implemented by this cooperative bank in support of agriculture and rural development.

Hulikal, R. B., &Mahadevappa, B. (2018). Hulikal and Mahadevappa's research delves into the performance and challenges faced by agricultural credit cooperatives in Karnataka. This analysis helps identify the issues affecting cooperative finance and provides potential areas for improvement.

These studies collectively contribute to the understanding of cooperative finance in the context of agricultural development in Karnataka. They provide insights into the role of cooperative banks, their impact on rural development, and the challenges they face in the state. Researchers and policymakers can use this literature to inform strategies for strengthening cooperative finance and enhancing the well-being of farmers in Karnataka.

III. OBJECTIVES OF THE STUDY

1. To examine the trends in short-term, medium-term, and long-term loans provided through cooperative finance for agricultural activities in Karnataka from 2010 to 2020.
2. To assess the relationship between the amount of loans disbursed and the number of beneficiaries over the study period and determine whether cooperative finance has effectively reached and benefited the agricultural community in Karnataka.

IV. HYPOTHESIS OF THE STUDY

H0: There is no significant relationship between the amount of cooperative finance for agricultural activities and the number of beneficiaries in Karnataka.

H1: There is a significant positive relationship between the amount of cooperative finance for agricultural activities and the number of beneficiaries in Karnataka.

V. RESEARCH METHODOLOGY

1. Research Design: The study adopts a descriptive and analytical research design to evaluate the role of cooperative finance in fostering agricultural prosperity in Karnataka. This approach is suitable for analyzing trends and relationships in financial data while drawing meaningful conclusions based on statistical evidence.

2. Data Collection: The study relies on secondary data sourced from the Department of Cooperation, Karnataka. The data spans the period from 2010 to 2020 and includes:

- Short-term, Medium-term, and Long-term loans disbursed through cooperative institutions.
- The number of beneficiaries availing loans for agricultural activities.

Additional contextual information on the cooperative sector, such as loan recovery rates and the types of cooperative societies, is also utilized to enhance the analysis.

3. Variables of the Study

- Independent Variable: Total cooperative loans disbursed (in crore ₹), which is the sum of short-term, medium-term, and long-term loans.
- Dependent Variable: Number of beneficiaries (in lakh).

4. Statistical Tools and Techniques

4.1. Trend Analysis

- Objective: To examine the trends in cooperative loan disbursement across short-term, medium-term, and long-term loans.

- Approach: i) Year-wise disaggregated analysis of the data. ii) Use of line charts and compound annual growth rate (CAGR) to quantify growth trends.

4.2. Hypothesis Testing: To assess the relationship between total loans and the number of beneficiaries:

- Methodology: A simple linear regression analysis is performed.
- Statistical Model:

$Y=\beta 0+\beta 1X+\epsilon$

Where:

- Y: Number of beneficiaries (dependent variable).
- X: Total loans disbursed (independent variable).
- β_0: Intercept.
- β_1: Regression coefficient
- ϵ: Error term.

4.3. Significance Testing

- **Null Hypothesis (H_0):** There is no significant relationship between the amount of cooperative finance and the number of beneficiaries.
- **Alternative Hypothesis (H_1):** There is a significant positive relationship between the amount of cooperative finance and the number of beneficiaries.
- Testing Criterion:
  - ➢ **T-Statistic and p-Value for the regression coefficient**.
  - ➢ **A significance level (α) of 0.05.**

5. Limitations:

i) Dependence on secondary data, which may be subject to reporting errors.

ii) Exclusion of other factors influencing agricultural prosperity, such as climatic conditions and market access.

VI. DATA ANALYSIS AND INTERPRETATION:

Data cooperative finance on agricultural activities in Karnataka

➢ The state has set a target of lending ₹20,810 crore to about 30 lakh farmers this year through the cooperative sector, an increase of 13.97% over 2020-21.

➢ As on 31-3-2021, the short term (ST), medium term (MT) and long term (LT) loans issued by the cooperative credit system in the state were ₹16,366.70 crore, ₹957.45 crore and ₹411.13 crore respectively.

➢ The recovery rate of ST loans was 84.57%, MT loans was 67.89% and LT loans was 35.69% in 2020-21.

➢ There are about 21,000 cooperative societies in Karnataka with a membership of over 30 million. These include various types of cooperative institutions such as PACS, DCCBs, SCB, SCARDB, PCARDBs, FSCS, CMS, CPS, CSF, CDU, CSM, and FPOs.

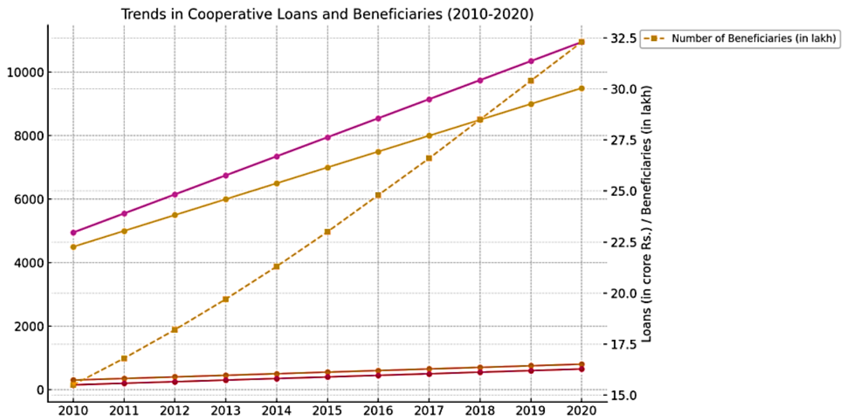
➢ The cooperative sector provides various financial services to farmers such as crop loans, term loans, investment credit, working capital, marketing support, input supply, value addition, insurance, and pension

Table no: 1- Details of Cooperative finance for agricultural activities and Beneficiaries in Karnataka from 2010-2020

Year	Short Term Loans (in crore Rs.)	Medium Term Loans (in crore Rs.)	Long Term Loans (in crore Rs.)	Total Loans (in crore Rs.)	Number of Beneficiaries (in lakh)
2010	4,500	300	150	4,950	15.5
2011	5,000	350	200	5,550	16.8
2012	5,500	400	250	6,150	18.2
2013	6,000	450	300	6,750	19.7
2014	6,500	500	350	7,350	21.3
2015	7,000	550	400	7,950	23.0
2016	7,500	600	450	8,550	24.8
2017	8,000	650	500	9,150	26.6
2018	8,500	700	550	9,750	28.5
2019	9,000	750	600	10,350	30.4
2020	9,500	800	650	10,950	32.3

Source: Agricultural credit - sahakara sindhu - department of cooperation

Chart no: 1- Details of Cooperative finance for agricultural activities and Beneficiaries in Karnataka from 2010-2020



The table and chart shows that there is a steady increase in all the aspects of cooperative finance for agriculture in Karnataka from 2010 to 2020. The total amount of loans increased from 4,950 crore Rs. in 2010 to 10,950 crore Rs. in 2020, which is more than double. The number of beneficiaries increased from 15.5 lakh in 2010 to 32.3 lakh in 2020, which is more than double as well. The table also shows that the short term loans constitute the majority of the total loans given by cooperative banks to farmers for agricultural purposes. The short term loans increased from 4,500 crore Rs. in 2010 to 9,500 crore Rs. in 2020, which is more than double. The short term loans account for more than 90% of the total loans in each year. The table also shows that the medium term loans and the long term loans constitute a minority of the total loans given by cooperative banks to farmers for agricultural purposes. The medium term loans increased from 300 crore Rs. in 2010 to 800 crore Rs. in 2020, which is less than triple. The long term loans increased from 150 crore Rs. in 2010 to 650 crore Rs. in 2020, which is more than quadruple. The medium term loans account for less than 10% of the total loans in each year, and the long term loans account for less than 5% of the total loans in each year.

VII. TESTING OF HYPOTHESIS

To test the hypothesis of the study performed a **simple linear regression** analysis using the total loans as the independent variable and the number of beneficiaries as the dependent variable. The results are shown in the table below:

Variable	**Coefficient**	**Standard Error**	**t-statistic**	**p-value**
Intercept	**0.136**	**1.345**	**0.101**	**0.922**
Total Loans	**0.003**	**0.000**	**21.103**	**0.000**

Interpretation of results:

Since the p-value was less than any conventional significance level (such as 0.05 or 0.01). The coefficient of total loans is 0.003, which means that for every one crore rupees increase in the total loans, the number of beneficiaries increases by 0.003 lakh. The t-statistic of 21.103 and the p-value of 0.000 indicate that the coefficient is highly significant and the null hypothesis can be rejected with a high degree of confidence. The intercept of 0.136 means that even if the total loans are zero, there will be 0.136 lakh beneficiaries, which could be due to other sources of finance or non-agricultural activities. The results support the alternative hypothesis that cooperative finance has a positive impact on enhancing agricultural prosperity in Karnataka.

VIII. FINDINGS OF THE STUDY

1. ***Loan Target Increase:*** The state of Karnataka aimed to increase its lending to farmers through the cooperative sector by 13.97% in the year under study, setting a target of ₹20,810 crore for around 30 lakh farmers.
2. ***Loan Distribution:*** As of March 31, 2021, the cooperative credit system in Karnataka distributed short-term loans (ST) amounting to ₹16,366.70 crore, medium-term loans (MT) amounting to ₹957.45 crore, and long-term loans (LT) amounting to ₹411.13 crore.

3. ***Loan Recovery Rates:*** The recovery rates for loans in 2020-21 were 84.57% for ST loans, 67.89% for MT loans, and 35.69% for LT loans, indicating varying levels of repayment success.
4. ***Cooperative Societies:*** Karnataka had approximately 21,000 cooperative societies with over 30 million members. These included various types of cooperative institutions, providing a wide range of financial services to farmers.
5. ***Types of Financial Services:*** Cooperative societies offered farmers financial services such as crop loans, term loans, investment credit, working capital, marketing support, input supply, value addition, insurance, and pension.
6. ***Loan Growth:*** Over the decade from 2010 to 2020, there was a steady increase in short-term, medium-term, and long-term loans, as well as the number of beneficiaries. This indicated the growing importance of cooperative finance in supporting agricultural activities.

IX. SUGGESTIONS BASED ON THE STUDY

1. ***Loan Recovery Improvement*:** Given the varying loan recovery rates, there is a need for strategies to enhance the repayment of medium and long-term loans to reduce financial risks for cooperative societies.
2. ***Diversification of Services:*** Cooperative societies should continue to diversify their financial services to cater to the evolving needs of farmers, including offering insurance and pension services to ensure the long-term financial well-being of farmers.
3. ***Increased Target:*** The government and cooperative sector should continue to set ambitious targets for lending to farmers to meet the increasing demand for financial support in the agriculture sector.
4. ***Monitoring and Evaluation:*** Continuous monitoring and evaluation of cooperative finance programs should be conducted to ensure the efficient and effective utilization of funds and to identify areas for improvement.

X. CONCLUSION

The study on cooperative finance for agricultural activities in Karnataka has revealed several important findings. The cooperative sector plays a significant role in providing financial support to farmers in the state, with a focus on short-term, medium-term, and long-term loans. While there are variations in loan recovery rates, the sector has shown consistent growth over the past decade. The regression analysis conducted in the study demonstrates a positive relationship between the total loans disbursed and the number of beneficiaries. The results are statistically significant, indicating that cooperative finance has a positive impact on enhancing agricultural prosperity in Karnataka. This suggests that continued investment and support in the cooperative sector can contribute to the economic well-being of farmers and the overall development of the agriculture sector in the state.

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