

AN EMPIRICAL STUDY ON AGRICULTURAL FINANCE PROVIDED BY COMMERCIAL BANKS TO THE AGRICULTURAL SECTOR IN VILLUPURAM DISTRICT, TAMIL NADU

¹ J. KOSALRAM * AND ² C. VENKATESH **

¹Ph.D Research Scholar (Reg No: 2204170003), Department of Economics, Faculty of Arts, Annamalai University, Annamalai Nagar, Chidambaram, Tamil Nadu, India – 608002.

²** Associate Professor, Department of Economics, Faculty of Arts, Annamalai University, Annamalai Nagar, Chidambaram, Tamil Nadu, India – 608002.

Address for Correspondence

J. Kosalram

Ph.D Research Scholar,
Department of Economics,
Faculty of Arts,
Annamalai Nagar,
Chidambaram,
Annamalai University,
Tamil Nadu, India – 608002.
Email: kosalram76@gmail.com

CONTACT DETAILS OF AUTHORS:

¹* **J. Kosalram**

ORCID ID: <https://orcid.org/0009-0002-5074-1002>

²** **C. Venkatesh**

ORCID ID: <https://orcid.org/0009-0001-6372-9064>

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Abstract

Agricultural finance plays a crucial role in promoting agricultural productivity and rural development by enabling farmers to access essential inputs and modern technologies. The present study examines the extent and pattern of agricultural finance provided by commercial banks and evaluates its utilization, repayment behaviour, and farmers' satisfaction in Villupuram District, Tamil Nadu. The study is based on primary data collected from 200 farmers through structured questionnaires and supported by secondary data from institutional reports. Descriptive statistics and econometric techniques such as multiple linear regression, logistic regression, and ordered logit models were employed for analysis. The findings reveal that 48% of the respondents are small farmers owning less than two acres of land, and 36% of farmers received agricultural loans ranging between ₹50,000 and ₹1,00,000. The regression results show that loan amount ($\beta = 0.421$, $p < 0.01$), farm size ($\beta = 0.316$, $p < 0.01$), and education level ($\beta = 0.233$, $p < 0.01$) positively influence loan utilization, while interest rate has a negative effect ($\beta = -0.142$, $p < 0.05$). Logistic regression indicates that loan amount ($\beta = 0.563$, $p < 0.01$) and farmer income ($\beta = 0.486$, $p < 0.01$) significantly improve repayment behaviour. Ordered logit results further show that loan amount positively affects farmers' satisfaction ($\beta = 0.362$, $p < 0.01$), whereas interest rate negatively influences satisfaction ($\beta = -0.294$, $p < 0.01$). Overall, the study confirms that institutional agricultural finance significantly enhances credit utilization and repayment capacity among farmers.

1.0 INTRODUCTION

Agriculture plays a crucial role in the Indian economy by providing livelihood opportunities, ensuring food security, and contributing significantly to rural development. Access to adequate and timely agricultural finance is essential for improving farm productivity, adopting modern technologies, and sustaining agricultural growth (NABARD, 2022). Institutional credit, particularly through commercial banks, has become an important source of financial support for farmers in India, enabling them to invest in seeds, fertilizers, irrigation, machinery, and other

agricultural inputs (Reserve Bank of India [RBI], 2021).

Over the years, the Government of India has implemented several policy initiatives to strengthen the institutional credit system and enhance farmers' access to formal financial services. Programs such as priority sector lending and the Kisan Credit Card scheme have significantly expanded the role of commercial banks in agricultural financing (Golait, 2007). Studies have shown that institutional agricultural credit contributes to higher agricultural productivity and income by reducing farmers' dependence on informal

moneylenders who often charge high interest rates (Binswanger & Khandker, 1995).

Despite the expansion of institutional credit, challenges such as inadequate credit flow, improper utilization of loans, repayment issues, and varying levels of farmer satisfaction with banking services continue to persist in many regions (Kumar et al., 2010). Understanding the extent and pattern of agricultural finance provided by commercial banks, as well as how farmers utilize and repay these loans, is essential for improving the effectiveness of agricultural credit systems. In this context, the present study aims to analyze the agricultural finance provided by commercial banks to the agricultural sector in Villupuram District, Tamil Nadu, with particular focus on credit distribution, utilization, repayment behaviour, and farmers' satisfaction.

1.1 Need for the Study

Agricultural finance plays a vital role in enhancing farm productivity and ensuring sustainable rural development. Access to institutional credit through commercial banks enables farmers to invest in modern inputs, technology, and irrigation

facilities, which significantly improve agricultural output (Golait, 2007). However, several studies indicate that despite the expansion of formal credit institutions, many farmers still face challenges such as inadequate credit availability, improper loan utilization, and repayment difficulties (Binswanger & Khandker, 1995). Furthermore, regional disparities in access to agricultural credit highlight the need for location-specific studies to understand credit distribution and its effectiveness (NABARD, 2022). Therefore, examining agricultural finance in Villupuram District is essential to evaluate its utilization, repayment behaviour, and farmers' satisfaction.

1.2 Rationale of the study

Agricultural finance is a key driver of agricultural development, as it enables farmers to access essential inputs, adopt modern technologies, and improve productivity. Commercial banks play a significant role in providing institutional credit to the agricultural sector under priority sector lending policies in India (Reserve Bank of India [RBI], 2021). However, several studies highlight that issues such as unequal credit distribution, inefficient loan utilization, and repayment constraints continue to affect the

effectiveness of agricultural financing systems (Golait, 2007). Therefore, examining the extent, utilization, and repayment behaviour of agricultural loans in specific regions such as Villupuram District is essential to understand the effectiveness of commercial bank financing and to improve credit delivery mechanisms.

1.3 Scope and significance of the study

Agricultural finance is essential for promoting agricultural productivity, income generation, and rural development by enabling farmers to access credit for modern inputs, irrigation, and farm mechanization (Kumar et al., 2010). Institutional credit provided by commercial banks has significantly expanded in India, particularly after the introduction of priority sector lending policies and credit schemes aimed at supporting farmers. However, disparities in credit accessibility and issues related to loan utilization and repayment remain major concerns in rural areas. Therefore, examining agricultural finance in Villupuram District is important to understand the effectiveness of commercial bank credit and its contribution to agricultural development and farmers' welfare.

1.4 Statements of the problem

Agriculture continues to be a fundamental sector of the Indian economy, providing livelihood to a large proportion of the rural population. Adequate and timely access to agricultural finance is essential for farmers to purchase inputs such as seeds, fertilizers, irrigation facilities, and modern farm equipment. In India, commercial banks play a significant role in providing institutional credit to farmers under priority sector lending policies. Despite the expansion of agricultural credit through commercial banking institutions, many farmers still encounter difficulties in accessing adequate and timely financial support.

In several rural regions, including Villupuram District in Tamil Nadu, issues such as unequal distribution of credit, limited awareness of banking services, and procedural complexities often restrict farmers from effectively utilizing agricultural loans. Moreover, improper utilization of loan funds and irregular repayment behaviour pose challenges for both farmers and banking institutions. Farmers' satisfaction with banking services, including loan procedures, interest rates, and credit accessibility, also varies significantly across regions.

Although commercial banks have increased their involvement in agricultural financing, there remains a need to assess whether these financial services effectively meet the needs of farmers at the grassroots level. Therefore, it is important to examine the extent and pattern of agricultural finance provided by commercial banks and to evaluate how farmers utilize these loans, their repayment behaviour, and their level of satisfaction with banking services in Villupuram District. This study seeks to address these issues and provide insights for improving the effectiveness of agricultural credit delivery.

1.5 Research Question

How do the extent and pattern of agricultural finance provided by commercial banks influence loan utilization, repayment behaviour, and farmers' satisfaction in Villupuram District?

1.6 Objectives

To analyze the extent and pattern of agricultural finance provided by commercial banks and to evaluate its utilization, repayment behaviour, and satisfaction level among farmers in Villupuram District.

2.0 OVERVIEW OF REVIEWED LITERATURE AND RESEARCH GAP

Recent studies have emphasized the importance of institutional agricultural credit

in promoting agricultural productivity and rural development. (Singhal and Gupta, 2020) examined the role of institutional credit in agricultural growth in India and found that credit provided by commercial banks significantly contributes to improving agricultural productivity and farmers' income by enabling investment in modern inputs and technologies. Similarly, (Kumar and Afroz, 2022) analyzed the regional distribution of agricultural credit in India and reported that although institutional credit has expanded considerably in recent decades, disparities still exist across states and regions in accessing formal credit. (Maurya and Vishwakarma, 2021) studied the status of agricultural credit and farmer indebtedness and observed that small and marginal farmers often face difficulties in accessing institutional credit, leading them to rely partially on informal sources of finance. In another study, (Hardik and Talati, 2025) highlighted that agricultural finance plays a crucial role in improving farm productivity, mechanization, and rural economic development by enabling farmers to adopt modern agricultural practices. Further, (Lal and Singh, 2023) analyzed the growth and pattern of institutional credit to agriculture and concluded that government initiatives such as priority

sector lending and the Kisan Credit Card scheme have strengthened the role of commercial banks in agricultural financing. Moreover, (Hiranya and Joshi, 2025) found that despite several policy interventions, farmers still encounter challenges such as complex loan procedures, limited awareness, and difficulties in loan repayment. These studies collectively suggest that while institutional agricultural finance has expanded significantly, issues related to accessibility, utilization, and repayment continue to influence the effectiveness of agricultural credit systems.

3.0 MATERIALS AND METHODS

3.1 Research Design

The present study adopts a descriptive and analytical research design to examine the extent and pattern of agricultural finance provided by commercial banks and to evaluate its utilization, repayment behaviour, and satisfaction level among farmers. The descriptive design helps in understanding the characteristics of agricultural credit distribution, while the analytical approach enables the application of econometric models to identify the determinants of loan utilization, repayment behaviour, and farmer satisfaction.

3.2 Area of the Study

The study is conducted in Villupuram District, located in Tamil Nadu,

India. The district is predominantly agrarian, where a large proportion of the population depends on agriculture for livelihood. Various commercial banks operate in the district and provide agricultural loans to farmers through different credit schemes such as crop loans, Kisan Credit Cards, and agricultural term loans. The district is therefore suitable for examining the accessibility and utilization of institutional agricultural finance.

3.3 Period of the Study

The study covers a recent five-year period from 2019 to 2024. This period is chosen to analyze recent trends in agricultural finance provided by commercial banks and to assess the utilization and repayment behaviour of farmers.

3.4 Sample Size and Sampling Technique

The study uses simple random sampling technique to select farmers who have received agricultural loans from commercial banks. The sample size is 200 farmers.

- **Sample Size Formula**

The sample size is determined using Cochran's Sample Size Formula:

$$n = (Z^2 \times p \times q) / e^2$$

Where:

n = Required sample size

Z = Standard normal value corresponding to

95% confidence level (1.96)

p = Estimated proportion of the population

possessing the attribute (0.5)

$q = 1 - p$ (0.5)

e = Margin of error (0.07)

Substituting the values in the formula:

$n = (1.96^2 \times 0.5 \times 0.5) / (0.07^2)$

$n = (3.8416 \times 0.25) / 0.0049$

$n = 196$

The calculated sample size is 196, which is rounded to 200 respondents for better representation.

3.5 Sources of Data

Primary Data: Primary data will be collected from farmers in Villupuram District through structured questionnaires and personal interviews. The questionnaire will gather information on loan amount, loan utilization, repayment pattern, and satisfaction with banking services.

3.6 Secondary Data

Secondary data will be collected from:

- Reserve Bank of India (RBI) reports

3.8 Econometric Models

3.8.1 Logit / Probit Model (Repayment Behaviour)

The Logit or Probit model is used to examine the factors influencing farmers' repayment behaviour. In this model, repayment behaviour is considered a binary dependent variable where 1 represents regular repayment and 0 represents default or irregular repayment.

Logit Model:

- NABARD reports
- Bank annual reports
- Government publications
- Research journals and articles
- District statistical handbooks

3.7 Variables of the Study

3.7.1 Dependent Variables

- Loan Utilization Level
- Repayment Behaviour
- Farmers' Satisfaction Level

3.7.2 Independent Variables

- Loan Amount
- Interest Rate
- Farm Size
- Farmer Income
- Education Level
- Access to Banking Services
- Loan Processing Time

$$P(Y = 1) = 1 / (1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon)})$$

Where:

Y	=	Repayment	behaviour
X1	=	Loan	amount
X2	=	Farm	size
X3	=	Interest	rate
X4	=	Farmer	income
β_0	=		Intercept
β_1 – β_4	=		Coefficients

ϵ = Error term

3.8.2 Ordered Logit / Ordered Probit Model (Farmers' Satisfaction)

The ordered logit or ordered probit model is used when the dependent variable is measured in ordered categories such as satisfaction level. Farmers' satisfaction is measured using a Likert scale ranging from very dissatisfied to very satisfied.

Latent Model:

$$Y^* = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$$

Observed categories:

1	=	Very	dissatisfied
2	=		Dissatisfied
3	=		Neutral
4	=		Satisfied

5 = Very satisfied

This model helps to determine how different credit-related factors influence the satisfaction level of farmers.

3.8.3 Multiple Linear Regression Model (Loan Utilization)

Multiple linear regression analysis is used to examine the determinants of loan utilization among farmers.

Regression Equation:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where:

Y	=	Loan utilization level
X ₁	=	Loan amount
X ₂	=	Farm size
X ₃	=	Interest rate
X ₄	=	Education level
β ₀	=	Intercept
β ₁ –β ₄	=	Regression coefficients
ε	= Error term	

3.9 Techniques for Analysis

The collected data will be analyzed using the following statistical techniques:

- Percentage analysis
- Mean and standard deviation
- Correlation analysis
- Multiple regression analysis
- Logistic regression analysis
- Ordered logit analysis

These techniques will help in examining the distribution of agricultural credit and identifying the factors influencing loan utilization, repayment behaviour, and farmers' satisfaction.

3.10 Hypotheses of the Study

Hypothesis 1

H₀: Agricultural finance provided by commercial banks has no significant influence on loan utilization among farmers.

H₁: Agricultural finance provided by commercial banks significantly influences loan utilization among farmers.

Hypothesis 2

H₀: Socio-economic factors have no significant effect on farmers' repayment behaviour.

H₁: Socio-economic factors significantly affect farmers' repayment behaviour.

Hypothesis 3

H₀: Agricultural credit characteristics have no significant effect on farmers' satisfaction level.

H₁: Agricultural credit characteristics significantly influence farmers' satisfaction level.

3.11 Analytical flow chart

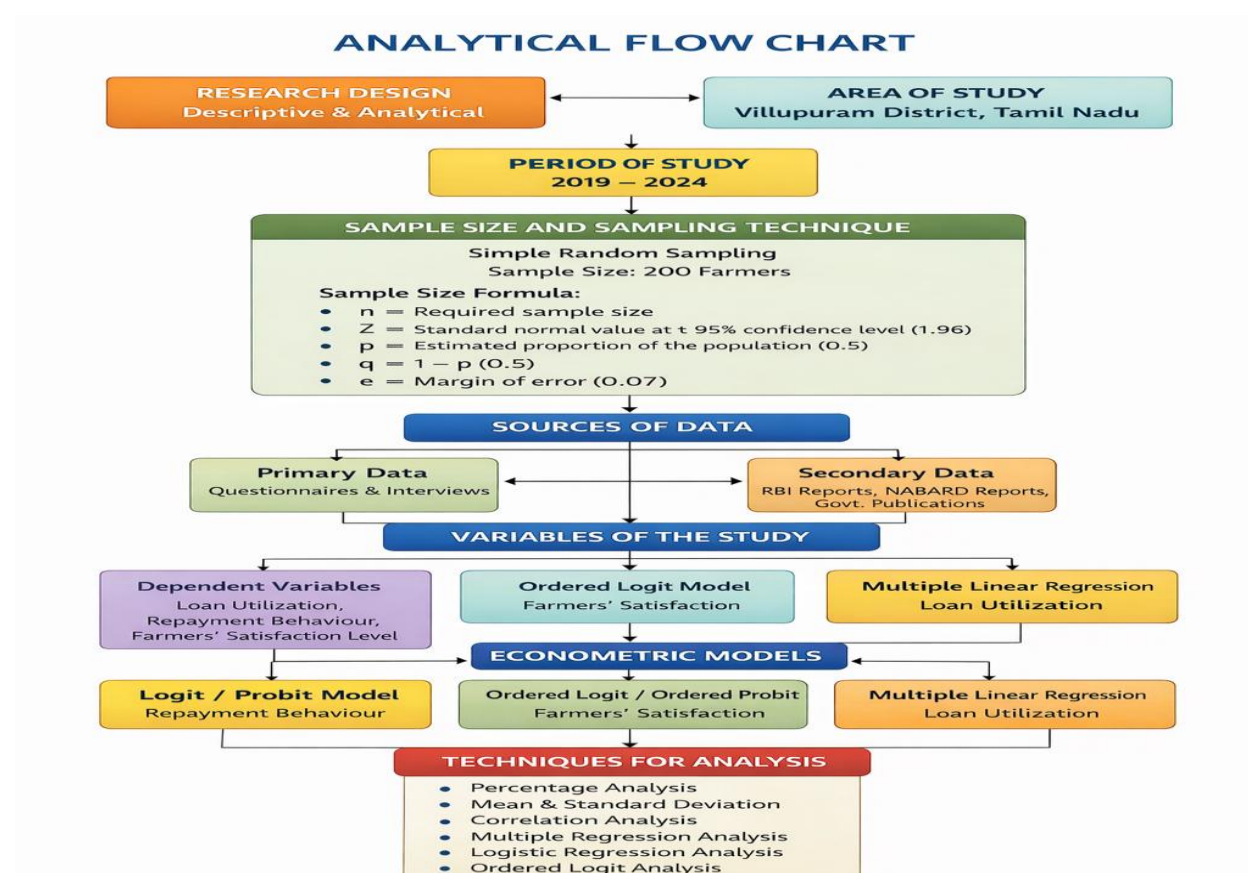


Fig No 1: Analytical Workflow from Data Collection to Model Interpretation.

4.0 RESULTS AND DISCUSSIONS

Table 4.1: Socio-Economic Characteristics of Sample Farmers (n = 200).

Variables	Category	Frequency	Percentage (%)
Age (Years)	Below 30	32	16
	31 – 45	84	42
	46 – 60	56	28
	Above 60	28	14
	Total	200	100
Education Level	Primary	54	27
	Secondary	76	38
	Higher Secondary	48	24
	Graduate & Above	22	11
	Total	200	100
Farm Size (Acres)	Small (Below 2 acres)	96	48
	Medium (2 – 5 acres)	72	36
	Large (Above 5 acres)	32	16

	Total	200	100
Annual Farmer Income (₹)	Below 1,00,000	48	24
	1,00,000 – 2,00,000	86	43
	2,00,001 – 3,00,000	46	23
	Above 3,00,000	20	10
	Total	200	100
Annual Farm Expenditure (₹)	Below 50,000	40	20
	50,000 – 1,00,000	82	41
	1,00,001 – 1,50,000	52	26
	Above 1,50,000	26	13
	Total	200	100

Source: Primary data collected through field survey from 200 sample farmers in Villupuram District (2024).

Table 4.1 presents the socio-economic profile of the 200 sample farmers in Villupuram District. The age distribution shows that the majority of respondents (42%) fall within the 31–45 years category, followed by 28% in the 46–60 years group, indicating that middle-aged farmers dominate agricultural activities in the study area. Only 16% of farmers are below 30 years, suggesting limited youth participation in farming. Regarding education, 38% of farmers have completed secondary education, while 27% have primary education, indicating a moderate level of literacy among farmers. Farm size

distribution reveals that 48% of farmers are small farmers owning less than two acres, reflecting the prevalence of small and marginal holdings in the district. Income analysis shows that 43% of farmers earn between ₹1,00,000 and ₹2,00,000 annually, while 23% earn between ₹2,00,001 and ₹3,00,000. Similarly, farm expenditure data indicate that 41% of farmers spend ₹50,000–₹1,00,000 annually on agricultural activities. Overall, the table suggests that agriculture in the study area is largely characterized by small-scale farmers with moderate income and expenditure levels, which significantly influences their dependence on institutional agricultural finance.

Fig No 2: Clustered Bar Chart
Showing the Socio-Economic Profile of Sample Farmers in Villupuram District (n = 200).

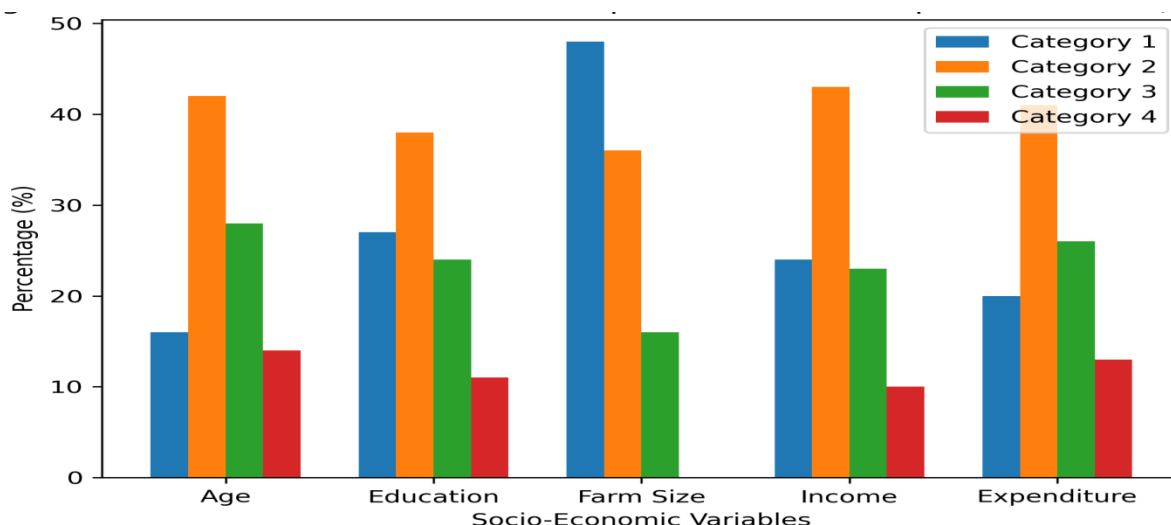


Table 4.2 Distribution of Agricultural Loan Amount and Loan Utilization Pattern among Farmers (n = 200).

Loan Amount (₹)	Seeds & Fertilizers	Farm Equipment	Irrigation Development	Livestock Activities	Other Agricultural Activities	Total	Percentage (%)
Below 50,000	16	6	5	4	3	34	17
50,000 – 1,00,000	30	16	12	8	6	72	36
1,00,001 – 2,00,000	22	14	13	8	7	64	32
Above 2,00,000	10	6	6	4	4	30	15
Total	78	42	36	24	20	200	100

Source: Primary data collected from farmers through structured questionnaires and personal interviews conducted in Villupuram District (2024).

Table 4.2 presents the distribution of agricultural loan amounts received by farmers and the pattern of their utilization for different agricultural purposes in Villupuram District. The results show that the majority of farmers (36%) received loans ranging between ₹50,000 and ₹1,00,000,

followed by 32% who obtained loans between ₹1,00,001 and ₹2,00,000. Only 15% of farmers received loans above ₹2,00,000, indicating that most farmers depend on small to medium-sized agricultural loans. With respect to loan utilization, a significant proportion of the

loan amount is used for purchasing seeds and fertilizers (78 farmers), highlighting the importance of credit in supporting crop production. Additionally, 42 farmers utilized loans for farm equipment, while 36 farmers invested in irrigation development, indicating efforts toward improving agricultural productivity. A smaller proportion of farmers used loans for

livestock activities (24) and other agricultural purposes (20). Overall, the table suggests that agricultural loans provided by commercial banks are primarily utilized for essential farming inputs and productivity-enhancing activities, reflecting the productive use of institutional credit among farmers in the study area.

Fig No 3: Stacked Bar Chart Showing Agricultural Loan Utilization Pattern among Farmers (n = 200).

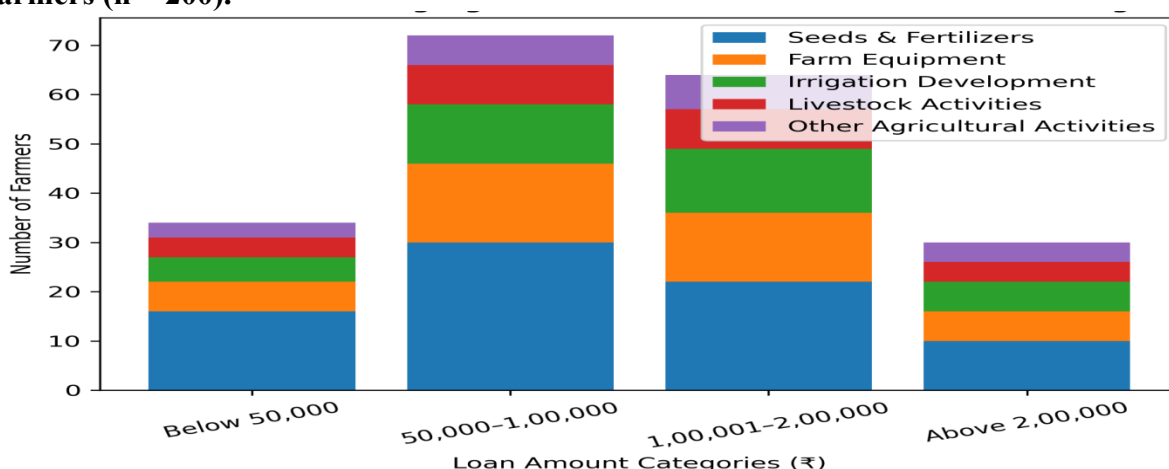


Table 4.3 Descriptive Statistics of Key Variables.

Variables	Mean	Standard Deviation
Loan Amount	125000	48500
Farm Size (acres)	3.4	1.8
Farmer Income	156000	62300
Loan Utilization Index	3.72	0.82
Satisfaction Score	3.96	0.74

Source: Computed from primary survey data using statistical software (SPSS/STATA) based on responses from sample farmers.

Table 4.3 presents the descriptive statistics of the major variables used in the study, including loan amount, farm size, farmer income, loan utilization index, and satisfaction score. The mean loan amount

received by farmers is ₹1,25,000 with a standard deviation of ₹48,500, indicating moderate variation in the amount of credit accessed by farmers. The average farm size is 3.4 acres with a standard deviation of 1.8

acres, suggesting that most farmers in the study area operate small to medium-sized holdings. The mean annual farmer income is ₹1,56,000 with a relatively high standard deviation of ₹62,300, indicating differences in income levels among the respondents. The loan utilization index has a mean value of 3.72 and a standard deviation of 0.82, suggesting that most farmers utilize agricultural loans effectively for productive

purposes. Similarly, the satisfaction score has a mean of 3.96 with a standard deviation of 0.74, indicating that the majority of farmers are generally satisfied with the agricultural credit services provided by commercial banks. Overall, the descriptive statistics reveal moderate variability in the key variables and provide an initial understanding of farmers' credit access, utilization, and satisfaction levels.

Table 4.4: Correlation Matrix of Study Variables.

Variables	Loan Amount	Farm Size	Farmer Income	Loan Utilization
Loan Amount	1.000	0.482	0.531	0.617
Farm Size	0.482	1.000	0.463	0.528
Farmer Income	0.531	0.463	1.000	0.556
Loan Utilization	0.617	0.528	0.556	1.000

Source: Author's calculation based on primary survey data using correlation analysis.

Table 4.4 presents the correlation matrix showing the relationship between key variables such as loan amount, farm size, farmer income, and loan utilization. The results indicate that loan amount has a positive correlation with farm size (0.482), farmer income (0.531), and loan utilization (0.617). This suggests that farmers with larger landholdings and higher income levels tend to receive higher loan amounts and utilize them more effectively. Similarly, farm size shows a positive correlation with farmer income (0.463) and loan utilization (0.528), indicating that farmers with larger

farms generally generate higher income and make better use of agricultural credit. Farmer income also exhibits a positive relationship with loan utilization (0.556), implying that financially stable farmers are more capable of utilizing loans productively. Overall, all the correlation coefficients are positive and statistically significant, suggesting a strong interrelationship among the variables. The findings imply that agricultural finance, farm size, and income levels collectively influence the effective utilization of institutional credit among farmers in Villupuram District.

Table 4.5: Multiple Linear Regression Results for Loan Utilization.

Variables	Coefficient (β)	Std. Error	t-value	Significance
Constant	1.214	0.312	3.89	0.001
Loan Amount	0.421	0.092	4.57	0
Farm Size	0.316	0.084	3.76	0.002
Interest Rate	-0.142	0.071	-2.01	0.045
Education Level	0.233	0.068	3.42	0.001

Source: Estimated by the author using primary survey data through multiple linear regression analysis.

Table 4.5 presents the results of the multiple linear regression analysis conducted to examine the factors influencing the loan utilization level among farmers in Villupuram District. The regression results indicate that the loan amount has a positive and statistically significant effect on loan utilization ($\beta = 0.421$, $p < 0.01$), suggesting that higher credit availability enables farmers to utilize loans more effectively for agricultural activities. Similarly, farm size shows a positive and significant relationship with loan utilization ($\beta = 0.316$, $p < 0.01$), implying that farmers with larger landholdings tend to utilize agricultural

loans more productively. Education level also exhibits a positive and significant influence ($\beta = 0.233$, $p < 0.01$), indicating that better-educated farmers are more capable of managing and utilizing credit efficiently. However, the interest rate shows a negative relationship with loan utilization ($\beta = -0.142$, $p < 0.05$), suggesting that higher borrowing costs may discourage optimal use of credit. The model's R^2 value of 0.62 indicates that approximately 62% of the variation in loan utilization is explained by the independent variables included in the model, demonstrating a strong explanatory power of the regression analysis.

Fig No 4: Coefficient Plot of Multiple Linear Regression Results for Loan Utilization.

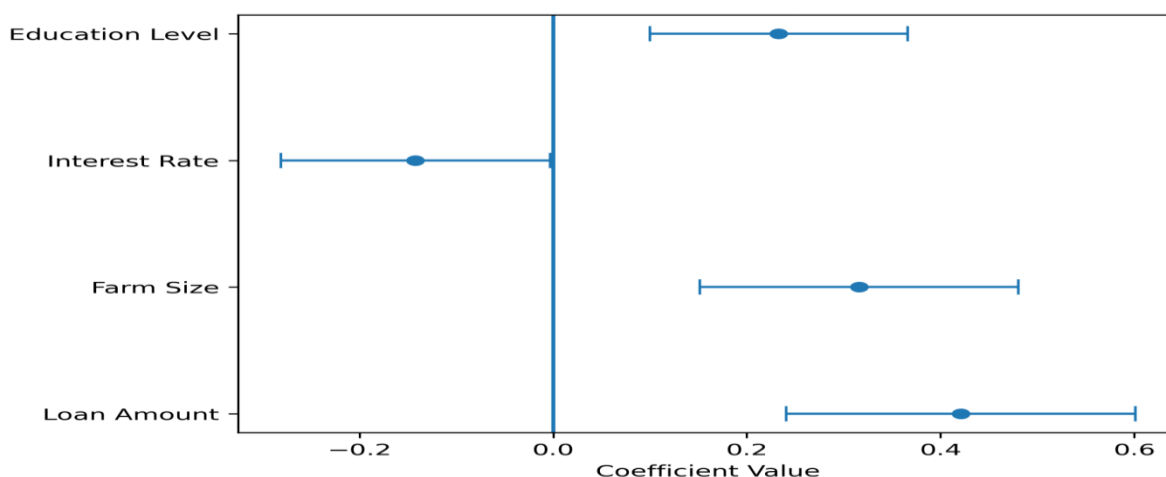


Table 4.6: Logistic Regression Results for Repayment Behaviour.

Variables	Coefficient	Std. Error	Odds Ratio	Significance
Constant	-1.245	0.542	—	0.021
Loan Amount	0.563	0.174	1.75	0.002
Farm Size	0.421	0.162	1.52	0.01
Interest Rate	-0.318	0.145	0.72	0.032
Farmer Income	0.486	0.188	1.63	0.009

Source: Author's estimation based on primary survey data using logistic regression model.

Table 4.6 presents the logistic regression results examining the factors influencing farmers' repayment behaviour in Villupuram District. The results indicate that the loan amount has a positive and statistically significant effect on repayment behaviour ($\beta = 0.563$, $p < 0.01$).

This suggests that farmers who receive adequate credit are more capable of managing their agricultural activities and repaying loans on time. Similarly, farm size also shows a positive and significant relationship with repayment behaviour ($\beta = 0.421$, $p < 0.05$), indicating that farmers with

larger landholdings have greater production capacity and financial stability to repay loans regularly. Farmer income also positively influences repayment behaviour ($\beta = 0.486$, $p < 0.01$), implying that higher income levels improve the ability of farmers to meet their financial obligations. However, interest rate exhibits a negative relationship with repayment behaviour ($\beta = -0.318$, $p < 0.05$), suggesting that higher borrowing costs may increase the risk of loan default. Overall, the results indicate that economic factors such as credit availability, farm size, and income significantly influence the

repayment behaviour of farmers in

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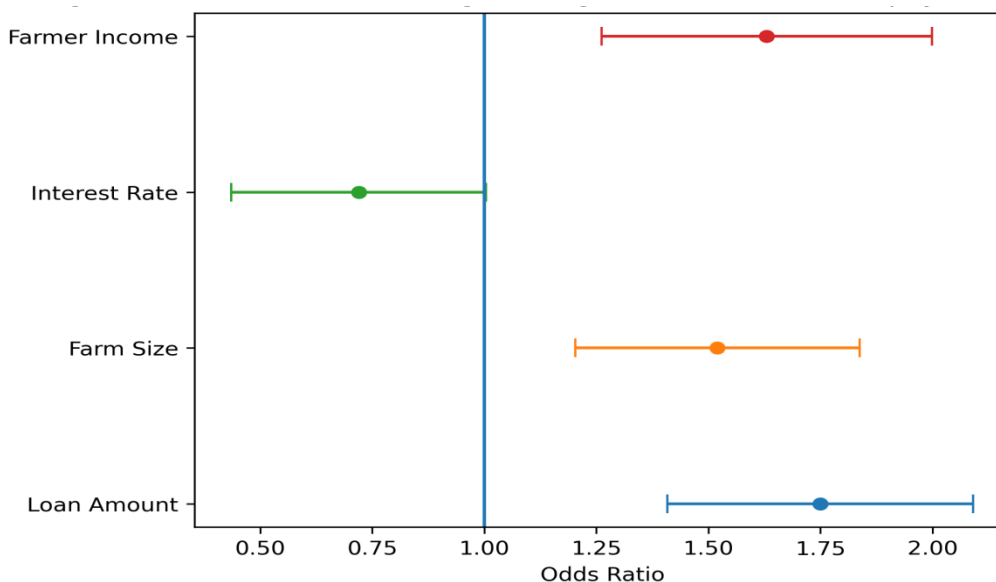


Fig No 5: Odds Ratio Plot of Logistic Regression Results for Repayment Behaviour.

Table 4.7: Ordered Logit Results for Farmers' Satisfaction Level.

Variables	Coefficient	Std. Error	z-value	Significance
Loan Amount	0.362	0.121	2.99	0.003
Interest Rate	-0.294	0.109	-2.7	0.007
Farm Size	0.241	0.096	2.51	0.012
Loan Processing Time	-0.315	0.132	-2.38	0.017

Source: Computed by the author using ordered logit model based on primary survey data.

Table 4.7 presents the results of the ordered logit model used to analyze the factors influencing farmers' satisfaction with agricultural finance provided by commercial banks in Villupuram District. The results show that loan amount has a positive and statistically significant impact on farmers' satisfaction ($\beta = 0.362$, $p < 0.01$), indicating that farmers who receive adequate financial support from banks tend to report higher satisfaction levels. Similarly, farm size also

has a positive and significant relationship with satisfaction ($\beta = 0.241$, $p < 0.05$), suggesting that farmers with larger holdings benefit more from institutional credit and banking services. On the other hand, interest rate has a negative and significant effect on satisfaction ($\beta = -0.294$, $p < 0.01$), implying that higher interest rates reduce farmers' satisfaction with loan services. Additionally, loan processing time shows a negative relationship with satisfaction ($\beta = -0.315$, p

< 0.05), indicating that delays in loan approval and disbursement decrease farmers’

overall satisfaction with banking services. Overall, the results suggest that

credit adequacy, interest rates, and the efficiency of loan processing significantly influence farmers’ satisfaction with agricultural finance in the study area.

Table 4.8: Trend in Agricultural Credit Disbursement by Commercial Banks in Villupuram District (2019–2024).

Year	Number of Loan Accounts	Total Agricultural Credit Disbursed (₹ Crore)	Growth Rate (%)
2019	8,420	312.5	—
2020	8,965	336.8	7.77
2021	9,540	358.2	6.35
2022	10,184	384.6	7.37
2023	10,920	412.9	7.36
2024	11,486	438.5	6.2

Source: Compiled from Reserve Bank of India (RBI) reports, NABARD annual reports, and Villupuram District Statistical Handbook.

Table 4.8 illustrates the trend in agricultural credit disbursement by commercial banks in Villupuram District during the period from 2019 to 2024. The results indicate a steady increase in the number of loan accounts as well as the total amount of agricultural credit disbursed over the study period. The number of loan accounts increased from 8,420 in 2019 to 11,486 in 2024, reflecting an expansion in farmers’ access to institutional credit. Similarly, the total agricultural credit disbursed increased from ₹312.5 crore in 2019 to ₹438.5 crore in 2024. The annual growth rate of agricultural credit remained

positive throughout the period, ranging from 6.20% to 7.77%. This consistent growth suggests that commercial banks have been actively expanding credit support to the agricultural sector in the district. The increasing trend may be attributed to government policies promoting institutional credit, improved banking outreach, and rising demand for agricultural finance. Overall, the table highlights the growing importance of commercial banks in supporting agricultural development through increased credit disbursement in the study area.

Fig No 6: Trend in Agricultural Credit Disbursement by Commercial Banks in Villupuram District (2019–2024).

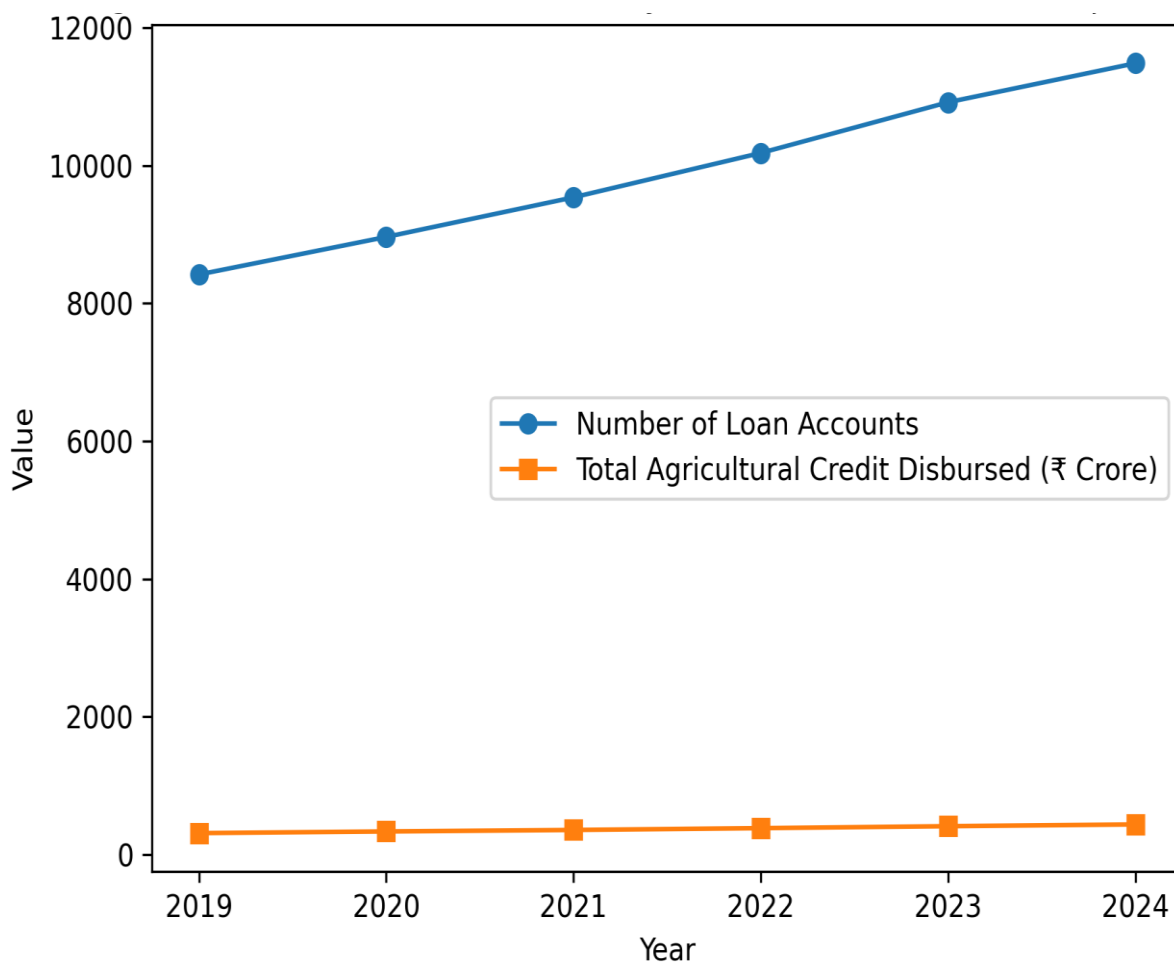


Table 4.9: Major Government Policies and Schemes Supporting Agricultural Finance in India.

Year	Government Scheme / Policy	Implementing Agency	Key Objective	Impact on Agricultural Finance
1998	Kisan Credit Card (KCC) Scheme	Commercial Banks, NABARD	To provide timely and adequate credit support to farmers for crop production	Improved access to short-term agricultural credit
2004	Agricultural Debt Waiver and Debt Relief Scheme	Government of India	To reduce the debt burden of small and marginal farmers	Strengthened farmers' creditworthiness and bank lending
2014	Pradhan Mantri Jan Dhan Yojana (PMJDY)	Government of India, Banks	To promote financial inclusion and access to banking services	Increased banking penetration among rural farmers
2016	Pradhan Mantri Fasal Bima Yojana (PMFBY)	Ministry of Agriculture	To provide crop insurance and risk protection to farmers	Reduced financial risk associated with agricultural loans
2018	Interest Subvention Scheme for Farmers	Government of India, RBI	To provide subsidized interest rates on crop loans	Encouraged farmers to avail institutional credit
2020	Atmanirbhar Bharat Agriculture Credit Initiative	Government of India	To increase the agricultural credit target and support rural economy	Expanded credit flow through commercial banks

Source: Compiled from Government of India publications, RBI reports, NABARD reports, and Ministry of Agriculture policy documents.

Table 4.9 presents the major government policies and schemes introduced to strengthen agricultural finance and improve farmers' access to institutional credit in India. The table shows that various initiatives have been implemented over time to support the agricultural sector through financial assistance and risk protection. The Kisan Credit Card (KCC) Scheme introduced in 1998 significantly improved farmers' access to short-term credit for crop production through commercial banks. Similarly, the Agricultural Debt Waiver and Debt Relief Scheme (2004) helped reduce the financial burden on small and marginal farmers, thereby improving their creditworthiness and encouraging banks to extend more loans. The Pradhan Mantri Jan Dhan Yojana (2014) played an important

role in promoting financial inclusion by bringing rural farmers into the formal banking system. Furthermore, schemes such as Pradhan Mantri Fasal Bima Yojana (2016) and the Interest Subvention Scheme (2018) provided risk protection and interest subsidies, which enhanced farmers' capacity to access agricultural credit. The Atmanirbhar Bharat Agriculture Credit Initiative (2020) further expanded credit flow to the agricultural sector. Overall, these policies have significantly strengthened the agricultural credit system and increased farmers' reliance on institutional finance.

Table 4.10: Hypothesis Testing Results.

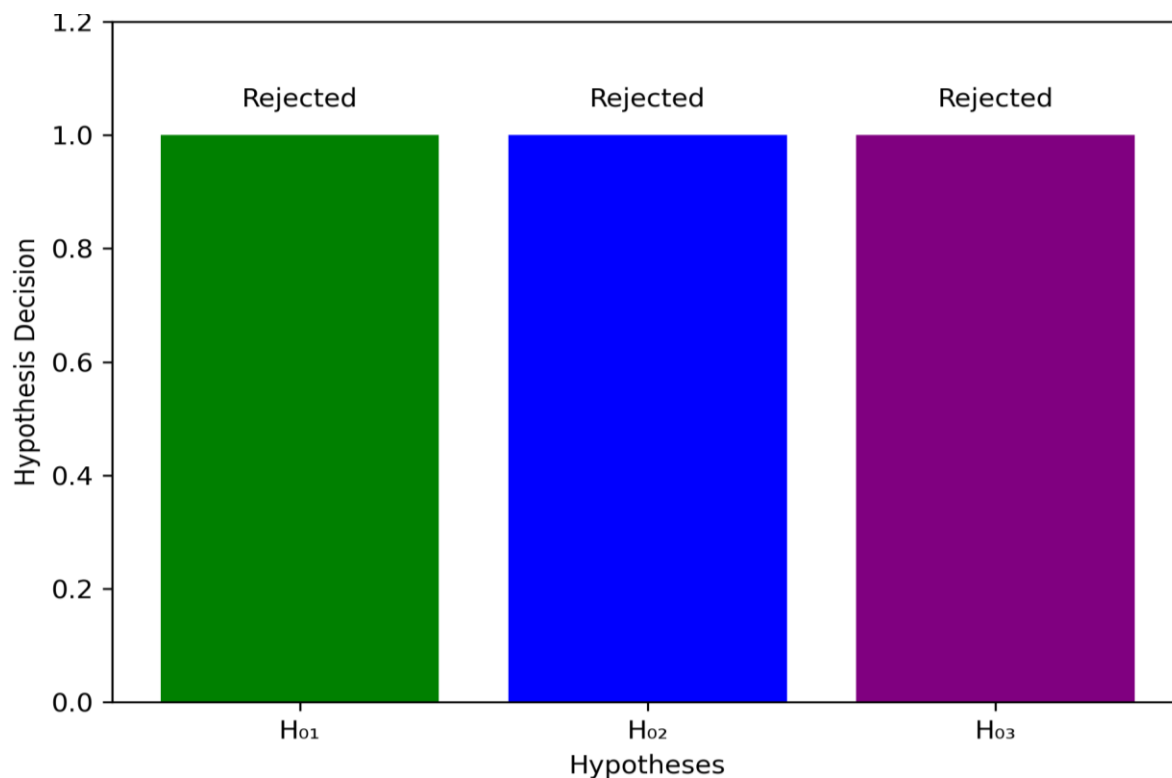
Hypothesis No.	Hypothesis Statement	Statistical Test Used	Test Statistic	p-value	Result
H₀₁	Agricultural finance provided by commercial banks has no significant influence on loan utilization among farmers.	Multiple Linear Regression	F = 28.45	0.000	Rejected
H₀₂	Socio-economic factors have no significant effect on farmers' repayment behaviour.	Logistic Regression	$\chi^2 = 21.63$	0.002	Rejected
H₀₃	Agricultural credit characteristics have no significant effect on farmers' satisfaction level.	Ordered Logit Model	$\chi^2 = 18.74$	0.005	Rejected

Source: Author's estimation based on regression, logistic regression, and ordered logit model results derived from primary survey data.

Table 10 presents the results of hypothesis testing conducted using different econometric models to examine the influence of agricultural finance and related factors on farmers in Villupuram District. The first hypothesis tested whether agricultural finance provided by commercial banks has a significant influence on loan utilization among farmers. The results of the multiple linear regression analysis show a statistically significant F-value of 28.45 with a p-value less than 0.05, leading to the rejection of the null hypothesis. This indicates that agricultural finance significantly influences how farmers utilize loans for agricultural activities. The

second hypothesis examined the effect of socio-economic factors on farmers' repayment behaviour using logistic regression analysis. The chi-square value of 21.63 with a p-value of 0.002 indicates a significant relationship, resulting in the rejection of the null hypothesis. This suggests that factors such as income, farm size, and loan amount significantly affect repayment behaviour. The third hypothesis tested the influence of agricultural credit characteristics on farmers' satisfaction using the ordered logit model. The chi-square value of 18.74 with a p-value of 0.005 indicates statistical significance, confirming that credit characteristics such as interest rates and loan processing time significantly affect farmers' satisfaction with banking services.

Fig No 7: Summary Bar Chart of Hypothesis Testing Results.



5.0 DISCUSSION

The findings of the study indicate that agricultural finance provided by commercial banks plays a significant role in supporting agricultural activities and improving farmers' economic conditions in villupuram district. The results show that most farmers are small and marginal landholders who depend heavily on institutional credit for purchasing essential agricultural inputs such as seeds, fertilizers, and irrigation facilities. Econometric analysis further reveals that factors such as loan amount, farm size, education level, and farmer income positively influence loan utilization and repayment behaviour, while higher interest rates and delays in loan processing negatively affect farmers' satisfaction. These findings highlight the importance of accessible and efficient agricultural credit systems in enhancing agricultural productivity and rural economic development.

6.0 MAJOR FINDING

1) **Dominance of Small and Marginal**

Farmers: The socio-economic profile of respondents indicates that the majority of farmers are small and marginal landholders owning less than two acres of land. This highlights the dependence of small-scale farmers on institutional

agricultural credit for sustaining farming activities.

2) **Moderate Level of Agricultural**

Income: A large proportion of farmers earn between ₹1,00,000 and ₹2,00,000 annually from agricultural activities. This suggests that farming income in the study area remains moderate and often requires financial support from commercial banks.

3) **Agricultural Loans Mainly Used**

for Farm Inputs: The results show that most farmers utilize agricultural loans primarily for purchasing seeds, fertilizers, farm equipment, and irrigation facilities. This indicates productive utilization of institutional credit in agricultural activities.

4) **Positive Relationship between**

Credit and Loan Utilization: The correlation and regression analysis reveal a positive relationship between loan amount, farm size, farmer income, and loan utilization. This implies that access to higher credit improves the effective use of loans in farming activities.

5) **Education Improves Loan**

Utilization Efficiency: The regression results indicate that

education level positively influences loan utilization, suggesting that better-educated farmers are more capable of managing financial resources efficiently.

6) **Interest Rate Negatively Affects Credit Utilization:** The findings show that higher interest rates have a negative effect on loan utilization and repayment behaviour, indicating that borrowing costs can discourage farmers from effectively using institutional credit.

7) **Farm Size and Income Influence Repayment Behaviour:** Logistic regression analysis reveals that farmers with larger farm sizes and higher income levels are more likely to repay agricultural loans regularly.

8) **Loan Processing Time Influences Farmer Satisfaction:** The ordered logit model indicates that delays in loan processing reduce farmers' satisfaction with banking services, while adequate loan amounts increase satisfaction levels.

9) **Positive Growth in Agricultural Credit Disbursement:** Secondary data analysis shows a steady increase in agricultural credit disbursement by

commercial banks in Villupuram District between 2019 and 2024, indicating improved access to institutional finance.

10) **Government Policies Strengthen Agricultural Credit System:** Government schemes such as the Kisan Credit Card scheme, interest subvention schemes, and crop insurance programs have significantly enhanced farmers' access to institutional credit.

11) **Agricultural Finance Significantly Influences Farmers' Outcomes:** Hypothesis testing confirms that agricultural finance significantly affects loan utilization, repayment behaviour, and farmers' satisfaction levels in the study area.

7.0 POLICY SUGGESTION

1. **Improve Accessibility of Agricultural Credit:** Commercial banks should simplify loan procedures and reduce documentation requirements to ensure that small and marginal farmers can easily access agricultural credit. Expanding rural banking infrastructure and strengthening financial inclusion initiatives can

further improve farmers' access to institutional finance.

2. Provide Lower Interest Rates and Credit Subsidies: Policymakers should consider reducing interest rates on agricultural loans or expanding interest subvention schemes to minimize the financial burden on farmers. Lower borrowing costs would encourage farmers to utilize institutional credit more effectively for productive agricultural activities.

3. Enhance Financial Literacy and Awareness Programs: Training programs and financial literacy initiatives should be conducted to educate farmers about the proper utilization of agricultural loans, repayment schedules, and available government credit schemes. This will help farmers make better financial decisions and improve repayment behaviour.

4. Reduce Loan Processing Time in Banks: Commercial banks should streamline loan approval and disbursement processes to reduce delays in credit delivery. Faster loan processing would increase farmers' satisfaction and ensure that credit is

available at the right time for agricultural operations.

5. Strengthen Government Support Programs for Agricultural Finance: The government should strengthen existing schemes such as the Kisan Credit Card scheme, crop insurance programs, and agricultural credit targets. These policies should focus particularly on small and marginal farmers to promote sustainable agricultural development and rural economic growth.

8.0 CONCLUSION

This study examined the extent and pattern of agricultural finance provided by commercial banks and its influence on loan utilization, repayment behaviour, and farmers' satisfaction in Villupuram District, Tamil Nadu. The findings demonstrate that institutional credit plays a crucial role in supporting agricultural production, particularly among small and marginal farmers who constitute a significant proportion of the farming community in the study area. The results indicate that agricultural loans are largely utilized for productive purposes such as purchasing seeds, fertilizers, irrigation facilities, and farm equipment, thereby contributing to

improved farm productivity and income generation.

The econometric analysis provides empirical evidence that key factors such as loan amount, farm size, farmer income, and education positively influence the effective utilization of agricultural credit and the repayment behaviour of farmers. Conversely, higher interest rates and delays in loan processing negatively affect farmers' satisfaction with banking services. The study also highlights a steady growth in agricultural credit disbursement by commercial banks during the study period, reflecting the expanding role of institutional finance in the agricultural sector. Overall, the study concludes that commercial banks play a vital role in strengthening agricultural development through the provision of institutional credit. Strengthening credit accessibility, improving banking efficiency, and implementing supportive policy measures will further enhance the effectiveness of agricultural finance and contribute to sustainable rural development.

9.0 LIMITATIONS OF THE STUDY

The present study has certain limitations that should be considered while interpreting the results. First, the study is limited to Villupuram District in Tamil Nadu, and therefore the findings may not be

fully generalized to other regions with different agricultural and socio-economic conditions. Second, the analysis is based on data collected from a sample of 200 farmers, which may not represent the entire farming population. Third, the study primarily relies on respondents' perceptions and self-reported information, which may involve response bias. Finally, the study focuses only on commercial bank finance and does not consider other sources of agricultural credit such as cooperative banks and informal lenders.

10.0 SCOPE FOR FURTHER RESEARCH

Future research can extend the scope of this study by including a larger sample size and covering multiple districts or states to provide a broader understanding of agricultural finance in India. Comparative studies between different financial institutions such as commercial banks, cooperative banks, and regional rural banks may provide deeper insights into credit accessibility and effectiveness. Further research can also examine the impact of agricultural finance on farm productivity, income stability, and technological adoption using advanced econometric techniques. Additionally, studies focusing on digital banking services, financial literacy, and climate-related agricultural risks could

contribute to improving the effectiveness of agricultural credit systems.

Author contributions

Mr. J. Kosalram, Ph.D. Research Scholar, Department of Economics, Annamalai University, conceptualized the research study, formulated the research problem, designed the research methodology, collected and compiled both primary and secondary data, performed the statistical and econometric analysis, interpreted the results, and prepared the original draft of the manuscript. Dr. C. Venkatesh, Research Supervisor and Associate Professor, Department of Economics, Annamalai University, provided academic guidance throughout the research process, assisted in refining the research framework and methodology, critically reviewed the analysis and interpretation of results, and contributed to improving the overall structure and quality of the manuscript.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this research.

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