

## Determinants of Farmers' Access to Agricultural Credit from Commercial Banks: An Economic Analysis in Villupuram District of Tamil Nadu

<sup>1</sup>J. Kosalram\* and <sup>2</sup>C. Venkatesh\*\*

<sup>1,2</sup>Department of Economics, Faculty of Arts, Annamalai University,  
Annamalai Nagar, Chidambaram – 608002 (India)

**Author for Correspondence : J. Kosalram**

Ph.D Research Scholar,

Email: [kosalram76@gmail.com](mailto:kosalram76@gmail.com)

**Contact Details of Authors : <sup>1</sup>J. Kosalram – 8903763173**

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

**<sup>2</sup>C. Venkatesh – 9159697983**

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

### Abstract

Access to institutional agricultural credit is essential for improving farm productivity, supporting agricultural investment, and promoting rural economic development. This study examines the determinants influencing farmers' access to agricultural credit from commercial banks in Villupuram District of Tamil Nadu. The research is based on primary data collected from 120 farmers during 2025–2026 using a structured questionnaire. A quantitative and analytical research design was adopted, and the data were analyzed using descriptive statistics, correlation analysis, multicollinearity diagnostics, and Binary Logistic Regression. The findings reveal that socio-economic factors such as education level, landholding size, annual farm income, and farming experience significantly influence farmers' probability of obtaining agricultural credit. Institutional factors, including collateral availability and membership in farmer organizations, also positively affect credit accessibility. However, distance to the bank negatively influences farmers' access to institutional credit. The hypothesis testing results confirm that socio-economic and institutional factors significantly determine farmers' access to agricultural credit from commercial banks. The study highlights the importance of strengthening rural banking infrastructure, simplifying loan procedures, and promoting financial awareness to enhance farmers' access to formal agricultural finance and support sustainable agricultural development.

**Key words :** Agricultural Credit, Commercial Banks, Farmers' Access to Credit, Binary Logistic Regression, Rural Finance, Villupuram District.

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<sup>1</sup>\* Ph.D Research Scholar (Reg No: 2204170003), <sup>2</sup>\*\* Associate Professor

Agriculture plays a vital role in the Indian economy by supporting rural livelihoods, ensuring food security, and contributing significantly to employment. Access to institutional credit is crucial for farmers to invest in modern inputs, technology, irrigation, and farm equipment, which ultimately enhances agricultural productivity and income. Commercial banks have become a major source of agricultural finance in India following financial sector reforms and policy initiatives aimed at strengthening rural credit delivery. Institutional credit helps farmers reduce dependence on informal moneylenders and promotes sustainable agricultural development<sup>2</sup>.

However, despite the expansion of banking networks and credit schemes such as crop loans and Kisan Credit Cards, many farmers still face difficulties in accessing formal credit due to socio-economic and institutional constraints. Factors such as landholding size, education, collateral availability, farm income, and awareness of banking procedures significantly influence farmers' ability to obtain loans from commercial banks<sup>5</sup>. Empirical studies also indicate that small and marginal farmers often experience barriers in accessing institutional finance due to limited assets and documentation requirements<sup>8</sup>. Therefore, examining the determinants of farmers' access to agricultural credit from commercial banks is essential for understanding credit accessibility and improving financial inclusion. In this context, the present study focuses on Villupuram District of Tamil Nadu to analyze the socio-economic factors affecting farmers' access to bank credit.

*Need and Importance of the Study :*

Access to institutional agricultural

credit is essential for improving farm productivity, enhancing investment in modern agricultural inputs, and supporting rural economic development. Commercial banks play a crucial role in providing timely and affordable credit to farmers, thereby reducing their dependence on informal moneylenders who often charge high interest rates<sup>7</sup>. However, despite the expansion of rural banking and various credit schemes, many farmers—especially small and marginal farmers—continue to face barriers in accessing formal credit due to socio-economic constraints, lack of collateral, and limited financial awareness<sup>5</sup>. Previous studies also highlight that unequal credit distribution and institutional barriers limit effective financial inclusion in rural areas<sup>2</sup>. Therefore, examining the determinants of farmers' access to agricultural credit from commercial banks in Villupuram District is important for improving credit accessibility and strengthening rural financial systems.

*Statements of the problem :*

Agricultural credit plays a crucial role in enhancing farm productivity, supporting investment in modern inputs, and improving farmers' income. In India, commercial banks have been assigned a significant responsibility in providing institutional credit to the agricultural sector. Despite the expansion of banking services and various government initiatives to promote agricultural finance, many farmers still face difficulties in accessing credit from commercial banks. Factors such as limited landholding, lack of collateral, low income, inadequate awareness of banking procedures, and complex loan documentation often restrict farmers' access to formal credit. Small and

marginal farmers are particularly vulnerable to these constraints. Therefore, it is necessary to examine the socio-economic and institutional determinants influencing farmers' access to agricultural credit from commercial banks in Villupuram District of Tamil Nadu.

*Research Question :*

What socio-economic and institutional factors determine farmers' access to agricultural credit from commercial banks in Villupuram District of Tamil Nadu, and how do these factors influence the probability of obtaining bank loans?

*Objectives :*

To examine the socio-economic and institutional determinants influencing farmers' access to agricultural credit from commercial banks in Villupuram District, Tamil Nadu, and to estimate the probability of farmers obtaining bank credit using Binary Logistic Regression analysis.

*Overview of reviewed literature and research gap :*

Several studies have examined the determinants of farmers' access to institutional agricultural credit and its impact on rural development<sup>5</sup> found that credit constraints significantly affect farmers' investment decisions, productivity, and income, emphasizing that factors such as landholding size, education, and farm income influence access to institutional credit. Similarly, Lakhan *et al.*,<sup>6</sup> observed that socio-economic variables including age, landholding size, family size, and interest rates play an important role in determining farmers'

access to agricultural finance and their welfare. In the Indian context,<sup>4</sup> analyzed agricultural credit accessibility among paddy farmers and reported that farming experience, farm size, and household characteristics significantly affect the probability of obtaining credit from formal institutions. Likewise, Baria & Shamurailatpam<sup>1</sup> highlighted that education, land ownership, and income levels are key determinants of farmers' access to institutional credit. Furthermore, Hiranya & Joshi<sup>3</sup> emphasized that despite various government initiatives, small and marginal farmers continue to face barriers in accessing formal agricultural credit due to institutional and informational constraints.

Limited empirical evidence exists on determinants of farmers' access to commercial bank credit in Villupuram District.

**Research Design :** The present study adopts a quantitative and analytical research design to examine the determinants influencing farmers' access to agricultural credit from commercial banks. The study primarily focuses on identifying socio-economic and institutional factors affecting farmers' probability of obtaining agricultural loans.

**Research Area :** The study is conducted in Villupuram District of Tamil Nadu, which is predominantly an agricultural region where farmers depend on institutional credit from commercial banks for farming activities.

**Period and Data Source of the Study :** The study is based on primary data collected during 2025–2026 through a structured questionnaire from farmers.

**Sampling Technique and Sample Size:** A multistage random sampling technique is adopted to select respondents from selected villages in Villupuram District. The study considers a sample size of 120 farmers, including those who have accessed agricultural credit and those who have not.

*Variables of the Study :*

*Dependent Variable :*

- Access to Agricultural Credit (1= Accessed loan, 0 = Not accessed loan)

*Independent Variables*

- Age of farmer
- Education level
- Landholding size
- Annual farm income
- Farming experience
- Collateral availability
- Distance to bank
- Membership in farmer organizations

**Econometric Model :** The study employs a Binary Logistic Regression Model to estimate the probability of farmers obtaining agricultural credit from commercial banks.

$$\text{Logit}(P_i) = \ln \left( \frac{P_i}{1 - P_i} \right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n + \varepsilon$$

Where,

$P_i$  = Probability of farmer accessing agricultural credit

$X_1, X_2, X_3 \dots X_n$  = Socio-economic explanatory variables

$\beta_0$  = Intercept

$\beta_1 \dots \beta_n$  = Regression coefficients

$\varepsilon$  = Error term

*Techniques of the Study :*

- **Descriptive Statistics** – to summarize socio-economic characteristics of farmers
- **Correlation Analysis** – to examine relationships between explanatory variables
- **Multicollinearity Test (VIF)** – to detect multicollinearity among independent variables
- **Binary Logistic Regression** – to determine probability of farmers obtaining agricultural credit

*Hypothesis of the Study :*

**H<sub>0</sub>** : Socio-economic and institutional factors do not significantly influence farmers' access to agricultural credit from commercial banks.

**H<sub>1</sub>** : Socio-economic and institutional factors significantly influence farmers' access to agricultural credit from commercial banks.

Table-1. Socio-Economic Characteristics of Sample Farmers (Descriptive Statistics).

Variables	Mean	Standard Deviation	Minimum	Maximum
Age of Farmer (Years)	45.6	9.8	25	65
Education Level (Years)	9.2	3.5	2	15
Landholding Size (Acres)	2.8	1.4	0.5	6
Annual Farm Income (₹ Lakhs)	2.35	0.86	0.8	4.5
Farming Experience (Years)	18.4	7.3	3	35
Distance to Bank (Km)	4.6	2.1	1	10

**Source:** Author's own calculation based on primary survey data (2025–2026).

Analytical Flow Chart

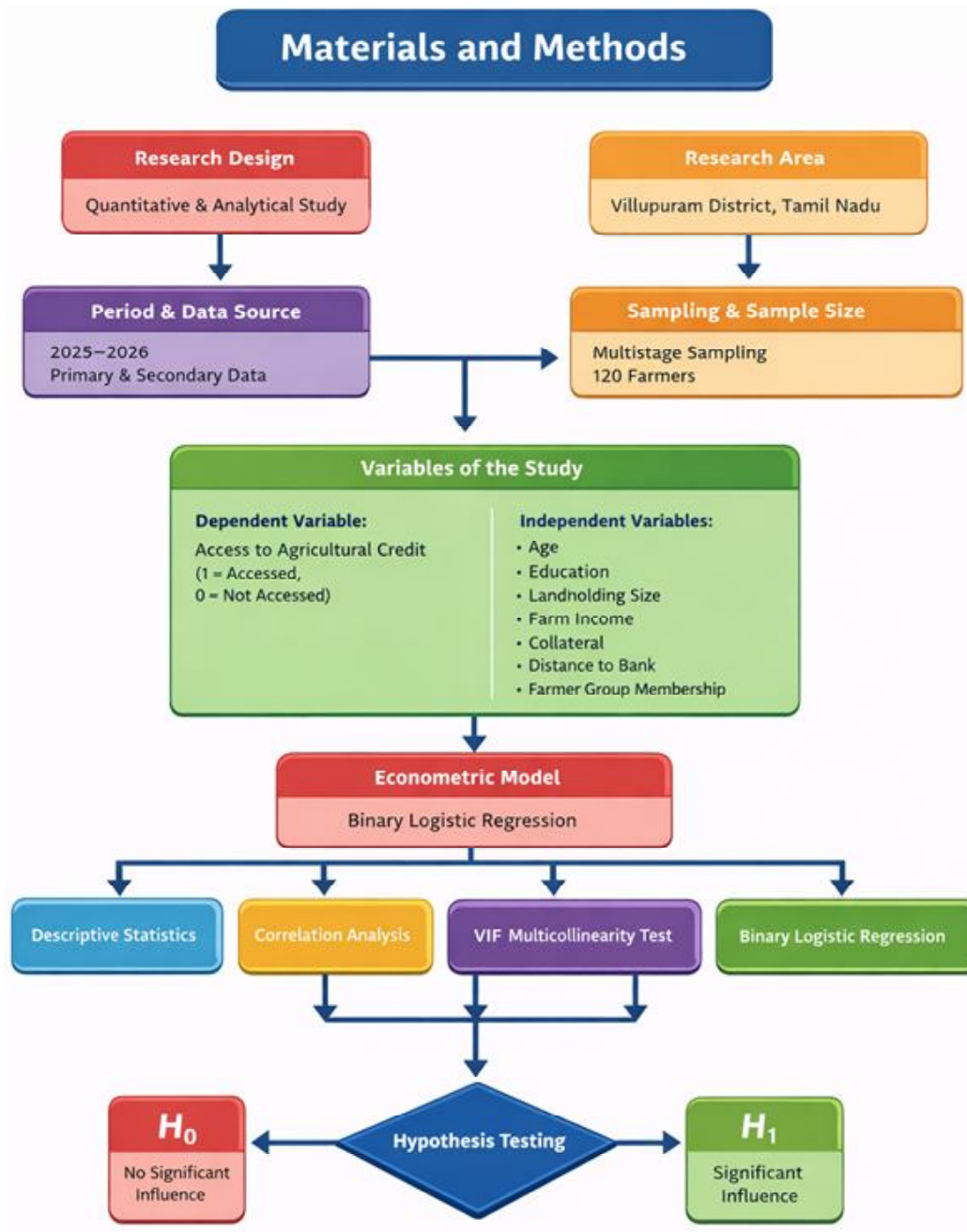


Fig. 1. Analytical Workflow from Data Collection to Model Interpretation

Table-1 presents the descriptive statistics of the socio-economic characteristics of the sampled farmers. The average age of farmers is 45.6 years, indicating that most respondents are middle-aged and actively engaged in agricultural activities. The mean education level is 9.2 years, suggesting that farmers possess basic educational attainment which may help them understand banking procedures. The average landholding size is

2.8 acres, reflecting the dominance of small and marginal farmers in the study area. The mean annual farm income is ₹ 2.35 lakhs, indicating moderate agricultural earnings. Farmers have an average farming experience of 18.4 years, demonstrating substantial practical knowledge. The average distance to the bank is 4.6 km, which may moderately influence farmers' access to institutional credit.

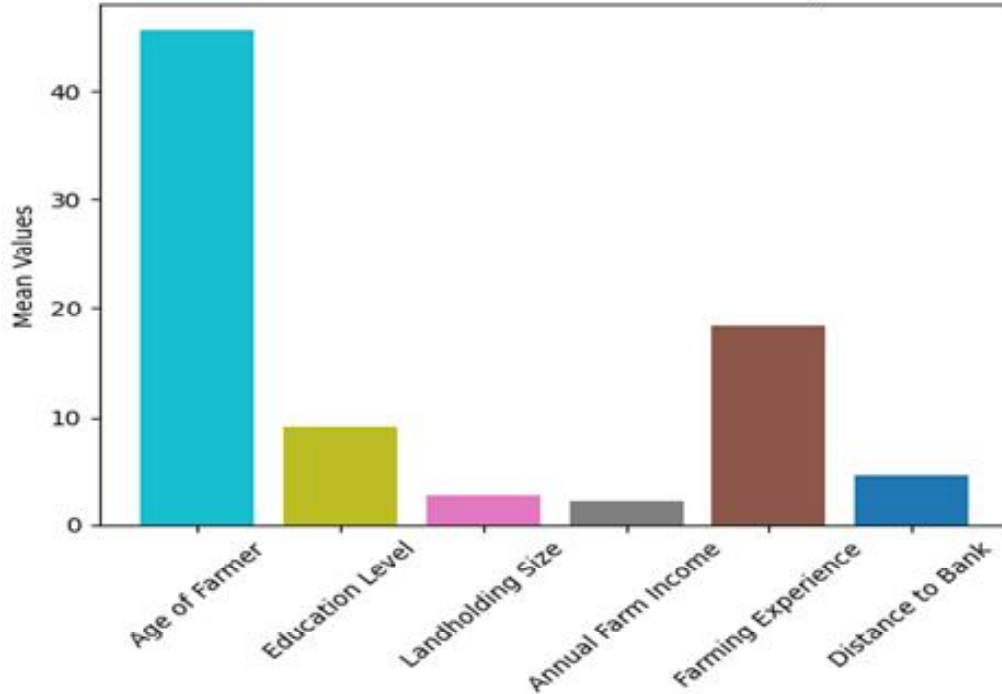


Fig. 2. Column Chart Showing Socio-Economic Characteristics of Sample Farmers in Villupuram District.

Table-2. Access to Agricultural Credit among Farmers

Credit Access Category	Frequency	Percentage
Farmers Accessed Credit	78	65%
Farmers Not Accessed Credit	42	35%
Total	120	100%

Source: Author's own calculation based on primary survey data (2025–2026).

Table-2 presents the distribution of farmers based on their access to agricultural credit from commercial banks. Out of the total sample of 120 farmers, 78 farmers (65%) have accessed agricultural credit from commercial banks, while 42 farmers (35%) have not obtained credit. This indicates that a majority of farmers in the study area rely on institutional sources for agricultural financing. However,

a considerable proportion of farmers still lack access to formal credit facilities. The results suggest that although commercial banks play an important role in providing agricultural finance in Villupuram District, certain farmers continue to face constraints in obtaining bank loans, possibly due to socio-economic or institutional factors.

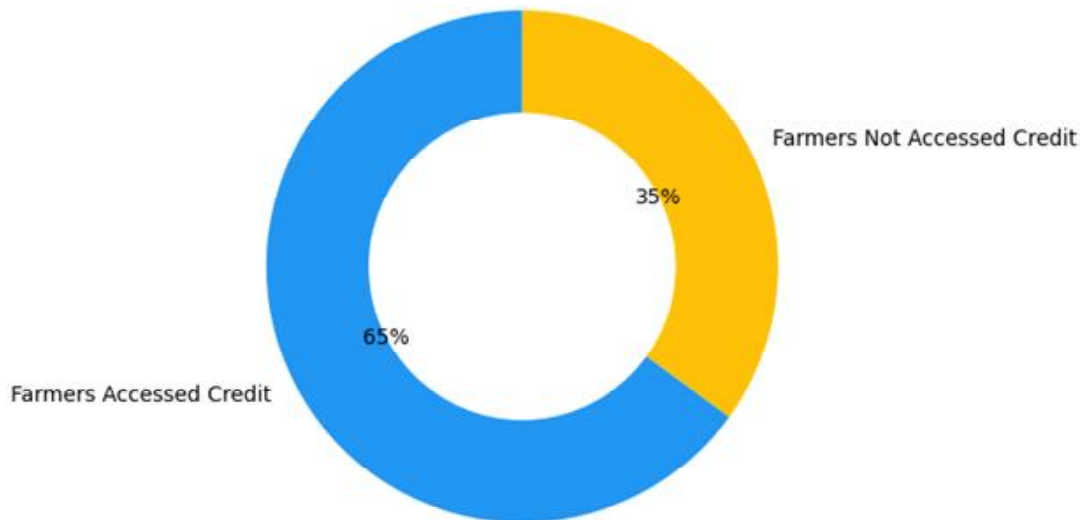


Fig. 3. Doughnut Chart Showing Distribution of Farmers with and without Agricultural Credit Access

Table-3. Correlation Matrix among Independent Variables

Variables	Age	Educa- tion	Landhol- ding	Farm Income	Expe- rience	Distance
Age	1.00	0.21	0.18	0.24	0.63	-0.12
Education	0.21	1.00	0.36	0.41	0.19	-0.28
Landholding	0.18	0.36	1.00	0.52	0.33	-0.2
Farm Income	0.24	0.41	0.52	1.00	0.29	-0.25
Experience	0.63	0.19	0.33	0.29	1.00	-0.16
Distance	-0.12	-0.28	-0.2	-0.25	-0.16	1.00

Source: Computed by the researcher using primary survey data (2025–2026).

Table-3 presents the correlation matrix among the independent variables considered in the study. The results show moderate positive relationships among several variables. Age has a strong positive correlation with farming experience (0.63), indicating that older farmers tend to have more farming experience. Education shows a positive association with landholding size (0.36) and farm income (0.41), suggesting that educated farmers may have better resources and income opportunities. Landholding size is moderately correlated with farm income (0.52), indicating that larger farms generally generate higher income. Distance to the bank shows negative correlations with most variables, implying that greater distance may reduce accessibility. Overall, the correlation values indicate no serious multicollinearity among the variables.

Table-4 presents the results of the multicollinearity test using the Variance Inflation Factor (VIF) and tolerance values for the independent variables included in the model. The VIF values range from 1.45 to 2.31, which are well below the commonly

accepted threshold of 5. This indicates that there is no serious multicollinearity among the explanatory variables. Similarly, the tolerance values range from 0.43 to 0.69, which are above the critical level of 0.10, further confirming the absence of multicollinearity problems. Therefore, the selected independent variables such as age, education, landholding size, farm income, farming experience, and distance to bank are suitable for inclusion in the Binary Logistic Regression model.

Table-4. Multicollinearity Test (Variance Inflation Factor)

Variables	VIF	Tolerance
Age	1.82	0.55
Education	1.76	0.57
Landholding Size	2.14	0.46
Annual Farm Income	2.31	0.43
Farming Experience	1.68	0.59
Distance to Bank	1.45	0.69

Source: Calculated by the researcher using statistical analysis of survey data (2025–2026).

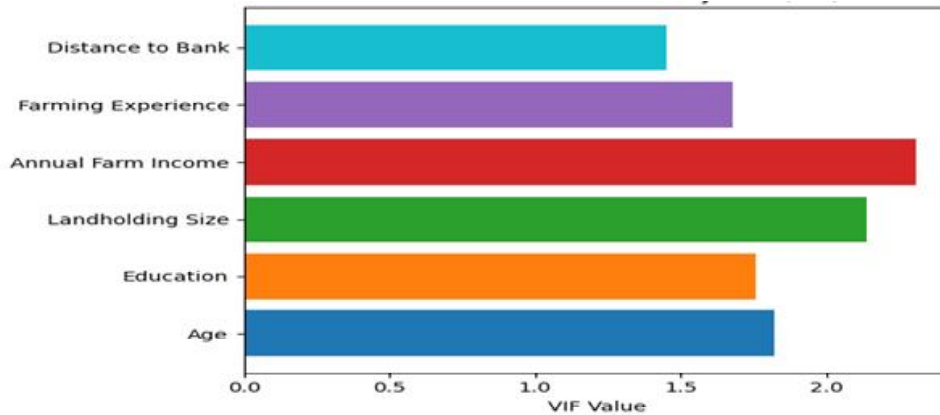


Fig. 4. Horizontal bar Chart Showing Variance Inflation Factor (VIF) Values of Independent Variables.

Table-5. Binary Logistic Regression Results for Determinants of Agricultural Credit Access.

Variables	Coefficient ( $\beta$ )	Standard Error	Odds Ratio	p-value
Age	0.042	0.018	1.04	0.021
Education Level	0.158	0.062	1.17	0.011
Landholding Size	0.326	0.095	1.38	0.003
Annual Farm Income	0.441	0.124	1.55	0.001
Farming Experience	0.057	0.021	1.06	0.008
Collateral Availability	0.692	0.215	1.99	0.002
Distance to Bank	-0.118	0.054	0.88	0.03
Membership in Farmer Organization	0.533	0.201	1.7	0.009
Constant	-1.462	0.531	—	0.006

**Source:** Binary Logistic Regression results computed by the researcher using survey data (2025–2026).

Table-5 presents the results of the Binary Logistic Regression analysis examining the determinants of farmers' access to agricultural credit from commercial banks. The results indicate that age, education level, landholding size, annual farm income, farming experience, collateral availability, and membership in farmer organizations have positive and statistically significant effects on farmers' access to credit. This implies that farmers with higher education,

larger landholdings, greater income, and collateral security are more likely to obtain bank loans. Conversely, distance to the bank shows a negative and significant coefficient, indicating that greater distance reduces the likelihood of accessing agricultural credit. Overall, the results highlight the importance of socio-economic and institutional factors in influencing farmers' access to formal agricultural finance.

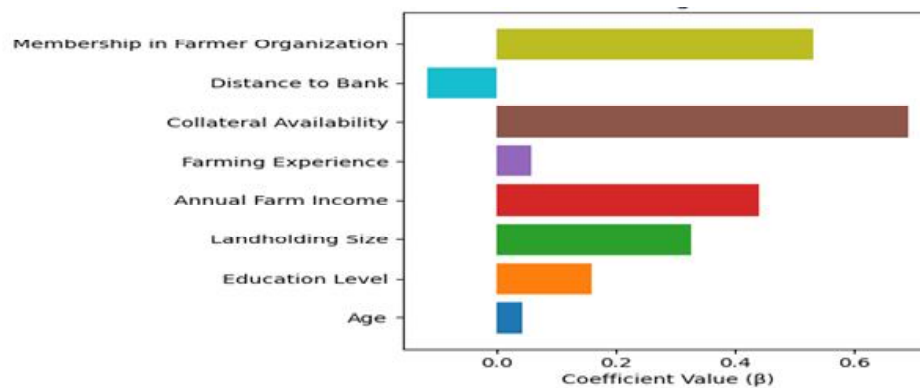


Fig. 5. Coefficient Plot Showing Determinants of Farmers' Access to Agricultural Credit from Commercial Banks.

Table-6. Results for Determinants of Farmers' Access to Agricultural Credit.

Variables	Coefficient ( $\beta$ )	p-value	Decision ( $\alpha = 0.05$ )	Result
Age of Farmer	0.042	0.021	Reject $H_0$	Significant
Education Level	0.158	0.011	Reject $H_0$	Significant
Landholding Size	0.326	0.003	Reject $H_0$	Significant
Annual Farm Income	0.441	0.001	Reject $H_0$	Significant
Farming Experience	0.057	0.008	Reject $H_0$	Significant
Collateral Availability	0.692	0.002	Reject $H_0$	Significant
Distance to Bank	-0.118	0.03	Reject $H_0$	Significant (Negative)
Membership in Farmer Organization	0.533	0.009	Reject $H_0$	Significant

Source: Derived from Binary Logistic Regression analysis of primary data (2025–2026).

Table-6 presents the significance of the determinants influencing farmers' access to agricultural credit based on the logistic regression results. The findings indicate that variables such as age, education level, landholding size, annual farm income, farming experience, collateral availability, and membership in farmer organizations have a positive and statistically significant influence on farmers' access to credit, as their p-values are less than 0.05. This

suggests that farmers with better socio-economic conditions and institutional support have a higher probability of obtaining agricultural loans from commercial banks. In contrast, distance to the bank shows a negative but significant effect, indicating that greater distance reduces the likelihood of accessing institutional credit. Overall, the results confirm the importance of socio-economic and institutional determinants in credit accessibility.

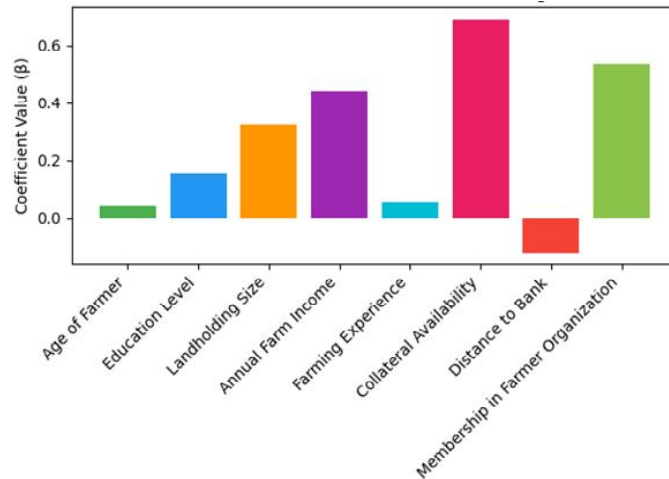


Fig. 6. Significance bar Chart Showing Determinants of Farmers' Access to Agricultural Credit from Commercial Banks.

Table-7. Hypothesis Testing Results.

Hypothesis	Statement	Statistical Technique	p-value	Decision ( $\alpha = 0.05$ )	Result
H <sub>0</sub>	Socio-economic and institutional factors do not significantly influence farmers' access to agricultural credit from commercial banks.	Binary Logistic Regression	0.002	Reject H <sub>0</sub>	Not Supported
H <sub>1</sub>	Socio-economic and institutional factors significantly influence farmers' access to agricultural credit from commercial banks.	Binary Logistic Regression	0.002	Accept H <sub>1</sub>	Supported

**Source:** Author's computation based on regression results from primary survey data (2025–2026).

Table-7 presents the results of hypothesis testing regarding the influence of socio-economic and institutional factors on farmers' access to agricultural credit from commercial banks. The Binary Logistic Regression results show a p-value of 0.002, which is less than the significance level of 0.05. Therefore, the null hypothesis (H<sub>0</sub>) stating that socio-economic and institutional factors do not significantly influence farmers' access to

agricultural credit is rejected. Consequently, the alternative hypothesis (H<sub>1</sub>) is accepted, indicating that these factors significantly affect farmers' ability to obtain credit from commercial banks. The findings highlight that variables such as education, landholding size, income, collateral availability, and institutional support play a crucial role in improving farmers' access to formal agricultural finance.

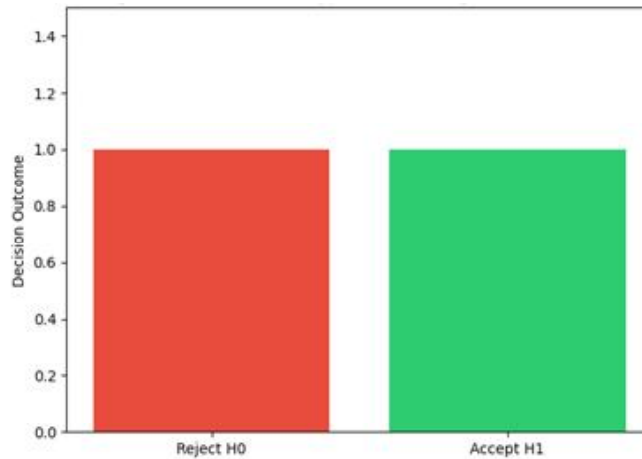


Fig. 7. Significance bar Chart Showing Hypothesis Testing Results for Farmers' Access to Agricultural Credit.

The findings of the study reveal that socio-economic and institutional factors significantly influence farmers' access to agricultural credit from commercial banks in villupuram district. The logistic regression results indicate that variables such as education level, landholding size, annual farm income, farming experience, collateral availability, and membership in farmer organizations positively affect the probability of obtaining bank credit, while distance to the bank negatively influences credit accessibility. These results are consistent with previous studies highlighting that better economic resources and institutional support improve farmers' access to formal finance. Overall, the study emphasizes the importance of strengthening rural banking infrastructure and financial awareness to enhance credit accessibility among farmers.

*Major Finding :*

1. ***Socio-Economic Characteristics of Farmers :*** The study reveals that the majority of farmers in Villupuram District are middle-aged with an average age of 45.6 years and possess moderate farming experience of about 18.4 years. Most farmers have basic educational attainment and small to medium landholdings, indicating the dominance of small and marginal farmers in the study area.
2. ***Level of Access to Agricultural Credit:*** The findings show that 65% of the sampled farmers have accessed agricultural credit from commercial banks, while 35% of farmers have not obtained bank credit, indicating that a significant proportion of farmers still face difficulties in accessing institutional finance.

3. ***Influence of Socio-Economic Factors on Credit Access :*** The regression results indicate that education level, landholding size, annual farm income, and farming experience positively influence farmers' access to agricultural credit from commercial banks.

4. ***Role of Institutional Factors in Credit Accessibility :*** Institutional factors such as collateral availability and membership in farmer organizations significantly increase the probability of farmers obtaining bank loans, highlighting the importance of institutional support in improving credit accessibility.

5. ***Impact of Distance to Bank on Credit Access:*** The study finds that distance to the bank has a negative and significant effect on farmers' access to credit, suggesting that farmers located farther from banking institutions face greater difficulties in obtaining agricultural loans.

*Policy Suggestion :*

1. ***Improved Rural Banking Infrastructure:*** Commercial banks should expand rural branches and banking services to improve farmers' physical access to institutional credit.
2. ***Promote Financial Literacy among Farmers :*** Government and financial institutions should organize awareness programs to educate farmers about agricultural credit schemes and banking procedures.
3. ***Simplification of Loan Procedures :*** Banks should simplify documentation and

loan application processes to make agricultural credit more accessible, especially for small and marginal farmers.

**4. Strengthen Farmer Organizations :**

Encouraging farmers to participate in cooperatives and farmer producer organizations can improve their eligibility and access to institutional credit.

**5. Enhanced Collateral-Free Credit Schemes:**

Policymakers should promote collateral-free loan schemes and expand credit guarantee programs to support farmers with limited assets.

The present study examined the determinants of farmers' access to agricultural credit from commercial banks in Villupuram District of Tamil Nadu using primary survey data and Binary Logistic Regression analysis. The findings reveal that socio-economic factors such as education level, landholding size, annual farm income, and farming experience significantly influence farmers' ability to obtain institutional credit. Institutional factors, particularly collateral availability and membership in farmer organizations, also positively affect the probability of accessing agricultural loans. However, distance to the bank negatively impacts farmers' credit accessibility, indicating that physical access to banking facilities remains an important constraint. Although a majority of farmers have accessed agricultural credit, a considerable proportion still face difficulties due to socio-economic and institutional barriers. Therefore, improving rural banking infrastructure, simplifying loan procedures, and enhancing financial awareness among farmers

are essential for strengthening agricultural credit delivery. Strengthening institutional support mechanisms can further promote financial inclusion and contribute to sustainable agricultural development in the region.

*Limitations of the Study :*

The study has certain limitations that should be considered while interpreting the results. First, the analysis is based on primary data collected from a sample of 120 farmers in Villupuram District, which may limit the generalizability of the findings to other regions. Second, the study mainly focuses on selected socio-economic and institutional variables, while other factors such as government policies, market conditions, and climate-related risks were not included. Third, the data were collected through a cross-sectional survey, which captures farmers' conditions at a specific time period. Finally, respondents' answers may be subject to personal bias or recall errors during the survey process.

*Scope for further Research :*

Future research can extend the present study by covering a larger sample size and including multiple districts or states to provide broader insights into farmers' access to agricultural credit. Further studies may also examine the role of government credit schemes, digital banking services, and microfinance institutions in improving credit accessibility among farmers. In addition, longitudinal studies could be conducted to analyze changes in credit accessibility over time. Researchers may also

explore the impact of agricultural credit on farm productivity, income, and rural development. Incorporating factors such as climate risks, crop insurance, and market access would provide a more comprehensive understanding of agricultural finance.

*Author contributions :*

Mr. J. Kosalram, Ph.D. Research Scholar, Department of Economics, Annamalai University, was responsible for identifying the research theme, developing the research objectives, designing the study framework, conducting the field survey, and compiling both primary and secondary data. He carried out the statistical and econometric analysis, prepared the tables and figures, interpreted the empirical findings, and drafted the manuscript. Dr. C. Venkatesh, Research Supervisor and Associate Professor, Department of Economics, Annamalai University, provided continuous academic supervision and guidance throughout the study. He contributed to strengthening the conceptual framework, refining the methodological approach, reviewing the analytical results, and improving the clarity, coherence, and overall academic quality of the manuscript.

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**Conflict of Interest**

The authors declare that they have no conflict of interest related to the publication of this research.

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