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Original Research Article

Financial Literacy and Agricultural Loan Utilization among Rural Farmers in Delta State, Nigeria

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Abstract: The effectiveness of agricultural credit in promoting productivity and rural development depends not only on farmers' access to finance but also on their ability to manage financial resources efficiently. This study examined the relationship between financial literacy and credit utilization among rural farmers in Delta State, Nigeria. A multistage sampling procedure was used to select 312 farmers from twelve rural communities. Primary data were collected using a structured questionnaire, while descriptive statistics, the Financial Literacy Index (FLI), Loan Utilization Index (LUI), and multiple regression analysis were employed for data analysis. The findings revealed a moderate level of financial literacy (FLI = 0.70), with relatively stronger performance in credit management and budgeting than in record-keeping practices. Cooperative societies and microfinance banks emerged as the dominant sources of agricultural credit among respondents. The results further indicated a high level of loan utilization (LUI = 0.76), suggesting that most farmers allocated borrowed funds to productive agricultural activities. Regression analysis confirmed that financial literacy and educational attainment significantly influenced credit utilization behaviour. The study concludes that financial literacy and education are crucial determinants of effective agricultural credit utilization. Enhancing farmers' financial knowledge and educational capacity can enhance loan utilization efficiency and improve farm performance. The findings provide important policy implications for strengthening financial capability and improving agricultural finance outcomes in rural development contexts.

Keywords: Financial Literacy, Agricultural Credit, Loan Utilization, Rural Farmers, Financial Inclusion.

INTRODUCTION

Agriculture remains a major source of employment, income generation, and livelihood sustenance in rural Nigeria, where a large proportion of households depend on farming as their primary occupation. Consequently, the sector plays a vital role in ensuring food security, reducing poverty, and promoting rural economic development. In Delta State, agricultural activities such as crop production, livestock farming, fisheries, and agro-processing contribute significantly to household welfare and economic stability (Ashoro *et al*., 2024). Given its strategic importance, improving agricultural productivity and the efficient use of production resources has become a major policy priority for governments and development agencies.

To enhance agricultural productivity, various agricultural financing programmes have been introduced to improve farmers' access to credit. Credit provides farmers with the financial resources required to purchase inputs, adopt improved technologies, hire labour, expand farm operations, and overcome liquidity constraints associated with agricultural production. As a result, access to agricultural credit is widely recognized as an important instrument for stimulating agricultural growth and improving rural livelihoods. However, evidence suggests that access to credit alone does not necessarily guarantee productive investment or improved farming outcomes. The benefits of agricultural credit depend largely on how effectively the borrowed funds are utilized by farmers.

The productive utilization of agricultural loans requires farmers to possess adequate financial knowledge and management skills. This has brought financial literacy to the forefront of contemporary agricultural finance discourse. Financial literacy refers to the ability to understand financial concepts and apply financial knowledge, skills, attitudes, and behaviours in making informed financial decisions. It encompasses budgeting, financial planning, savings management,

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investment decisions, understanding loan conditions, interest rate evaluation, and risk management (González-Prida *et al*., 2025). Financially literate individuals are generally better positioned to evaluate financial opportunities, allocate resources efficiently, and make decisions that enhance economic outcomes.

Recent studies have highlighted the growing importance of financial literacy in agricultural development. Napu *et al*., (2025) demonstrated that financial literacy enhances financial management behaviour and self-efficacy among agribusiness actors. Similarly, Imhanrenialena and Nwobodo-Anyadiegwu (2025) found that financial literacy significantly improves access to funding, adoption of agricultural innovations, and sustainable food production among rural farmers. These findings suggest that financial literacy can strengthen farmers' ability to make prudent financial decisions and utilize available resources more effectively.

A critical area where financial literacy manifests is in the utilization of agricultural credit. Loan utilization refers to the manner in which farmers allocate borrowed funds to various activities after obtaining credit. It reflects decisions regarding the use of loans for farm inputs, land preparation, acquisition of equipment, labour hiring, technology adoption, farm expansion, or non-farm expenditures. Effective loan utilization requires careful planning, proper budgeting, and an understanding of the costs and benefits associated with alternative investment decisions. Adewumi and Falola (2024) reported that farmers who possessed better financial planning skills and a sound understanding of loan conditions utilized agricultural credit more effectively and achieved improved production outcomes. This finding underscores the importance of financial literacy in ensuring that agricultural loans are directed toward productive purposes.

Despite increased efforts to expand rural financial inclusion, concerns remain regarding the efficient utilization of agricultural credit among farmers. In many rural communities, some farmers divert loan funds to immediate household consumption, social obligations, or other non-productive activities, thereby reducing the capacity of credit to generate the intended agricultural benefits. Poor budgeting practices, inadequate record keeping, limited understanding of loan terms, and weak financial management skills often contribute to inefficient credit utilization. Such challenges can undermine the effectiveness of agricultural financing programmes and limit the contribution of credit to agricultural development. Although financial literacy has been identified as a potential solution to these challenges, empirical evidence on how financial literacy influences loan utilization among rural farmers remains limited, particularly in Delta State, Nigeria.

Understanding the relationship between financial literacy and loan utilization behaviour is therefore important for designing effective agricultural finance policies and interventions. Financially literate farmers are more likely to evaluate borrowing decisions carefully, understand repayment obligations, allocate credit to productive activities, and monitor the use of borrowed funds. Consequently, strengthening financial literacy may enhance the effectiveness of agricultural credit programmes and improve the overall performance of rural farming enterprises.

This study is anchored on the Human Capital Theory, which provides a useful framework for explaining the relationship between financial literacy and credit utilization. The theory posits that financial knowledge and skills constitute valuable human capital that enables farmers to utilize credit more effectively for agricultural production and livelihood improvement. In the context of agricultural credit, financially literate farmers are more likely to understand credit products, assess borrowing costs and benefits, manage loan obligations effectively, and allocate borrowed funds to productive ventures. According to Mireku *et al*., (2023), financial literacy enhances borrowers ability to access, manage and utilize credit efficiency, thereby improving financial outcomes and enterprise performance. Theory therefore suggests that higher levels of financial literacy among farmers are associated with more effective credit utilization, as knowledgeable farmers are better equipped to make prudent borrowing and investment decisions. Consequently, human capital theory provides a strong theoretical basis for examining how financial literacy influences credit utilization among farmers.

Given the growing emphasis on financial inclusion and agricultural financing, it is essential to understand how financial literacy influences the utilization of agricultural credit among rural farmers. Such knowledge is necessary for developing strategies that strengthen farmers' financial capabilities, improve credit utilization and enhance the effectiveness of agricultural financing programmes in Delta State, Nigeria. The broad objective of this study is to analyze the effect of financial literacy on credit utilization among rural farmers in Delta State, Nigeria. The specific objectives are to:

i. Assess the level of financial literacy among rural farmers in the study area;
ii. Identify the sources of agricultural credit accessed by rural farmers;
iii. Examine the pattern of agricultural loan utilization among rural farmers;
iv. Determine the extent of agricultural loan utilization among rural farmers; and
v. Analyze the effect of financial literacy on agricultural loan utilization among rural farmers.

MATERIALS AND METHODS

Study Area

Delta State is located in the South-South region of Nigeria within the Niger Delta ecological zone and is characterized by fertile lowland plains and wetland ecosystems that support diverse agricultural activities. Rural livelihoods are predominantly based on smallholder farming involving crop production, livestock rearing, and fisheries. The state is divided into three agricultural zones Delta North, Delta Central, and Delta South which reflect variations in farming systems and agro-ecological conditions.

Sampling Procedure

A multistage sampling technique was employed to select respondents for this study to ensure representativeness across the agricultural zones of Delta State. First, Delta State was stratified into its three agricultural (senatorial) zones: Delta North, Delta Central, and Delta South. Second, two Local Government Areas (LGAs) were purposively selected from each zone based on the intensity of farming activities and the presence of active farmer cooperatives, yielding a total of six LGAs.

Third, two rural farming communities were randomly selected from each of the selected LGAs, giving twelve (12) communities in total. Finally, a list of registered farmers was obtained from cooperative societies and agricultural extension offices in each community. From these lists, 312 farmers were selected through simple random sampling, ensuring that every registered farmer had an equal probability of inclusion in the study. However, only 312 questionnaire were retrieved and used for the analysis.

Method of Data Collection

Primary data were collected through a structured questionnaire administered to rural farmers in the selected communities of Delta State. The questionnaire was designed in line with the study objectives and informed by relevant literature on financial literacy and agricultural credit utilization. The instrument was structured into sections covering respondents' socio-economic characteristics, financial literacy indicators (including budgeting, savings behaviour, credit management, and record keeping), sources of agricultural credit, loan characteristics, and loan utilization behaviour. Additional information on the allocation of borrowed funds to productive and non-productive uses was also obtained. Data collection was carried out through face-to-face interviews to ensure clarity of responses and improve response rate, given the varying literacy levels of respondents.

Method of Data Analysis

Descriptive and inferential statistical tools were be employed. Descriptive statistics such as frequency counts, percentages, means, and standard deviations were used to summarize the socio-economic characteristics of respondents, levels of financial literacy, sources of loans, and extent of loan utilization. Specifically, the relationship between financial literacy and loan utilization was examined using multiple regression model.

Model Specification

Financial literacy was measured using a multidimensional approach encompassing budgeting and financial planning, savings and investment decisions, credit and loan management, and record-keeping practices. Respondents were asked to indicate their level of agreement with a series of financial literacy statements using a four-point Likert-type scale ranging from 1 = Strongly Disagree to 4 = Strongly Agree.

A Financial Literacy Index (FLI) was subsequently computed by aggregating responses across all financial literacy dimensions and standardizing the resulting scores. The index ranged from 0 to 1, with higher values indicating greater financial literacy.

The index was classified as follows:
Low financial literacy: FLI < 0.50
Moderate financial literacy: FLI = 0.50–0.74
High financial literacy: FLI ≥ 0.75

This classification is consistent with established approaches used in financial literacy studies among rural households and agricultural producers.

Loan Utilization Index (LUI)

To objectively measure the extent to which loans are utilized for productive agricultural purposes, a Loan Utilization Index (LUI) was constructed. The index provides a quantitative measure of the proportion of loan funds applied directly to farming-related activities. The index will be computed as follows:

$$\text{LUI} = \frac{\text{Amount of loan used for productive farm activities (₦)}}{\text{Total loan amount obtained (₦)}} \dots\dots\dots\dots\dots\dots (2)$$

The value of the index ranged between 0 and 1, where:
LUI = 1.0 indicates complete utilization of the loan for productive farming purposes;
$0.5 \leq \text{LUI} < 1.0$ indicates partial utilization; and
$\text{LUI} < 0.5$ indicates low utilization

Model I: Effect of Financial Literacy on Loan Utilization

The first model seeks to determine how farmers' financial literacy influences the extent to which they utilize agricultural loans for productive purposes. It is specified as follows:

$$LU_i = \beta_0 + \beta_1 FL_i + \beta_2 AGE_i + \beta_3 EDU_i + \beta_4 EXP_i + \beta_5 INC_i + \beta_6 HH_i + U_i \ldots\ldots\ldots\ldots (4)$$

Where:
LU_i = Loan Utilization Index of the ith farmer (extent of use of loan for productive activities)
FL_i = Financial Literacy Score of the ith farmer
AGE_i = Age of the farmer (years)
EDU_i = Level of education (years of schooling)
EXP_i = Farming experience (years)
INC_i = Annual farm income (₦)
HH_i = Household size (number of persons)
β_0 = Intercept
$\beta_1 – \beta_6$= Regression coefficients
u_i = Error term capturing other unexplained variations

The a priori expectation was that financial literacy would exert a positive influence on productive loan utilization. Farmers with higher financial literacy levels are expected to possess better budgeting, planning, and credit management skills, thereby increasing the likelihood that borrowed funds will be allocated to productive agricultural activities. Similarly, education, farming experience, and income are expected to positively influence loan utilization efficiency, while the effects of age and household size may vary depending on household and production circumstances. This modelling framework provides a robust empirical basis for evaluating the role of financial literacy in shaping credit utilization behaviour among rural farmers in Delta State, Nigeria.

RESULTS AND DISCUSSION

Financial Literacy Level

The assessment of financial literacy among rural farmers in Delta State was conducted across four major dimensions as presented in Table 1.

Budgeting and Financial Planning

The budgeting and financial planning dimension recorded a sub-mean of 3.01 with a dimension index of 0.75, indicating a relatively high level of competence in this area. Farmers agreed that they could prepare simple farm budgets (mean = 3.12), calculate profit or loss (mean = 3.06), separate personal and farm finances (mean = 2.97), and maintain records of income and expenditure (mean = 2.88).These findings suggest that farmers possess foundational financial management skills necessary for organizing farm activities and making informed expenditure decisions. Falola *et al*., (2023) argued that individuals with sound budgeting skills demonstrate better financial control and resource allocation. The relatively high score in this dimension indicates that rural farmers are not entirely financially naïve; rather, they possess practical knowledge that supports day-to-day farm financial management.

Savings and Investment Decisions

The savings and investment dimension recorded a sub-mean of 2.68 and a dimension index of 0.67, reflecting a moderate level of financial literacy. Farmers generally agreed that they save a portion of their farm income (mean = 2.64), understand the benefits of saving with formal financial institutions (mean = 2.71), and compare savings or investment options before making decisions (mean = 2.69).Although the results suggest awareness of savings and investment principles, the moderate score indicates that consistent application may be constrained by irregular farm income and seasonal cash flows. Amarere and Gbigbi (2026) observed that while many individuals understand the importance of saving, income instability frequently reduces actual savings capacity. The moderate performance in this dimension highlights the need for financial education programs that focus on structured savings planning and risk management strategies tailored to agricultural cycles.

Credit and Loan Management

The credit and loan management dimension recorded the highest sub-mean of 3.12 and a dimension index of 0.78, indicating strong financial literacy in understanding credit-related issues. Farmers agreed that they understand loan terms such as interest rates and repayment periods (mean = 3.18), estimate total borrowing costs before taking loans (mean = 3.04), and recognize the importance of prompt repayment (mean = 3.14). This strong performance suggests that rural farmers are relatively knowledgeable about borrowing conditions and repayment obligations. Adelekan (2018) found that improved understanding of loan terms significantly enhances credit management and repayment behavior among smallholder farmers. Twumasi *et al*., (2022) also reported that financial literacy positively influenced responsible borrowing and credit utilization among rural households. The high score in this dimension likely contributed to the relatively high Loan Utilization Index observed in the study, as understanding credit conditions is essential for productive loan use.

Record Keeping and Financial Documentation

In contrast to other dimensions, record keeping and financial documentation recorded the lowest sub-mean of 2.44 and a dimension index of 0.61, indicating weak performance. Respondents disagreed that they keep adequate records of loan and farm transactions (mean = 2.42) and interpret simple financial statements (mean = 2.38), although they moderately agreed that they seek financial or extension advice when needed (mean = 2.53).This weakness suggests that while farmers may understand financial concepts in principle, their ability to systematically document transactions and analyze financial performance is limited. This poor documentation reduces farmers' capacity to assess profitability and loan efficiency accurately. Weak record keeping may limit farmers' ability to track cash flows, evaluate costs, and make data-driven financial decisions.

The overall mean score of 2.81 and Financial Literacy Index of 0.70 indicate moderate financial

literacy among rural farmers. This suggests that while farmers demonstrate reasonable knowledge in budgeting and credit management, deficiencies in record keeping and financial documentation persist. Odumusor and Acquah (2025) and Ogbemudia *et al*., (2024) reported that rural populations often display moderate financial literacy, with particular weaknesses in technical financial analysis and documentation. The findings of this study follow a similar pattern, where practical financial understanding exists but requires strengthening in analytical and record-based aspects. The results imply that rural farmers in Delta State possess a functional level of financial literacy sufficient for basic budgeting and credit management. However, improving record-keeping practices and strengthening structured savings behavior could significantly enhance the effectiveness of loan utilization and overall farm performance. Targeted financial education programs focusing on documentation, financial analysis, and investment planning would likely yield substantial improvements in rural financial outcomes.

Table 1: Mean Scores of Financial Literacy Components

Financial Literacy Statement	Mean	Std. Dev	Decision
A. Budgeting & Financial Planning			
I can prepare a simple budget for my farm operations	3.12	0.74	Agree
I regularly record my farm income and expenditure	2.88	0.81	Agree
I can calculate profit or loss from my farming activities	3.06	0.69	Agree
I separate personal and business finances	2.97	0.78	Agree
Sub-Mean (Budgeting)	**3.01**	**0.76**	High
Dimension Index	**0.75**		
B. Savings & Investment Decisions			
I save a portion of my farm income regularly	2.64	0.83	Agree
I understand benefits of saving with formal institutions	2.71	0.77	Agree
I compare savings/investment options before choosing	2.69	0.82	Agree
Sub-Mean (Savings)	**2.68**	**0.81**	Moderate
Dimension Index	**0.67**		
C. Credit & Loan Management			
I understand loan terms (interest rate, repayment period)	3.18	0.63	Agree
I estimate total borrowing cost before taking loan	3.04	0.71	Agree
I know importance of prompt repayment	3.14	0.65	Agree
Sub-Mean (Credit Management)	**3.12**	**0.66**	High
Dimension Index	**0.78**		
D. Record Keeping & Documentation			
I keep records of loan and farm transactions	2.42	0.91	Disagree
I can interpret simple financial statements	2.38	0.88	Disagree
I seek financial/extension advice when needed	2.53	0.79	Agree
Sub-Mean (Record Keeping)	**2.44**	**0.86**	Low
Dimension Index	**0.61**		
Overall Mean Score	**2.81**	**0.77**	Moderate
Overall Financial Literacy Index (FLI)	**0.70**		

Source: Field Survey, 2026

Sources of Loans Accessed by Farmers

Table 2 presents the various sources of loans accessed by rural farmers in Delta State. The results show that cooperative societies constituted the most dominant source of credit, accounting for 46.8% of responses. This indicates that nearly half of the borrowing farmers relied on cooperative-based financial systems for accessing agricultural loans. Cooperative societies often provide more flexible lending conditions, lower collateral requirements, and peer monitoring mechanisms. This finding is consistent with Adeosun *et al*., (2024), who reported that cooperative membership significantly enhances access to agricultural credit among rural farmers. Similarly, Onah *et al*., (2024) observed that cooperative-based credit systems improved farmers' financial participation and enterprise growth. The prominence of cooperatives suggests that social capital plays a crucial role in rural credit access.

Microfinance banks ranked second, accounting for 31.4% of loan sources. This indicates that formal microfinance institutions are important contributors to rural financial inclusion. Microfinance institutions are generally structured to serve low-income clients and smallholder farmers who may not meet the stringent requirements of commercial banks. Twumasi *et al*., (2022) found that access to microfinance services significantly improved financial decision-making and agricultural productivity among rural households. The relatively high reliance on microfinance banks reflects their accessibility and alignment with small-scale agricultural financing needs. The Bank of Agriculture

accounted for 17.3% of loans accessed. As a specialized agricultural financing institution, its role in supporting rural farmers remains significant, though lower compared to cooperatives and microfinance banks. Abdullahi *et al*., (2024) reported that agricultural credit schemes positively influenced farm productivity in Nigeria, particularly when targeted toward smallholder farmers. The moderate patronage of the Bank of Agriculture may reflect bureaucratic processes or eligibility constraints.

Commercial banks accounted for only 9.0% of loan sources, indicating limited engagement of conventional banking institutions in smallholder agricultural financing. This low participation is consistent with findings by Adewale *et al.*, (2022) and Gbigbi *et al*., (2024), Gbigbi (2017), who noted that commercial banks often impose strict collateral and documentation requirements that discourage rural farmers from accessing formal credit. Informal sources such as friends/relatives (13.5%) and money lenders (7.7%) also played a notable role. The reliance on informal credit sources suggests that some farmers either face barriers in accessing formal institutions or prefer flexible repayment arrangements. However, informal credit may carry higher interest rates or weaker regulatory protection. NGO and development programs accounted for 5.8% of loan access, indicating limited but existing intervention by development agencies in rural financing. The distribution of loan sources in Table 2 reveals a dual structure of rural credit in Delta State, dominated by cooperative societies and microfinance institutions, with limited involvement of commercial banks. This structure underscores the importance of strengthening cooperative and microfinance systems to enhance sustainable agricultural financing and improve loan utilization outcomes.

Table 2: Sources of Loans

Loan Source	Frequency	Percent
Cooperative Society	146	46.8
Microfinance Bank	98	31.4
Bank of Agriculture	54	17.3
Commercial Bank	28	9.0
Friends/Relatives	42	13.5
Money Lenders	24	7.7
NGO/Development Programs	18	5.8

Source: Field Survey, 2026 Multiple Responses

Loan Utilization Pattern among Rural Farmers

Table 3 presents the mean scores of statements measuring the pattern of loan utilization among rural farmers in Delta State. The grand mean of 2.69 indicates that, on average, respondents demonstrated positive loan utilization behavior. The highest-ranked statement was "I used the entire loan for agricultural production purposes" (mean = 3.21), suggesting that most farmers reported allocating borrowed funds directly to productive farming activities. This finding indicates a strong commitment to the intended purpose of agricultural credit. Similar results were reported by Gbigbi (2019) and Etunim (2020), who found that access to agricultural credit significantly improved productive input use among smallholder farmers. The high score implies that loan diversion to non-agricultural uses was relatively limited. Closely following was the statement "The loan improved my farm productivity" (mean = 3.18), indicating that farmers perceived a direct positive impact of credit on output and performance. Nwandu (2021) reported that agricultural credit positively influenced productivity and farm income in Nigeria. The perception of productivity improvement reinforces the importance of credit as a production-enhancing tool rather than merely a liquidity-support mechanism.

Respondents also agreed that the loan obtained was sufficient for their farming activities (mean = 3.05). This suggests that the loan sizes accessed were generally adequate to meet production needs. Twumasi *et al*., (2022) noted that adequacy of credit significantly enhances farm investment decisions and production outcomes. Adequate loan size reduces the need for supplementary borrowing and improves operational efficiency. However, some areas revealed weaker performance. The statement "I kept records showing how the loan was utilized" recorded a mean of 2.47, falling below the acceptance threshold. This indicates deficiencies in systematic documentation of loan usage. This poor record-keeping practices among rural farmers limit effective monitoring of credit utilization and profitability assessment. Weak documentation may reduce the ability to evaluate financial performance accurately. The statement "I seek financial guidance before deciding how to use the loan" (mean = 2.41) also fell below the decision threshold, suggesting limited reliance on professional financial advice. Adeosun *et al*., (2024) emphasized that advisory services enhance responsible loan management and credit efficiency. The relatively low score in this area implies a potential gap in financial advisory support.

Importantly, respondents disagreed with the statement "Part of the loan was used for non-farming purposes" (mean = 2.14), indicating minimal diversion of loan funds to consumption or unrelated expenditures. Oluwatayo & Ojo (2018) highlighted that financially literate individuals are less likely to misuse borrowed

funds. The low mean score on diversion supports the relatively high Loan Utilization Index recorded in the study. The results in Table 3 demonstrate that rural farmers largely utilized loans for productive agricultural purposes, contributing to improved farm productivity. However, weaknesses in record keeping and limited consultation with financial advisors suggest areas where targeted financial literacy interventions could further strengthen loan utilization efficiency and long-term farm performance.

Table 3: Analysis of Loan Utilization Statements (n = 312)

Statement	Mean	Std. Dev	Decision	Rank
The loan obtained was sufficient for my farming activities	3.05	0.71	Agree	3rd
I used the entire loan for agricultural production purposes	3.21	0.66	Agree	1st
Part of the loan was used for non-farming purposes	2.14	0.83	Disagree	6th
I kept records showing how the loan was utilized	2.47	0.88	Disagree	5th
The loan improved my farm productivity	3.18	0.69	Agree	2nd
I experienced difficulty managing the loan effectively	2.39	0.91	Disagree	4th
I seek financial guidance before deciding how to use the loan	2.41	0.86	Disagree	4th
Grand Mean	**2.69**	**0.79**	Agree	

Source: Field Survey, 2026

Loan Utilization Index (LUI) Distribution

Table 4 presents the distribution of respondents according to the Loan Utilization Index (LUI), which measures the proportion of borrowed funds applied to productive agricultural activities. The mean LUI of 0.76 indicates a generally high level of productive loan utilization among rural farmers in Delta State. The results show that only 12.2% of respondents fell within the low utilization category (LUI = 0.00–0.49). This implies that a relatively small proportion of farmers used less than half of their loans for productive agricultural purposes. Farmers within this category may have diverted part of their credit to consumption or non-farm activities. Oladeebo, J. O., & Oladeebo (2018) observed that diversion of agricultural loans often occurs when borrowers face household financial pressures or lack adequate financial planning skills. Although the proportion is relatively small, it highlights the importance of monitoring and financial guidance in credit programs.

A further 23.1% of respondents were categorized under moderate utilization (LUI = 0.50–0.69). Farmers within this group allocated more than half of their loans to productive activities but still demonstrated partial diversion. Twumasi *et al*., (2022) noted that moderate loan utilization often reflects a balance between productive investment and consumption smoothing in rural households. While such allocation may help address short-term household needs, it may limit the full productive potential of agricultural credit. The largest proportion of respondents (40.4%) fell within the high utilization category (LUI = 0.70–0.89). This indicates that the majority of farmers used at least 70% of their loan funds for farm-related purposes. High utilization suggests responsible financial behavior and effective alignment of credit with agricultural production needs. Tuaneh (2025) reported that higher proportions of productive loan allocation significantly improved farm output and income levels among smallholder farmers. The dominance of this category supports the view that credit in the study area is largely production-oriented.

Additionally, 24.3% of respondents recorded full utilization (LUI = 0.90–1.00), meaning nearly one-quarter of farmers allocated almost all borrowed funds to agricultural activities. Sadiq (2025) emphasized that financially capable individuals are more likely to allocate financial resources efficiently toward productive investment. The presence of this substantial full-utilization group reflects disciplined financial management and strengthens the empirical relationship observed between loan utilization and farm performance. The distribution in Table 4.8 demonstrates that the majority of rural farmers in Delta State utilized agricultural loans predominantly for productive purposes, as reflected in the mean LUI of 0.76. The relatively small proportion of low-utilization cases suggests that loan diversion is limited, although continued financial literacy training and credit monitoring mechanisms would further enhance productive credit use and maximize farm performance outcomes.

Table 4: Distribution of Loan Utilization Index (n = 312)

LUI Range	Interpretation	Frequency	Percentage (%)
0.00 – 0.49	Low Utilization	38	12.2
0.50 – 0.69	Moderate Utilization	72	23.1
0.70 – 0.89	High Utilization	126	40.4
0.90 – 1.00	Full Utilization	76	24.3
Mean LUI		**0.76**	

Source: Field Survey, 2026

Effect of Financial Literacy on Loan Utilization among the Farmers

Table 5 presents the multiple regression results examining the effect of financial literacy on loan utilization among rural farmers in Delta State. The dependent variable was the Loan Utilization Index (LUI), while financial literacy and selected socio-economic variables were included as explanatory variables. The model shows strong explanatory power, with an R^2 of 0.594, indicating that approximately 59.4% of the variation in loan utilization was explained by the variables included in the model. The F-statistic (19.84, p = 0.000) confirms that the overall model was statistically significant, while the Durbin–Watson value of 1.962 suggests absence of autocorrelation. The VIF values below 2 indicate no multicollinearity concerns.

Financial Literacy Index (FLI) had a positive and highly significant effect on loan utilization (β = 0.486, p < 0.01). The standardized beta coefficient (0.521) shows that financial literacy was the strongest predictor in the model. This implies that an increase in financial literacy significantly improves the productive use of agricultural loans. The result supports the findings of Salami *et al*., (2024), who argued that financial literacy enhances financial decision-making and efficient allocation of financial resources. Similarly, Adelekan (2018) found that financially literate farmers demonstrated improved credit management and responsible loan utilization. The strong positive coefficient confirms that farmers with better knowledge of budgeting, credit terms, and repayment obligations are more likely to allocate loans to productive agricultural activities.

Education also had a positive and statistically significant effect (β = 0.012, p < 0.05), suggesting that years of formal schooling enhance loan utilization efficiency. This aligns with Das and Maji (2023), who identified education as a significant determinant of financial behavior among farmers. Educational attainment likely strengthens analytical ability and understanding of financial concepts, thereby improving loan management decisions. Income was marginally significant (p = 0.078), indicating that higher-income farmers may utilize loans slightly more effectively, although the effect was weaker compared to financial literacy. Twumasi *et al*., (2022) noted that income stability improves credit management capacity, but its influence may diminish when financial literacy is accounted for.

Age, farming experience, and household size were not statistically significant (p > 0.05), indicating that demographic characteristics alone do not significantly determine loan utilization when financial literacy is controlled for. This suggests that financial capability plays a more decisive role than age or experience in ensuring productive credit use. Regarding hypothesis testing, Ho_1 stated that financial literacy has no significant effect on loan utilization among rural farmers in Delta State. Since the p-value for FLI (0.000) is less than 0.05, the null hypothesis is rejected. Therefore, financial literacy has a statistically significant positive effect on loan utilization among rural farmers in Delta State.

Table 5: Effect of financial literacy on loan utilization among the farmers

Variable	Coefficient (β)	Std. Error	Std. Beta	t-value	p-value	VIF
Constant	0.173	0.094	–	1.842	0.067	–
FLI	0.486	0.072	0.521	6.732	0.000***	1.84
Age	0.003	0.002	0.087	1.421	0.156	1.62
Education	0.012	0.005	0.148	2.214	0.027**	1.71
Experience	0.004	0.003	0.079	1.338	0.182	1.58
Income	0.0000013	0.0000007	0.104	1.766	0.078	1.46
Household Size	-0.009	0.006	-0.092	-1.512	0.131	1.39
Model Summary						
Statistic	**Value**					
R^2	0.594					
Adjusted R^2	0.563					
Standard Error of Estimate	0.142					
F-statistic	19.84					
Prob (F-statistic)	0.000					
Durbin–Watson	1.962					

Source: Field Survey, 2026 *** and ** are significant at 1% and 5% levels respectively

CONCLUSION AND RECOMMENDATIONS

This study establishes that financial literacy is a crucial determinant of how effectively rural farmers convert agricultural credit into productive investment and improved enterprise performance in Delta State, Nigeria. The findings show that farmers' financial knowledge and management skills significantly enhance the utilization of borrowed funds, leading to more efficient farm operations and better economic outcomes. It further demonstrates that the developmental impact of

agricultural credit depends not only on access to finance but also on the capacity of beneficiaries to make informed financial decisions.

The evidence also highlights important gaps in financial capability, particularly in record-keeping practices, indicating areas where targeted capacity development is needed to strengthen farmers' financial decision-making. Generally, the results reinforce the importance of human capital development in maximizing the benefits of agricultural lending systems.

In conclusion, improving financial literacy among rural farmers is essential for enhancing the effectiveness of agricultural credit, increasing productivity, raising rural incomes, and promoting sustainable agricultural development in Nigeria and similar developing economies.

The findings suggest that:

i. Since the study found a moderate level of financial literacy (FLI = 0.70), rural development stakeholders should implement targeted financial literacy enhancement programmes to improve overall financial competence among farmers.
ii. Given that farmers performed better in credit management and budgeting than record-keeping, agricultural agencies should prioritize training on simplified farm record-keeping systems to strengthen financial monitoring and accountability.
iii. As cooperative societies and microfinance banks are the major sources of agricultural credit, they should expand outreach and strengthen lending services, while policies should also improve the accessibility and attractiveness of other credit sources to ensure a more diversified and inclusive agricultural financing system for rural farmers.
iv. Considering the high level of loan utilization (LUI = 0.76), credit providers should continue supporting productive loan usage by reinforcing monitoring mechanisms that encourage investment in farm production activities.
v. Since financial literacy significantly influences credit utilization, policymakers should integrate financial literacy development programmes into rural credit schemes to enhance effective loan use.
vi. Given that educational attainment also significantly affects credit utilization, adult education and farmer training initiatives should be expanded in rural communities to improve farmers' decision-making capacity in financial matters.

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