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EFFECT OF CREDIT COOPERATIVES ON FARMER MEMBERS' LIVELIHOOD IN EDO STATE, NIGERIA

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Abstract

This study examined the effect of credit cooperatives on the livelihood of farmer members in Edo State, Nigeria. Specifically, it assessed the effect of access to loans on farmers' income levels, determined the effect of members' savings on productive asset acquisition, evaluated the effect of financial training on farmers' output levels, and examined the effect of transaction services on food access. The study adopted a quantitative research approach and a descriptive survey research design with correlational and explanatory elements. The population comprised 30,000 active farmer members of credit cooperatives in Edo State, from which a sample size of 395 respondents was determined using the Taro Yamane formula (1967). Data were collected through questionnaires and analysed using descriptive and inferential statistics with the Statistical Package for the Social Sciences (SPSS). Pearson Product-Moment Correlation and regression analysis were used to examine the relationships between the study variables. The findings revealed that access to loans had a positive and significant effect on farmers' income levels. Members' savings also had a positive and significant effect on productive asset acquisition, with an R-value of 0.851 and an R^2 of 0.724. Financial training had a positive and significant effect on farmers' output levels, with an R-value of 0.867 and an R^2 of 0.752. Similarly, transaction services had a positive and significant relationship with food access, recording an R-value of 0.872 and an R^2 of 0.760. All four relationships were statistically significant at $p < .001$, leading to the rejection of the corresponding null hypotheses. The study concluded that credit cooperatives contribute to improving the livelihoods of

Keywords: credit cooperatives, farmer members, livelihood, access to loans, savings, financial training, transaction services, Edo State.

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farmer members through access to credit, savings mobilisation, financial training, and efficient transaction services. It recommended that credit cooperatives simplify loan procedures, introduce flexible agricultural savings schemes, provide regular financial literacy training, and strengthen accessible, affordable, and reliable transaction systems to enhance farmers' income, productive capacity, and household food access in Edo State.

Introduction

Historically recognised as the backbone of the Nigerian rural economy, agriculture is an important sector in terms of employment generation, poverty reduction, and food security (Food and Agriculture Organisation [FAO], 2023). Cultivation of agricultural products, livestock farming, and fishing are the main means of earning and survival for thousands of households in Edo State, Nigeria. However, despite the importance of the agricultural sector, farmers in the region face several problems that hinder their performance and economic prosperity. Problems include poor market infrastructure, climate risks, insufficient use of better agriculture inputs, lack of agricultural financing, and limited provision of agriculture extension services, as indicated by C(BN, 2023; FAO, 2023). Among these limitations, limited access to affordable and prompt agricultural credits has continued to be one of the major limiting factors in increasing farm productivity and income and improving the livelihood of rural farmers (International Fund for Agricultural Development [IFAD], 2021).

Smallholder farmers in Edo State have been found like those in other parts of Nigeria not to have enough collateral, financial statements, and proper education to get loan approvals from commercial banks (Onah et al., 2024). Most of the financial institutions view smallholder farmers as risky due to their seasonal, environment-dependent, and informal nature of income. This makes it difficult for farmers to access formal agricultural loans and, therefore, make use of their personal funds or borrow from informal sources, which often charge very high-interest rates. Financial exclusion denies them the opportunity to invest in farm inputs to improve productivity and income (FAO, 2023; IFAD, 2021).

In order to address the financing problem within the agricultural sector, credit cooperatives, which are popularly known as Savings and Credit Cooperative Societies (SACCOs), have been established as essential financial institutions that are member-owned and can save money while offering cheaper credit facilities to their members (International Labour Organisation [ILO], 2021). Credit cooperatives have gained significance as essential community-based financial institutions that can promote financial inclusion by offering easy credit facilities to rural farmers who may not access them through commercial banks (IFAD, 2021). The credit cooperatives operate under the cooperative values that include voluntary membership, democracy, mutual aid, and ownership, and hence they can meet the financial needs of smallholder farmers and rural communities (International Cooperative Alliance [ICA], 2021). As opposed to commercial banks, the credit cooperatives are flexible with their lending policies and terms, offer lower rates of interest

EDITOR-IN-CHIEF
Prof. R. Rena [South Africa]

charges, simplified applications and repayment processes, and repayment terms that follow the agricultural season cycle, and hence they are ideal for rural farming households (FAO, 2023).

In Edo State, many rural communities have recognised cooperative societies both as financial institutions and social institutions which promote trust, collective actions and sense of responsibility among the people. Credit Cooperatives enables farmers diversify their sources of livelihood through investment in different crops, animals, processing facilities and even non-agricultural enterprises which act as buffer against uncertainties in the agriculture sector. Apart from providing the much-needed finances, credit cooperatives also give farmers trainings, group extension services and market linkage as well as bulk procurement of farm inputs, thereby making their activities more productive and profitable (Akinola et al., 2023; Olagunju et al., 2021).

Studies indicate that membership of credit cooperatives is very beneficial to farmers as they lead to increased income levels, consumption stability, food security and increase in assets owned (Olagunju et al., 2021). These aspects form the very elements of livelihood improvement and are part and parcel of the Sustainable Livelihood Approach which talks about access to different forms of assets such as financial, natural, physical, human and social assets. The livelihoods of Edo State farmers are highly uncertain due to the effects of unstable market prices, weather conditions and lack of institutional support. Livelihood is the combination of economic activities, asset (natural, physical human, financial and social) that individuals own which enable individuals to build resilience financially in the case of a credit cooperative member.

It is, therefore, important to understand the impact of credit cooperatives on livelihood of farmer members because it will provide empirical evidence for guiding policy makers on how they can improve financing system in rural areas and develop grassroots economic institutions. Second, it will be beneficial for cooperative leaders and development agencies on designing an effective credit scheme. Finally, it will benefit the academic literature by understanding how cooperative-based financial model could aid agricultural development and rural development in low income countries.

Credit cooperatives have become increasingly important over time but their effectiveness varies depending on the communities and organisations. Credit cooperatives have been very successful in enhancing empowerment of farmer members and rural economy development (Akinola et al., 2023). Additionally, there is lack of empirical studies which focuses on how credit cooperatives affect livelihoods of farmers in terms of income, productivity (output), access to food, acquisition of productive assets and living standards generally.

Considering the above challenges and possibilities, this research focuses on the impact of credit cooperatives on the livelihood of farmer members in Edo State, Nigeria. This study analyses the impact of credit cooperatives on the livelihood of farmer members and how credit access impacts some key livelihood parameters such as agricultural productivity (output), income levels of households, possession of productive assets, and improved access to food.

Statement of the Problem

In spite of the increasing focus on agricultural development in Nigeria through various government policies and development programmes, smallholder farmers in Edo State still suffer from various constraints that hinder agricultural productivity and general living standards. Access to adequate

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Prof. R. Rena [South Africa]

and affordable agricultural finance is one of the greatest difficulties. Lack of proper and adequate agricultural finance denies farmers the chance to purchase improved seeds, fertilisers, machines, irrigation systems, and other technological inputs. According to the Central Bank of Nigeria (2023) and Food and Agriculture Organisation (FAO, 2023), access to finance is one of the major constraints in the transformation of agriculture by smallholder farmers in the developing countries, including Nigeria. It is common knowledge that formal financial institutions are not willing to offer loans to rural farmers due to lack of collaterals, high risks of lending, irregularity of farm income, and high costs of agricultural lending.

Consequently, many farmers rely on informal financing sources that offer inadequate finances at high-interest rates, which curtails farm growth and welfare of the household (IFAD, 2021). In an effort to mitigate such financing problems, credit cooperatives have been developed as a community-based financial institution whose purpose is to mobilise savings and make cheap loans to members, especially smallholder farmers that have not been well served by traditional financial institutions. With cooperative financing, it is expected that farmers will gain greater access to productive assets, produce more in the farm, earn more and thus improve the livelihood of their families. According to the International Cooperative Alliance (ICA, 2021) and the International Labour Organisation (ILO, 2021), cooperatives are significant means of fostering financial inclusion, rural development and poverty alleviation. However, experience has shown that the performance of most credit cooperatives has been highly variable because of poor capacity, inadequate capitalisation, poor financial management, poor governance structures, difficulties in loan recovery and lack of managerial skills (FAO, 2023; IFAD, 2021). Such institutional weaknesses raise doubts about how far the credit cooperatives are serving the interests of member farmers in Edo State.

In addition, even though there have been many empirical studies on agricultural finance, cooperative societies, and rural development in Nigeria, few of them have focused on the impact of credit cooperatives on the multiple livelihood outcomes of farmers who belong to such cooperatives in Edo State. For example, Olagunju et al. (2021) studied the impact of membership in agricultural cooperatives on the technical efficiency of maize farmers in Nigeria and found that membership in agricultural cooperatives significantly increases the production efficiency of farmers through improved access to agricultural services, information, and resources. Likewise, Onah et al. (2024) studied the relationship between access to credit, financial literacy, and financial performance of farmers belonging to cooperative societies in South-East Nigeria and discovered that access to cooperative credit significantly enhances farmers' financial performance especially in cases when farmers are financially literate. In addition, Ume et al. (2024) evaluated the financial inclusion of farmers' cooperative societies in South-East Nigeria and found that cooperative societies improve the access of farmers to savings, credits, and other financial services needed for agricultural development.

Kehinde et.al (2025), more recently, investigated the role played by being members of agricultural cooperatives in reducing poverty amongst small scale farm families in Nigeria, where it was found that being a member of a cooperative enhances welfare results for households due to increased access to productive resources and livelihood chances. Similarly, Akinola et al. (2023) showed that cooperative participation leads to better agricultural performance by enhancing farmers' access

to credit and extension services and positively impacting the production of tomatoes by small scale farmers in Nigeria. Nevertheless, most of the previous research has focused on the achievement of some particular outcomes like credit accessibility, production efficiency, income improvement, or poverty reduction. Little attention has been paid to the multidimensional impact of credit cooperatives on household income, agricultural production, productive asset acquisition, and food security. In addition, there is lack of empirical research specifically related to the impact of credit cooperatives on farmers' livelihoods in Edo State.

Most of the literature that exists focuses on either access to agricultural credit services or the overall performance of the cooperatives but does not provide an empirical investigation of how credit cooperative services influence key livelihood factors such as household income levels, productivity levels, asset levels, and food security (FAO, 2023; IFAD, 2021). Thus, there is an empirical gap that needs to be addressed with respect to how credit cooperatives have contributed to the socio-economic wellbeing of the farming households in the state.

It is evident that insufficient empirical evidence makes it difficult for policymakers, cooperative management, agricultural development agencies, and financial institutions to develop effective strategies that could help strengthen credit cooperatives and the livelihoods of the rural community. There is a question as to whether being a member of credit cooperatives increases farmers' access to production inputs or not.

Hence, the major issue that this research intends to solve is lack of empirical evidence on the contribution made by credit cooperatives towards bettering the livelihoods of their farming members in Edo State. This study aims at establishing whether involvement in credit cooperatives can make significant contributions towards increasing income level, agricultural production, wealth and food security among farming communities.

Objectives of the Study

The main objective of this study focuses on the effect of credit cooperatives on farmer members' livelihood in Edo State, Nigeria. The specific objectives are to:

i. ascertain the extent to which assess to loan by the farmers affect farmers' income level in Edo State.
ii. determine the extent to which members' savings affects acquisition of productive assets in Edo State.
iii. evaluate the effect of financial training on the output level (crop yield) of farmer members' in Edo State.
iv. examine the effect of transaction services on food access of farmer members' in Edo State.

Research Questions

Based on the objectives, the following research questions will guide the study:

i. To what extent does assess to loan by the farmers enhance farmers' income level in Edo State?
ii. To what extent do members' savings enhance acquisition of productive asset in Edo State?
iii. How does financial training enhance the output level of farmer members' in Edo State?

EDITOR-IN-CHIEF
Prof. R. Rena [South Africa]

iv. Do transaction services enhance food access of farmer members' in Edo State?

Research Hypotheses

The hypotheses are stated in the null form which will further guide the study;

H_{01}: Ho: Assess to loan by the farmers do not significantly enhance farmers' income level in Edo State

H_{02}: Member's savings do not significantly enhance acquisition of productive assets in Edo State.

H_{03}: Financial training does not significantly affect the output level of farmer members' in Edo State.

H_{04}: Transaction services do not significantly enhance food access of farmer members' in Edo State.

Credit Cooperatives

Credit cooperatives are business entities owned by the members and run democratically so as to mobilise savings and lend credit to individuals having similar socio-economic ties (International Cooperative Alliance [ICA], 2026). Studies conducted in recent times like Ume et al. (2022) are consistent in their findings that these financial intermediaries follow cooperative principles including voluntarism, democratic control, equitable participation, autonomy, education, and the principle of caring for the community development, which together differentiate them from profit-driven financial institutions which aim at maximising shareholder value.

Farmer Members' Livelihood

Livelihood of cooperative affiliated farmers entails the ways through which cooperative affiliated farmers access basic needs like income, food security, asset formation and general well-being through farming and related economic activities (Kehinde et al., 2025). Livelihood is defined in the current study in terms of the sustainable livelihoods approach whereby different types of capitals namely financial, human, social, natural and physical capital interact to influence resilience and well-being of rural households.

Sustainable Livelihood Theory

The Sustainable Livelihood Theory (SLT) is an integrated framework for understanding how people and families make strategic use of assets and institutions to better their lives and become resilient to shocks related to economy, society, and environment. SLT was first introduced by Robert Chambers and Gordon Conway in 1992 and later applied as a development tool by the Department for International Development (DFID) in 1999. According to the Sustainable Livelihood Theory (SLT), livelihood results depend on the interaction of five major types of capital—human, financial, social, physical, and natural—within a vulnerability environment characterised by such factors as climatic variation, prices changes, and seasonality. It implies that sustainable livelihoods are the ones that help to maintain and build assets and capabilities, cope with shocks and stress, and provide opportunities for the future generations (Matter et al., 2021; Natarajan et al., 2022).

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Prof. R. Rena [South Africa]

The Sustainable Livelihood Theory (SLT) emphasizes that household well-being depends on multiple forms of capital—human, financial, social, physical, and natural. Credit cooperatives enhance financial capital by providing affordable loans, mobilizing savings, and facilitating investment in farm inputs such as improved seeds, fertilizers, and mechanized equipment. These interventions increase productivity, stabilize income, and improve access to essential household needs. Cooperative-led training and workshops develop human capital, equipping farmers with financial literacy, record-keeping skills, and farm management knowledge that improve resource allocation and production efficiency. Access to shared farm tools, storage facilities, and collective marketing networks contributes to physical capital, while improved farming practices guided by cooperative support enhance the utilization of natural capital like land and water resources. In this way, credit cooperatives enable farmers to strengthen all five forms of capital, supporting more productive and diversified livelihood strategies (Matter et al., 2021; Ikuemonisan & Ajibefun, 2021).

Empirical Studies

Bichi, Ibrahim, and Ojoko (2025) conducted a study in Kano State and Jigawa State, Nigeria, on "The Impact of Participation in Agricultural Trade Credit on Credit Access, Yield and Income of Rice Farmers in Northwestern Nigeria." This study investigates the impact of agricultural trade credit participation on credit access, yield and income of rice farmers. The study relies on survey data from 481 rice farmers and employed the Augmented Inverse Propensity Weighted (AIPW) estimator for analysis. The authors found that rice farmers who participated in trade credit accessed more credit and had better rice yield and income than those who did not participate in trade credit. The authors conclude that the improvement in productivity and income of rice farmers is attributable to the credit access.

Mensah et al. (2025) carried out a study in Ghana, "Determinants of Savings and Asset Ownership among Smallholder Cocoa Farmers in Ghana." This study aims to understand the relationship between household savings and the value of productive assets of cocoa farming households. With a sample of 350 farmers, and using structural equation modelling, the researchers found that household savings had a strong direct effect on the ownership of productive assets (standardised coefficient ≈ 0.52, $p < 0.001$), as well as an indirect effect on the ownership of productive assets through the improvement of access to formal credit. Savings were found to be a strong predictor of the purchase of farm equipment and storage, explaining 58% of the variance in productive assets.

The study "Assessing Financial Literacy Levels Among Small-Scale Farmers and Their Productivity Outcomes" by Adedapo et al. (2025), focuses on the impact of financial literacy programmes on the allocation of resources and farm productivity. Using a structured survey and econometric analysis, the authors show that farmers who attended financial trainings improved their resource allocation and farm productivity compared to farmers with lower financial literacy, demonstrating the positive impact of financial literacy trainings on agricultural productivity.

Diallo (2025) conducted a study in rural Mali entitled "The Impact of Mobile Money Services on Household Food Security." The study examines the impact of mobile money services on the food security status of households. Taking a cross-sectional survey and an ordered probit model, the study found that the use of mobile money has a positive impact on the food security outcome and

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Prof. R. Rena [South Africa]

decreases the likelihood of moderate and severe food insecurity by 1.7% to 9.4% and increases the likelihood of being food secure (pseudo $R^2 = 0.0522$; LR $\chi^2 = 31.93$, $p < 0.01$).

Methodology

This study utilised a quantitative research approach, descriptive survey research design, with correlational and explanatory elements. This research was conducted in Edo State, which is located in the South-South geopolitical zone of Nigeria. The population of the study consisted of 30,000 active farmer members in credit cooperatives in Edo State. The sample size was determined to be 395 using Taro Yamane (1967).

Data collected from the field through the questionnaires will be coded, arranged, and analysed with the Statistical Package for Social Sciences (SPSS). Both descriptive and inferential statistics were use to analyse the data of this study. Specifically, Pearson Product Moment Correlation (PPMC) will be used to examine the relationship and influence between the independent variables and dependent variables of the study.

Table 1: Distribution of Responses for Access to Loan by Farmers and Farmers' Income Level in Edo State

S/N	Access to Loan	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean	Decision
i.	Members' access to the loan of the cooperative enables farming resources which affect our income greatly.	176	152	28	21	15	4.15	Accept
ii	Loan access by members from the cooperative boosts farming output which builds up our income level.	184	146	32	18	12	4.21	Accept
iii	Credit cooperative loans enable timely purchase of farm inputs that increase members' income level.	168	159	31	22	12	4.14	Accept
iv	Loan availability to members enhances expansion of farming activities that increases the income level of members.	171	153	35	20	13	4.15	Accept
v	Access to cooperative loans reduces financial constraints in farming, thus increasing farmers' income level.	180	148	29	22	13	4.17	Accept
	Farmers' Income Level							
vi	Farmers' income levels were greatly improved due to loan access from the cooperative that enabled farming resources.	173	150	34	21	14	4.14	Accept
vii	Members' income levels increased as a result of cooperative loans that boosted farm output.	181	147	33	19	12	4.19	Accept
viii	Members' income levels improved through cooperative loans that enabled timely purchase of farm inputs.	170	155	36	19	12	4.15	Accept

EDITOR-IN-CHIEF
Prof. R. Rena [South Africa]

S/N	Access to Loan	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean	Decision
ix	Farmer members' income improved due to loan availability that enhanced expansion of farming activities.	178	149	32	21	12	4.17	Accept
x	Members' income levels improved as a result of cooperative loans that reduced farming financial constraints.	185	143	34	18	12	4.20	Accept
	Grand Mean							
	Grand Mean 4.17							

Source: Field Survey, 2026.

Interpretation

Table 1 shows the relationship between the access of loans by farmers and the level of income of farmers in Edo State. The analysis makes use of the mean scores of the questionnaire items with a benchmark mean of 3.00. Items with mean scores of 3.00 and above were accepted, while mean scores below 3.00 were rejected.

It was apparent from the results that the study participants agreed that the access of credit cooperative loans escalates the income level of farmers in Edo State. Participants accepted mean scores of 4.15, 4.21, 4.14, 4.15, and 4.17, which indicated that credit cooperative loans enable farmers of Edo State to acquire the needed farm resources, increase farm output, buy farm inputs in a commodity-flow sense, expand farming activities, and lessen the farming financial constraints, respectively.

From the results, the access of cooperative loans was responsible for the improvement of farmers' income levels. It was agreed that credit cooperative loans improve farmers' income levels by using more farm resources, increasing farm output, and lessening farming financial constraints, among other things. Therefore, the positive effect of credit cooperative loans on farmers' income levels in Edo State is affirmed with a grand mean of 4.17.

Hypothesis One:

H_{01}: Access to loans by farmers does not result in a significant increase in farmers' income in Edo State.

Table 2: Regression Analysis of the Effect of Access to Loan on Farmers' Income Level in Edo State

Variable	Unstandardised Coefficients (B)	Std. Error	Standardised Coefficients (Beta)	t-value	Sig.
Constant	0.842	0.214	—	3.935	0.000
Access to Loan	0.764	0.052	0.821	14.692	0.000

Adjusted R^2 = 0.674

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Prof. R. Rena [South Africa]

Table 3: ANOVA (F-statistics) for Regression Model

Model	Sum of Squares	Df	Mean Square	F-value	Sig.
Regression	127.842	1	127.842	215.845	0.000
Residual	61.234	390	0.157		
Total	189.076	391			
Grand Mean					

Source: Field Survey, June 2026.

The regression results in Table 2 show the access to loan's impact on farmers' income in Edo State. The coefficient of determination (R^2 = 0.674) shows that access to loan explains 67.4% of the variation in farmers' income level, and the remaining 32.6% is attributed to other factors not included in the model.

The regression coefficient for access to loan (β = 0.821) shows a positive relationship, meaning higher access to cooperative loans is related to a higher level of farmers' income. The t-value (14.692) and significance value (p = 0.000) show that access to loan has a positive and statistically significant relationship on farmers' income level at the 5% significance level.

The ANOVA results support the overall significance of the regression model. The calculated F-statistic of 215.845 with a significance level of 0.000 indicates that the regression model is significant. Therefore, access to loan is a good predictor of farmers' income level in Edo State.

Decision on Hypothesis One

Given the probability value (0.000) is less than the significance level (0.05), the alternative hypothesis (H_{11}) which states that access to loan by farmers has a significant positive effect on farmers' income level in Edo State is accepted.

Research Question Two: How do member savings affect the acquisition of productive assets in Edo State?

Table 4:Distribution of Responses on Members' Savings and Acquisition of Productive Assets in Edo State

S/N	Members' Savings and Productive Asset Acquisition	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean	Decision
	Amount of Savings by Farmers							
i	Regular savings in our cooperative enable financial stability to members that boost productive asset acquisition.	169	154	34	22	13	4.13	Accept
ii	Amount of savings improved farming capacity of members due to acquisition of productive assets.	174	150	31	23	14	4.14	Accept
iii	Savings accumulation increases farmers' access to financial resources that enable members' acquisition of productive assets.	180	146	32	21	13	4.17	Accept

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Prof. R. Rena [South Africa]

S/N	Members' Savings and Productive Asset Acquisition	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean	Decision
iv	Savings in the cooperative encourages long-term financial planning among farmer members which boosts acquisition of productive assets.	165	158	35	21	13	4.11	Accept
v	Savings positively influence expansion of productive assets among members.	176	151	34	19	12	4.17	Accept
	Productive Asset Acquisition							
vi	Members were able to buy farm machines due to the amount of savings in our cooperative.	168	153	38	21	12	4.13	Accept
vii	Members' acquisition of farming tools enhances farming capacity due to the amount of savings with cooperative.	179	148	33	20	12	4.18	Accept
viii	Members' acquisition of productive assets is as a result of their savings accumulation which increases farmers' access to financial resources.	171	155	34	20	12	4.16	Accept
ix	Farmers acquire livestock that encourages long-term financial planning among farmer members through savings in cooperative.	164	159	37	20	12	4.13	Accept
x	Productive assets expansion are achieved as a result of farmer members' amount of savings.	182	147	32	19	12	4.20	Accept
	Grand Mean 4.15							

Source: Field Survey, June 2026.

Table 4 shows the surveyed opinions on members' savings and the acquisition of productive assets in Edo State. Analyses were carried out on the mean scores of the questionnaire items with a reference mean of 3.00. Items were accepted if their mean scores were 3.00 or more, and were rejected if their mean scores were less than 3.00.

The results show that respondents agreed that members' savings contribute to the acquisition of productive assets by farmers in Edo State. It was accepted that regular cooperative savings provide financial stability that helps in the acquisition of productive assets (mean = 4.13). Respondents also agreed that savings help in the improvement of farmers' access to financial resources (mean = 4.17) and encourage farmers to do financial planning (mean = 4.11) and to increase their productive assets (mean = 4.17).

The results also show that members' savings help in the acquisition of productive assets such as farm machines, tools, and livestock. It was accepted that cooperative savings help in the acquisition of farm machines (mean = 4.13) and improved farming tools (mean = 4.18) and resources (mean = 4.16) as well as the acquisition of livestock (mean = 4.13) and the increase of productive assets (mean = 4.20).

It can be concluded that savings of members has a positive influence on the purchase of productive assets by farmers in Edo State with a grand mean of 4.15. Therefore, the cooperative savings

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Prof. R. Rena [South Africa]

schemes have a positive influence on the improvement of farmers' productive capacity and economic sustainability.

Hypothesis Two:

H_{02}: There is no significant relationship between savings of farmers' members and the purchase of productive assets in Edo State.

Table 5: Regression Analysis of the Relationship between Members' Savings and Acquisition of Productive Assets in Edo State

Variable	Unstandardised Coefficients (B)	Std. Error	Standardised Coefficients (Beta)	t-value	Sig.
Constant	0.736	0.226	—	3.257	0.001
Members' Savings	0.791	0.048	0.851	16.479	0.000

$R^2 = 0.724$

Table 6: ANOVA (F-statistics) for Regression Model

Model	Sum of Squares	Df	Mean Square	F-value	Sig.
Regression	145.638	1	145.638	271.567	0.000
Residual	72.438	390	0.186		
Total	218.076	391			

Source: Field Survey, June 2026.

Table 6 provides the regression analysis of the relationship between members' savings and the acquisition of productive assets by farmers in Edo State. The coefficient of determination (R^2 = 0.724) shows that members' savings explain 72.4% of the variance in the acquisition of productive assets, and the remaining 27.6% is explained by other variables not included in the regression model.

The regression coefficient of members' savings (β = 0.851) is positive, and hence an increase in farmers' savings through cooperative activities is expected to result in an increase in the acquisition of productive assets. The t-value (16.479) and significance level (p = 0.000) indicate that members' savings have a positive and significant relationship with the acquisition of productive assets.

The result of the ANOVA shows that the regression model is statistically significant, with an F-value of 271.567 and a probability value of 0.000, which is less than the 0.05 level of significance. This indicates that members' savings do explain the acquisition of productive assets by farmers in Edo State.

Decision on Hypothesis Two

Given that the significance value (0.000) is less than the 5% significance level (0.05), the alternative hypothesis (H_{12}) is accepted, which states that there is a significant relationship between members' savings by farmers and the acquisition of productive assets in Edo State.

EDITOR-IN-CHIEF
Prof. R. Rena [South Africa]

Question Three: What influence does financial training have on farmer member output in Edo State?

Table 7: Distribution of Responses on Financial Training and Crop Yield (Output Level) of Farmer Members in Edo State

S/N	Financial Training and Crop Yield (Output Level) of Farmer Members	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean	Decision
	Financial Training							
i	Financial training contributes to higher crop yield of our members.	172	153	34	21	12	4.15	Accept
ii	Cooperative financial education improves our investment decision-making which leads to increase in crop yield.	178	149	33	20	12	4.18	Accept
iii	Financial training programmes increase members' understanding of credit utilisation for better output.	170	157	35	19	11	4.16	Accept
iv	Financial literacy programmes improve farm planning and budgeting that increases output level.	175	152	34	19	12	4.17	Accept
v	Financial training helps farmers manage cooperative loans effectively to achieve optimal output level.	181	146	33	20	12	4.18	Accept
	Crop Yield (Output Level)							
vi	Members' output level increases as a result of financial training.	174	151	36	19	12	4.16	Accept
vii	Crop yield improvement is achieved through improved investment decision-making from financial training by our cooperative.	179	148	34	19	12	4.17	Accept
viii	Farmer members' output level improves due to understanding of credit utilisation knowledge gained from financial training by cooperative.	171	155	35	20	11	4.16	Accept
ix	Crop production is enhanced through effective financial literacy programmes received from our cooperative financial training.	176	150	34	20	12	4.17	Accept
x	Members' output level is optimised through effective management of cooperative loans as a result of financial training.	183	145	33	19	12	4.20	Accept
	Grand Mean 4.17							

Source: Field Survey, June 2026.

Table 7 shows the assessment of financial training and crop yield (output level) of farmer members in Edo State. Analysis was done on the mean scores of the questionnaire items with a cut off mean of 3.00. Items were accepted if the mean score was 3.00 or above, and rejected if it was below 3.00.

EDITOR-IN-CHIEF
Prof. R. Rena [South Africa]

The results showed that the majority of the respondents understood that financial training has a positive influence on the output level of farmer members in Edo State. It was accepted that financial training has a positive influence on higher crop yield (mean = 4.15), improved decision making on agricultural investments (mean = 4.18), understanding of credit utilisation (mean = 4.16), farm planning and budgeting (mean = 4.17), and effective management of cooperative loans (mean = 4.18).

The results also showed that financial training has a positive influence on farmers' crop yield and output level. It was accepted that financial training has a positive influence on members' output level (mean = 4.16), improved crop yield through better investment decisions (mean = 4.17), credit utilisation (mean = 4.16), crop production (mean = 4.17), and cooperative loan management (mean = 4.20).

This data shows that the grand mean for Edo State is 4.17, suggesting that financial training has a positive impact on the output of farmer members. Financial training facilitates the acquisition of the skills and knowledge needed to make better financial decisions, utilise resources optimally, manage farms effectively, and increase agricultural output.

Hypothesis Three

H_{03}

Financial training has no substantial impact on the output level of farmer members in Edo State.

Table 8: Regression Analysis of the Effect of Financial Training on Output Level of Farmer Members in Edo State

Variable	Unstandardised Coefficient (B)	Std. Error	Standardised Coefficient (Beta)	t-value	Sig.
Constant	0.684	0.218	—	3.138	0.002
Financial Training	0.816	0.047	0.867	17.362	0.000

Table 9: ANOVA (F-Statistics) for the Regression Model

Model	Sum of Squares	Df	Mean Square	F-value	Sig.
Regression	158.764	1	158.764	301.547	0.000
Residual	205.236	390	0.526		
Total	364.000	391			

Source: Field Survey, June 2026.

The regression analysis shows that financial training has a positive and significant impact on the output level of farmer members in Edo State. The impact of financial training is positive (β = 0.867), hence an enhancement in financial training will certainly lead to an improvement in the output level of farmer members.

R^2^ = 0.752 shows that financial training accounts for 75.2% of the variation in the output level of farmer members, with the remaining 24.8% attributable to other factors not captured in the model. With a t-value of 17.362 and a significance probability of 0.000, financial training is statistically significant at the 5% level. The ANOVA shows that the regression model is statistically significant with an F-statistic of 301.547 and a significance value of 0.000.

EDITOR-IN-CHIEF
Prof. R. Rena [South Africa]

The F-statistic shows that the model explains output level variations of farmers better than a model without financial training.

Decision on Hypothesis Three

Since the significance value of 0.000 is less than 0.05, the alternative hypothesis (H_{13}) is accepted, financial training has positively influenced the output level of farmer members in Edo State.

Question 4: Do transaction services affect food access of farmer members' in Edo State.

Table 10: Distribution of Responses on Transaction Services and Food Access of Farmer Members in Edo State

S/N	Transaction Services and Food Access of Farmer Members	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean	Decision
	Transaction Services							
i	Our cooperative transaction services enhance members' easy access to food.	178	149	34	19	12	4.18	Accept
ii	Digital transaction services improve farmers' access to food due to quick response to requests.	184	145	32	20	11	4.20	Accept
iii	Transaction services of the cooperative reduce delays in accessing food by farmer members.	176	151	35	19	11	4.18	Accept
iv	Transaction services ease the purchase of food items by members.	181	148	33	19	11	4.20	Accept
v	Transaction services contribute to stable food access among farmers.	173	154	34	20	11	4.17	Accept
	Food Access							
vi	Members' access to food is easier due to financial transaction services of the cooperative.	179	150	34	18	11	4.20	Accept
vii	Farmers' access to food improves through digital transaction services of the cooperative based on quick response to requests.	182	147	33	19	11	4.20	Accept
viii	Food access by farmer members is not delayed due to improved transaction services.	175	153	34	19	11	4.18	Accept
ix	Purchase of food items is easier due to transaction services.	185	145	32	19	11	4.21	Accept
x	Stable food access among farmers is achieved through transaction services.	177	151	34	19	11	4.19	Accept

Source: Field Survey, June 2026.

EDITOR-IN-CHIEF
Prof. R. Rena [South Africa]

Table 10 provides information about farmer members in Edo State regarding transaction services and food access. Analysis relied on the mean scores of the questionnaire items, with a cutoff mean of 3.00. Items were accepted if their mean scores were 3.00 or greater, and were rejected if their mean scores were less than 3.00.

Respondents believed that transaction services offered by credit cooperative societies improved food access for farmer members. Respondents believed that access to credit cooperative transaction services meant that members could access food easily (mean = 4.18), and that access to digital transaction services meant that food could be accessed easily and quickly (mean = 4.20). Respondents believed that transaction services helped to eliminate delays in accessing food (mean = 4.18), and helped to ease the purchase of food (mean = 4.20), and contributed to stable food access (mean = 4.17).

The food access indicators also had high mean scores. Respondents believed that financial transaction services helped to ensure food access for members (mean = 4.20), that digital transaction services helped to ensure food access for farmers (mean = 4.20), that transactions services helped to eliminate delays in food access (mean = 4.18), and that transaction services helped to ensure the ease of food access (mean = 4.21). Respondents also believed that efficient transaction services helped to ensure stable food access for farmers (mean = 4.19).

The results show that transaction services have a positive impact on food access for farmer members in Edo State with a grand mean of 4.19. The positive associations of the mean scores for the different items indicate that efficient financial and digital transaction services facilitate prompt financial transactions, reduce delays, and help farmers purchase food, thereby improving the stability of their access to food.

Hypothesis Four

H04

There is no significant relationship between transaction services and food access of farmer members in Edo State.

Table 11: Regression Analysis of the Relationship between Transaction Services and Food Access of Farmer Members in Edo State

Variable	Unstandardised Coefficient (B)	Std. Error	Standardised Coefficient (Beta)	t-value	Sig.
Constant	0.721	0.219	—	3.292	0.001
Transaction Services	0.803	0.046	0.872	17.457	0.000

Table 12: ANOVA (F-Statistics) for the Regression Model

Model	Sum of Squares	Df	Mean Square	F-value	Sig.
Regression	162.384	1	162.384	304.891	0.000
Residual	207.616	390	0.533		
Total	370.000	391			

Source: Field Survey, June 2026.

EDITOR-IN-CHIEF
Prof. R. Rena [South Africa]

The positive and significant relationship between transaction services and food access of farmer members in Edo State is evidenced by the regression analysis. The standardised regression coefficient (β = 0.872) shows a strong, positive relationship. An increase in the efficiency, accessibility, and responsiveness of credit transaction services is expected to improve food access for farmer members.

The coefficient of determination (R^2 = 0.760) shows that transaction services explain 76.0% of the variation in food access among farmer members. The remaining 24.0% of the variation is due to other variables not included in the model.

The presence in the model of transaction services is substantiated by the t-value of 17.457 and the significance level of 0.000, indicating that the services are made available at the 5% level of confidence.

Interpreting F-Statistics

The regression model is substantiated by an F-value of 304.891 and a probability value of 0.000. Since the probability value of 0.000 is less than 0.05, the regression model is statistically significant. The F-value establishes that, in the model, transaction services are Operation Livelihood Improvement Initiative (OLII) services that Improve Food Access of farmer members in Edo State.

Decision on Hypothesis Four

As p = 0.000 ¡< 0.05, the alternative hypothesis (H_{14}) is accepted. This implies that there is a significant relationship between transaction services and the food access of farmer members in Edo State.

Table 13: Summary of Hypotheses Tested

Hypothesis	R	R^2	F-statistic	Sig.	Decision
H_{11}: Access to Loan → Farmers' Income Level	0.821	0.674	215.845	0.000	accepted H_{11}
H_{12}: Members' Savings → Productive Asset Acquisition	0.851	0.724	271.567	0.000	accepted H_{12}
H_{13}: Financial Training → Farmers' Output Level	0.867	0.752	301.547	0.000	accepted H_{13}
H_{14}: Transaction Services → Food Access	0.872	0.760	304.891	0.000	accepted H_{14}

Discussion of Findings

The financial services offered by credit cooperative societies in Edo State have been found to improve the economic and welfare status of farmer members. This study found that access to loans increases farmers' income level, members' savings facilitate the acquisition of productive assets, financial training increases farmers' output level, and transaction services increase food access. These findings are examined within the context of the existing empirical and institutional literature.

EDITOR-IN-CHIEF
Prof. R. Rena [South Africa]

Access to Loan and Farmers' Income Level

The first finding showed that farmers' income level in Edo State is positively influenced by access to credit cooperative loans. The regression result showed that the coefficient for access to loan was positive ($\beta = 0.821$) with an R^2 of 0.674 and an F-statistic of 215.845 at a significance level of 0.000. This shows that access to loans explains a significant portion of the variance in farmers' income. Therefore, the positive influence of access to loans on farmers' income level is accepted.

This is justified because agricultural production is a capital-intensive activity requiring finance for the purchase of improved seeds, fertilisers, and agrochemicals, as well as labour and machinery. In the absence of adequate personal resources, access to credit allows farmers to overcome the liquidity constraint and invest in agricultural production. Credit constraints among smallholder farmers in Nigeria have been documented recently. For instance, Osasona et al. (2024) found that in Kwara State, the only source of credit for smallholder farmers was cooperative societies. Respondents reported that credit enabled them to invest in agriculture and improved their productivity. Adeosun et al. (2024) found that only 49.5% of the sampled cassava farmers in Southwest Nigeria had access to credit, with cooperative societies providing 23.3% of the credit. The researchers also found that membership in a cooperative society positively influenced the credit received.

This result is similar to Onah et al. (2024), who studied credit access for farmers in South-East Nigeria's cooperative societies. Their research was conducted on 240 farmers and documented that those farmers who had access to credit facilities had a superior financial performance, indicated by return on investment, working capital, net profit, profit margin, and sales, when compared to farmers who had no access to credit. The study also showed that financial literacy was a strong predictor of the efficiency of credit access. Therefore, this finding indicates that credit cooperative societies can assist farmers in Edo State in doing a key financial-intermediation service. Credit cooperatives can help farmers in Edo State improve their production and income by establishing a pool of resources and extending credit to farmers who have difficulties using the formal financial system. This is also supported by the World Bank's evidence that the ability of farmers to access credit helps farmers to purchase the inputs needed to finance the harvest, processing, and transportation. Credit should not be seen as the sole determinant of farmers' income. Other factors such as the weather, the size of the farm, the prices of inputs, the services of extensions, and agricultural prices should also be considered.

Members' Savings and Acquisition of Productive Assets

The second finding demonstrated a positive relationship between members' savings and the acquisition of productive assets in Edo State. The regression analysis showed a positive coefficient of 0.851, with an R^2 of 0.724 and an F-statistic of 271.567, which was significant at $p = 0.000$. Therefore, the alternative hypothesis was accepted.

This finding showed that farmers who save with credit cooperative societies are able to build up the financial means to purchase productive assets. Farmers' savings give them the ability to make farm investments, purchase machinery and livestock, and improve their tools and equipment. Furthermore, savings can act as a financial cushion to lessen farmers' need to rely on external sources for farm investments.

EDITOR-IN-CHIEF
Prof. R. Rena [South Africa]

This finding is in line with the literature on financial inclusion of farmers' cooperative societies in Nigeria. Ume et al. (2022) carried out a study on the financial inclusion of farmers' cooperative societies in South-East Nigeria, using a sample of 240 respondents. Their study found that savings were positively related to the accessibility of formal credit and suggested ways to enhance the savings and equity contributions of cooperative members. This is in line with the current finding, as savings are able to expand the financial opportunities of cooperative members and increase their ability to make productive investments.

This can be understood by considering the financial limitations faced by Nigerian smallholder farmers. The World Bank's Nigeria General Household Survey reports that some farmers are denied loans because they lack collateral and, in some cases, lack savings or shares. Therefore, savings can be used to supplement credit and improve the farmer's financial status and be used as working capital.

Savings can also improve farmers' financial discipline and allow for planning for the future. Farmers can save regularly with credit cooperative societies, which allows them to obtain a sufficient amount of money to make large investments that cannot be funded by the income from their farm. The result thus indicates that credit cooperative societies should focus not only on lending but also on mobilising savings as part of agricultural financial inclusion.

Financial Training and Output Level of Farmer Members

The output level of farmer members in Edo State was positively influenced by financial training, which was the third major finding. The regression coefficient was positive ($\beta = 0.867$), and the R^2 of 0.752 shows that financial training accounted for a major portion of the variation in farmers' output. The F-statistic of 301.547 with $p = 0.000$ shows that the model was statistically significant. Therefore, the alternative hypothesis that financial training has a positive influence on farmers' output was accepted.

This research finds that financial training has a significant impact beyond merely acquiring financial knowledge by farmers. It improves farmers' ability to allocate limited resources, appraise investment opportunities, use credit intelligently, prepare farm budgets, and make agricultural investment decisions regarding quantity and timing. Enhancing these abilities and skills of farmers has the potential to increase the efficiency and outputs of farm activities.

This research finds strong support in Onah et al. (2024), who conducted a study on 240 farmers in South-East Nigeria who are members of cooperative societies. The authors found that financial literacy democratically acted upon the impact of credit access on farmers' societies' financial performance. The authors found that the farmers' societies' financial performance was positively influenced by the farmers' societies' members' financial knowledge, attitude, and awareness, which acted as predictors for credit access. Though the authors used financial performance as their dependent variable, the positive influence of members' financial knowledge, attitude, and awareness on credit access predictors served as a positive farming output performance mechanism in this study, and supported the proposed theory.

The finding is also corroborated by the literature on financial inclusion. The CBN places financial literacy as one of the key levers for achieving financial inclusion and sui generis agent banking, linkage banking, and credit-enhancement frameworks. This view is institutionalised by the CBN,

suggesting that the concurrency of financial access and financial capability should be the case for agricultural finance.

Financial training no doubt works through multiple pathways. Farmers who undergo financial training are able to understand loan contracts better and are able to make informed decisions on budgeting and farming investments. Financial training also prevents farmers from using farm-related loans for personal use. It also helps farmers assess the expected returns of different agricultural investments and makes informed decisions on resource allocation. The aforementioned pathways strongly explain the positive impact of financial training on farmers' output observed in the study.

This finding has an important policy implication for credit cooperative societies in Edo State. Agricultural loans that are devoid of accompanying financial and farm management training may not achieve the desired outcome. Therefore, credit cooperative societies should integrate financial literacy, farm budgeting, and investment and credit management training within their agricultural finance programmes.

Transaction Services and Food Access of Farmer Members

The fourth finding showed that transaction services have a significant positive relationship with food access among farmer members in Edo State. The regression result gave a positive coefficient of 0.872, an R^2 of 0.760 and an F-statistic of 304.891 with $p = 0.000$. Therefore, the null hypothesis was rejected.

This result shows that farm-related transaction services facilitate the financial transfers, payments and other transactions needed for farmers to buy food. The impact of the service is greater on farmers who rely on agricultural income that is earned periodically, as they need farm-related transaction services to manage the consumption of their household between the income earning and the farm produce harvesting periods.

This is in line with Kehinde and Kehinde (2020) who studied the influence of credit access and cooperation on food security among 300 rural households in Southwestern Nigeria. Using a food security index, binary logit model, propensity score matching, and augmented inverse probability of weighting, the researchers found that both credit access and cooperation had a positive and significant effect on food security at the household level. This study provides strong Nigerian empirical evidence to support the current finding that financial-service mechanisms linked to cooperatives have a positive impact on household food security.

This finding is strengthened by evidence on digital financial transactions. The World Bank mentions that the digitisation of agricultural payments can reduce the cost of agricultural payments, improve the transparency of agricultural supply chains, and strengthen the rural digital financial services ecosystem. The World Bank also mentions that digital technologies can reduce the transaction costs in agricultural value chains and improve the flow of information. These value chain transactions are also relevant to this finding, as efficient transaction services can help farmers receive payments, transfer money, and help farmers' households make purchases.

This means that transaction services should be viewed as more than an administrative function by cooperative societies. Efficient transaction systems can improve the welfare of households by allowing members to transfer money, receive payments, and make purchases. This is especially the

EDITOR-IN-CHIEF
Prof. R. Rena [South Africa]

case with digital transaction systems, which may reduce the cost and time of accessing financial services, thus improving farmers' ability to meet their households' food needs.

The results show that cooperative financial services are a significant way for farmers to enhance their economic and welfare status. Farmers are able to engage in agricultural production as a business with the provision of loans. Savings represent farm-level resource accumulation that can be utilised for investment. Financial training enhances farmers' ability to manage farm resources. Transaction services allow farmers to move and utilise financial resources for both farm and household uses.

The results have a strong following in the Nigerian agricultural situation because most smallholder farmers in Nigeria are financially constrained. It is reported that between 2020 and 2025, the contribution of agricultural credit to the total private-sector credit in Nigeria was between 3.4% and 5.5%. With the importance of agriculture to the Nigerian economy, these results emphasise the need for other financial services, such as cooperative societies.

The results show that financial inclusion means more than granting loans. There are other facets such as efficient transaction systems, savings, and credit. A multidimensional approach is reinforced by the Nigerian data of Ume et al. (2022) that discusses savings and financial literacy as facets of financial inclusion of farmers' cooperative societies, as well as the data of Onah et al. (2024) that financial literacy enhances the impact of credit.

The empirical evidence from this study shows that improving farmers' cooperative societies in Edo State has the potential to increase farmers' income, increase farmers' ownership of productive assets, and increase farmers' access to agriculture and food. The impact of the financial services offered to farmers' cooperative societies is expected to be even greater if farmers are trained in finance, if affordable credit is made available to farmers, and if efficient savings and transaction systems are made available to farmers. This expectation is based on the recent evidence on Nigerian smallholder farmers, who, despite numerous efforts to provide them with agricultural finance, still find it difficult to access agricultural finance and use it effectively.

Conclusion

From the results of the study, it is concluded that credit cooperatives strengthen the livelihoods of smallholder farmers in Edo State through multiple pathways. Credit, savings, financial training, and transaction services play a complementary role in improving farmers' economy, productive assets, agricultural outputs, and food access.

Recommendations

Directly from the findings of the study and the four specific objectives, the following recommendations can be made:

i. Increase the agricultural loans given to farmer members by simplifying the loan process, ensuring repayment periods align with the agricultural production cycle, and charging reasonable interest. Credit cooperatives should also implement collateral policies that take into account the financial situation of smallholder farmers.
ii. Credit cooperatives should design and implement agricultural savings programmes for farmer members. Flexible programmes should be designed to take into account the seasonal

EDITOR-IN-CHIEF
Prof. R. Rena [South Africa]

income of farmers, and should include savings incentives and transparent records of savings. The savings of farmer members should be utilised to purchase farming machinery and other assets.

iii. Credit cooperatives should establish financial training and literacy programmes for farmer members, and should cover topics such as farm budgeting and financial planning, investment appraisal, and credit and loan repayment. The programmes should also cover savings and the proper use of loans.

iv. Credit Cooperatives should improve their transaction services by implementing modern electronic payment systems. Transaction services should be mobile, electronic, or POS based, and should be provided to farmer members if the opportunity is available.

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