

AGRICULTURAL EXTENSION SUPPORT, FINANCIAL ACCESS AND FINANCIAL MANAGEMENT PRACTICES: EVIDENCE FROM SMALLHOLDER AGRIBUSINESSES IN BENUE STATE, NIGERIA

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Abstract

This study examined the relationship between access to financial institutions, financial management practices, and agribusiness performance among smallholder farmers in Benue State, Nigeria, while accounting for the influence of extension contact, education level, and farm size. A multistage sampling procedure was used to select 328 smallholder agribusiness operators from three purposively selected Local Government Areas. Primary data were collected using a structured questionnaire and analysed using descriptive statistics, a five-point Likert scale, and Ordinary Least Squares (OLS) regression. The findings revealed that only 38.7% of the respondents had access to formal financial institutions, indicating a high level of financial exclusion. Farmers perceived agricultural extension services as playing a positive role in facilitating access to financial institutions (grand mean = 3.46), while financial management practices were moderate (grand mean = 3.25). Regression results showed that access to financial institutions was positively associated with agribusiness performance ($B = 0.438$, $p < 0.001$). Financial management practices also exhibited a positive and significant relationship with agribusiness performance ($B = 0.512$, $p < 0.001$). Extension contact, education level, and farm size were likewise significant predictors of agribusiness performance. The study concludes that improved access to financial services and sound financial management practices are associated with better agribusiness performance among smallholder farmers. It recommends strengthening the financial advisory role of agricultural extension services, expanding farmers' access to inclusive financial products, and promoting financial management training through extension programmes and farmer cooperatives to improve agribusiness outcomes.

Keywords: Agribusiness performance, Agricultural extension services, Benue State; Nigeria
Financial institutions, Financial management practices, Smallholder farmers

Introduction

Agriculture remains a critical sector in Nigeria's economy, contributing substantially to food security, employment, and rural livelihoods. The sector accounts for approximately one-quarter of the country's Gross Domestic Product (GDP) and employs a significant proportion of the labour force, with smallholder farmers constituting the backbone of agricultural

production (National Bureau of Statistics [NBS], 2024; World Bank, 2024). Despite its strategic importance, agricultural productivity remains constrained by limited access to productive resources, inadequate institutional support, and poor access to formal financial services, thereby restricting farmers' capacity to invest in improved technologies and expand agribusiness operations (Ayinde et al., 2023).

Access to financial institutions is widely recognized as an important driver of agricultural development because it enables farmers to obtain credit, savings, insurance, and other financial services necessary for production and enterprise growth. However, access to financial institutions differs from financial inclusion and credit utilization. While access refers to the opportunity to obtain financial services, financial inclusion encompasses the ownership and effective use of these services, whereas credit utilization concerns the productive application of borrowed funds. In Nigeria, many smallholder farmers continue to experience financial exclusion due to collateral requirements, inadequate financial literacy, and weak institutional linkages (Demirgüç-Kunt et al., 2022; Ayinde et al., 2024).

Agricultural extension services are expected to reduce these constraints by providing technical information, strengthening farmers' capacities, and facilitating linkages with complementary service providers, including financial institutions. Contemporary extension systems are increasingly expected to extend beyond technology dissemination to include financial advisory services, cooperative development, and institutional networking that improve farmers' access to productive resources (Anderson & Feder, 2007; Davis & Sulaiman, 2024). Nevertheless, evidence suggests that extension systems in many developing countries remain predominantly technology-oriented, with relatively limited emphasis on financial facilitation and agribusiness advisory support (Mapiye et al., 2024).

Beyond financial access, effective agribusiness performance depends largely on farmers' financial management capabilities. Practices such as budgeting, record keeping, cash-flow monitoring, and prudent allocation of financial resources improve enterprise efficiency and profitability. Conversely, poor financial management reduces the benefits of financial access by encouraging inefficient resource utilization and increasing the likelihood of loan default (Koomson et al., 2023; Adegbite et al., 2021).

Previous studies have investigated agricultural credit access (Ayinde et al., 2024), extension services and financial inclusion (Aminu et al., 2025), financial management practices (Koomson et al., 2023), and financial inclusion and agricultural performance (Adegbite et al., 2021). However, these studies largely examined these variables independently. Consequently, limited empirical evidence exists on whether extension support translates into farmers' access to formal financial institutions, how financial access influences agribusiness performance, and the extent to which financial management practices contribute to improved performance. Moreover, few studies have integrated these variables within a single analytical framework among smallholder agribusiness operators in Benue State, Nigeria.

Benue State, widely known as Nigeria's "Food Basket," provides an appropriate setting for addressing these gaps because agriculture remains the dominant economic activity, yet many smallholder farmers continue to experience limited financial access, inadequate extension support, and weak financial management capacity. Addressing these challenges requires an integrated understanding of the relationships among extension support, financial access, financial management practices, and agribusiness performance. Therefore, this study

examined the level of farmers' access to financial institutions, assessed the perceived role of agricultural extension services in facilitating such access, evaluated financial management practices, and determined the effects of financial access and financial management practices on agribusiness performance among smallholder farmers in Benue State, Nigeria.

The study sought answers to the following questions:

1. What is the level of access to formal financial institutions among smallholder farmers in Benue State?
2. How do farmers perceive the role of agricultural extension services in improving awareness of financial opportunities and linkages with financial institutions?
3. What financial management practices are adopted by smallholder farmers?
4. What is the relationship between access to financial institutions and agribusiness performance?
5. What is the relationship between financial management practices and agribusiness performance?

The general objective of this study is to examine financial access, extension support, financial management practices, and their relationship with agribusiness performance among smallholder farmers in Benue State, Nigeria

The specific objectives are to:

1. Examine the level of smallholder farmers' access to formal financial institutions in Benue State;
2. Assess farmers' perceptions of extension support in improving awareness of financial opportunities and linkages with financial institutions;
3. Assess the financial management practices of smallholder farmers in Benue State;
4. Examine the relationship between access to financial institutions and agribusiness performance among smallholder farmers;
5. Examine the relationship between financial management practices and agribusiness performance among smallholder farmers.

Research Hypotheses

The following null hypotheses were tested at the 5% level of significance:

H01: Access to financial institutions has no significant relationship with agribusiness performance among smallholder farmers in Benue State.

H02: Financial management practices have no significant relationship with agribusiness performance among smallholder farmers in Benue State.

This study is justified by the need to enhance financial inclusion and improve agribusiness performance among smallholder farmers in Nigeria. By focusing on access to financial institutions, extension services, and financial management practices, the study addresses critical factors influencing agricultural productivity and rural livelihoods.

First, the study provides empirical evidence on the level of farmers' access to financial institutions and the role of agricultural extension services in facilitating such access. This is particularly important given recent findings that link extension services with improved financial inclusion outcomes among agricultural households (Aminu et al., 2025).

Second, the study incorporates financial management practices into the analysis, thereby introducing an accounting dimension that is often overlooked in agricultural extension research. Understanding how practices such as record keeping and budgeting influence agribusiness performance will provide insights into improving the effectiveness of financial interventions.

Third, the study examines the direct effects of financial access and financial management practices on agribusiness performance, offering a more comprehensive understanding of the pathways through which financial resources translate into productivity gains.

Finally, the study contributes to the literature by integrating extension services, financial access, and financial management practices into a unified analytical framework. This approach provides a more holistic perspective on smallholder agribusiness development and offers valuable insights for policymakers, extension practitioners, and financial institutions seeking to improve agricultural financing outcomes.

Literature Review

Conceptual Review

Agricultural Extension Services

Agricultural extension services are an important institutional mechanism for improving agricultural productivity through the dissemination of knowledge, technologies, and advisory services to farmers. Beyond technology transfer, modern extension systems facilitate capacity building, market linkages, agribusiness development, and farmers' access to financial institutions and other support services, thereby enhancing enterprise competitiveness and rural livelihoods (Anderson & Feder, 2007; FAO, 2023). However, the effectiveness of extension services in many developing countries is constrained by inadequate funding, shortage of personnel, weak institutional coordination, and limited collaboration with financial institutions (FMARD, 2016). Although empirical evidence indicates that extension services improve technology adoption and farmers' access to agricultural information, their effectiveness in facilitating actual access to formal financial institutions remains inconclusive. This underscores the need to strengthen the financial advisory and linkage roles of extension services to enhance smallholder agribusiness performance (Ragasa et al., 2021; Davis & Sulaiman, 2024).

Access to Financial Institutions

Access to financial institutions refers to the ability of individuals or enterprises to obtain financial services such as credit, savings, insurance, and payment facilities from formal financial organizations. It differs from financial inclusion, which emphasizes the ownership and effective use of financial services, and from credit access, which specifically relates to obtaining loans (Demirgüç-Kunt et al., 2022). Access to formal financial services enables smallholder farmers to invest in improved technologies, manage production risks, and expand agribusiness operations. Despite various government interventions, access to formal financial institutions among Nigerian smallholder farmers remains limited due to collateral requirements, inadequate financial literacy, poor financial records, and weak rural banking infrastructure (CBN, 2024; World Bank, 2024). Agricultural extension services can help address these constraints by facilitating farmers' awareness of financial opportunities and strengthening linkages with financial institutions.

Financial Management Practices

Financial management practices refer to the effective planning, allocation, utilization, and monitoring of financial resources to improve enterprise performance and sustainability. Among smallholder farmers, these practices include budgeting, record keeping, financial planning, cash-flow management, savings mobilization, and prudent loan utilization. Effective financial management promotes efficient resource allocation, informed investment decisions, improved loan repayment, and higher profitability, whereas poor financial management often results in inefficient use of credit, weak financial discipline, and reduced enterprise performance (Brigham & Ehrhardt, 2022; Koomson et al., 2023). Studies have shown that farmers with sound financial management skills are more likely to utilize credit productively and achieve better agribusiness outcomes than those with limited financial capability (Koomson et al., 2023; World Bank, 2022). Therefore, strengthening financial literacy and enterprise management through agricultural extension programmes is essential for improving the sustainability and performance of smallholder agribusinesses.

Smallholder Agribusiness Performance

Smallholder agribusiness performance refers to the ability of agricultural enterprises to achieve production, financial, and business objectives through improved productivity, profitability, income, enterprise growth, market participation, and sustainability (OECD, 2023). Agribusiness performance is influenced by several interrelated factors, including access to productive resources, extension services, markets, finance, and farmers' managerial capabilities. While access to these resources facilitates enterprise development, improved performance largely depends on farmers' ability to utilize them efficiently through sound management and informed decision-making (Barrett, et al., 2022). Empirical evidence indicates that access to extension services, financial institutions, and improved technologies enhances agribusiness performance; however, differences in enterprise outcomes among farmers with similar resources highlight the critical role of financial management and managerial competence in achieving sustainable business success (Abate, et al., 2023).

Relationship among Agricultural Extension Services, Financial Access, Financial Management Practices and Agribusiness Performance

Agricultural extension services, financial access, financial management practices, and agribusiness performance are closely interconnected in promoting sustainable agricultural development. Extension services facilitate farmers' access to financial information, strengthen institutional linkages, and enhance financial and managerial capacities necessary for effective enterprise management. Access to financial institutions provides the capital required for investment in improved technologies and agribusiness expansion; however, the benefits of financial access depend largely on farmers' ability to manage financial resources effectively. Sound financial management practices, including budgeting, record keeping, and prudent loan utilization, enhance resource use efficiency, profitability, and business sustainability (Koomson, et al., 2023). Therefore, improved agribusiness performance is achieved through the complementary roles of extension support, financial access, and effective financial management, highlighting the need for integrated interventions that strengthen both institutional support and farmers' managerial capabilities.

Theoretical Framework

Agricultural Innovation Systems (AIS) Theory

The study is anchored on the Agricultural Innovation Systems (AIS) Theory, which emphasizes that agricultural development results from effective interactions among multiple actors, including farmers, extension organizations, research institutions, financial institutions, input suppliers, markets, and government agencies. Unlike the traditional technology-transfer approach, AIS views agricultural extension as an innovation broker that facilitates knowledge exchange, institutional linkages, and access to productive resources required to improve farm performance (World Bank, 2012; FAO, 2023).

The theory is relevant to this study because it explains how agricultural extension services facilitate farmers' access to financial institutions by creating awareness of financial opportunities, strengthening farmer organizations, and linking farmers with formal financial service providers. It further recognizes that access to financial resources alone may not improve agribusiness performance unless farmers possess the managerial capacity to utilize those resources effectively. Consequently, financial management practices such as budgeting, record keeping, and prudent loan utilization are essential for transforming financial resources into improved productivity, profitability, and business sustainability. The AIS theory therefore provides a suitable framework for explaining the relationships among agricultural extension services, financial access, financial management practices, and agribusiness performance among smallholder farmers in Benue State, Nigeria.

Empirical Review

Agricultural Extension Services and Access to Financial Institutions

Empirical evidence indicates that agricultural extension services improve farmers' awareness of financial opportunities, facilitate linkages with financial institutions, and strengthen access to agricultural credit. Ragasa et al., (2021) and Anang et al., (2022) reported that extension contact increased farmers' participation in formal financial services through improved information dissemination and institutional networking. However, Arouna et al., (2023) observed that weak collaboration between extension agencies and financial institutions limited farmers' actual access to finance. These inconsistent findings indicate limited evidence on whether extension support translates into formal financial access among smallholder farmers in Benue State.

Financial Access and Agribusiness Performance

Access to financial institutions enables farmers to invest in improved technologies, expand production, and increase enterprise productivity. Koomson et al., (2023) found that improved financial access enhanced farm investment and profitability among smallholder farmers. Similarly, Abate et al., (2023) reported a positive relationship between formal financial access and agribusiness performance. Conversely, Adjognon et al., (2022) argued that financial access alone may not improve performance where farmers lack adequate managerial skills. This suggests that factors beyond financial access influence agribusiness performance.

Financial Management Practices and Agribusiness Performance

Studies consistently show that sound financial management practices improve agribusiness performance by promoting efficient resource allocation, prudent loan utilization, and effective financial planning. Koomson et al. (2023) found that farmers with better financial management skills achieved higher profitability and enterprise growth. Likewise, Koomson et al., (2023) reported that budgeting and record keeping significantly improved farm performance. However, poor financial literacy and weak bookkeeping practices continue to limit the productive use of financial resources among many smallholder farmers, particularly in developing countries.

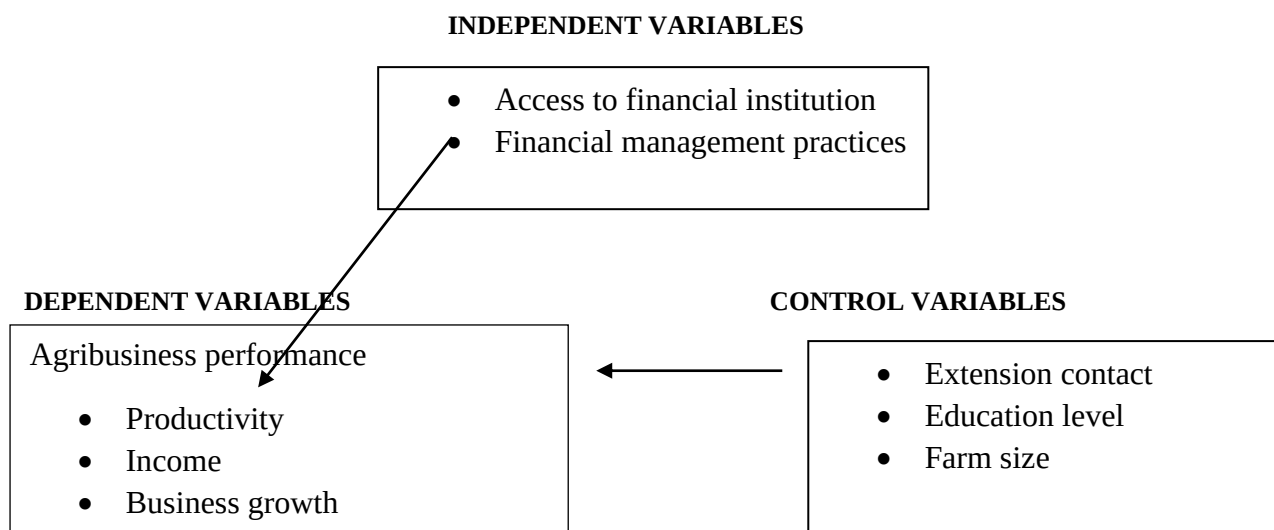
Financial Access, Financial Management Practices and Agribusiness Performance

Although financial access and financial management practices have been widely studied, they have rarely been examined together within a single analytical framework. Existing studies generally consider financial access or financial management independently, with limited attention to their complementary influence on agribusiness performance (Abate et al., 2023; Koomson et al., 2023). Consequently, little empirical evidence exists on how extension support, financial access, and financial management practices jointly influence smallholder agribusiness performance in Benue State. This study addresses this empirical and contextual gap.

Conceptual Model

The conceptual model illustrates the hypothesized relationship between access to financial institutions and financial management practices as the key independent variables influencing agribusiness performance among smallholder farmers in Benue State. Agribusiness performance, the dependent variable, is reflected by improvements in productivity, farm income, and business growth. The model assumes that access to financial institutions provides farmers with opportunities to obtain financial resources for productive investments, while sound financial management practices promote the efficient utilization of these resources to enhance enterprise performance.

The model further recognizes extension contact, education level, and farm size as observable (control) variables that may also influence agribusiness performance. Extension contact facilitates access to technical and financial information, education enhances farmers' managerial and decision-making capacity, and farm size reflects the production resource base available to the enterprise. These variables were controlled for in the empirical analysis to provide a clearer assessment of the relationship between the principal explanatory variables and agribusiness performance. Finally, the model provides the analytical framework that guided the study's objectives, hypotheses, and regression analyses.



Materials and Method

The study was conducted in Benue State, located in the North-Central region of Nigeria. The state lies approximately between latitudes 6°30'N and 8°10'N and longitudes 7°20'E and 10°00'E. Benue State shares boundaries with several states, including Nasarawa to the north, Taraba to the east, Cross River to the south, Enugu to the southwest, and Kogi to the west. The state is traversed by the River Benue, which provides fertile alluvial plains that support extensive agricultural activities. Benue State is widely regarded as the “Food Basket of the Nation” due to its significant contribution to national food production. The state has a tropical climate characterized by distinct wet and dry seasons, with annual rainfall ranging from 1,200 mm to 2,000 mm. The vegetation is predominantly Guinea savannah, which supports the cultivation of a wide range of crops, including yam, cassava, rice, maize, and soybeans. Agriculture is the mainstay of the economy, employing a large proportion of the population, most of whom are smallholder farmers engaged in subsistence and semi-commercial farming systems. The study specifically focused on three Local Government Areas (LGAs), namely Gboko, Katsina-Ala, and Otukpo. These LGAs were purposively selected due to their prominence in agricultural production and the presence of active extension and agribusiness activities.

A multi-stage sampling technique was employed for this study to ensure adequate representation of smallholder agribusiness operators across the study area. In the first stage, Benue State was purposively selected due to its strategic importance in agricultural production and its reputation as the “Food Basket of the Nation.” The state is characterized by a high concentration of smallholder farmers and agribusiness activities, making it suitable for examining issues related to access to financial institutions, extension service delivery, and financial management practices. In addition, the presence of agricultural extension structures and financial institutions across the state provides an appropriate context for investigating the interaction between extension services and financial access. In the second stage, three Local Government Areas (LGAs) Gboko, Katsina-Ala, and Otukpo were purposively selected based on their prominence in agricultural production and the prevalence of smallholder agribusiness

activities. These LGAs also reflect diverse agro-ecological and socio-economic conditions within the state, thereby enhancing the representativeness of the study. In the third stage, a random selection of villages was carried out within each of the selected LGAs. Specifically, three (3) villages from each of the LGAs out of the total of twenty-four farming communities were identified across the three selected Local Government Areas, from which nine communities were selected using simple random sampling. The selected communities were assigned identification numbers and simple random sampling by balloting without replacement was used to select the required communities. The selection of villages was based on the availability of farming households and the presence of agricultural extension activities within the communities. In the final stage, smallholder farmers from each of the chosen villages were selected from the sampling frame obtained from local farmer associations and extension agents using the Taro Yamane's (1973) formula in computing the required sample size for the study. Therefore, three hundred and twenty eight (328) farmers were selected across all selected villages for the study from the total sample frame of one thousand eight hundred and forty five (1845) farmers. The sampling frame consisted of registered smallholder farmers obtained from the Agricultural Development Programme (ADP), extension offices, and recognized farmer associations because these provided the most reliable and verifiable sampling lists. Consequently, unregistered farmers were not included in the sampling frame, and the findings should therefore be interpreted within the population of registered smallholder farmers in the study area.

Using the Taro Yamane (1967) formula, a minimum sample size of approximately 329 respondents was obtained. However, following proportionate allocation of the sample across the selected Local Government Areas and communities, the final sample size was adjusted to 328 respondents to maintain whole-number allocations within each sampling unit. All 328 questionnaires were successfully administered and found suitable for analysis.

For the purpose of this study, a smallholder farmer was defined as an individual actively engaged in agribusiness production on not more than five hectares of farmland during the production season.

The formula is expressed as follows;

$$n_0 = \frac{N}{1 + N(e^2)} \quad (1)$$

n_0 = Sample size

N = Total population of farmers in the selected area

e = margin of error (0.05)

N=1845

$n_0=328$

e = margin of error (0.05)

$$\frac{328}{1845} \times 100 = 17.8\% \cong 18\%$$

Respondents from each village was therefore selected proportionately using the expression below;

$$x = \frac{(X/n) \times N}{2}$$

Where;

x = Sample size per village

X = Number of selected registered farmers per villages

n = Total number of farmers in the selected Local Government Areas

N = Required sample size for the study (from Taro Yamane's 1973 formula)

The selected State, Local Government Areas, villages and number of sampled farmers from each village is as shown in Table 1 below.

Table 1: Distribution of sampled farmers from the selected LGAs and villages in Benue State.

State	LGAs	Villages	Sample Frame	Sample Size (18%)
Benue	Gboko	Yadev	289	52
		Tse-Kucha	176	31
		Ikpenger	198	35
	Katsina-Ala	Amaafu	167	30
		Sati-Agirigi	254	45
		Abaji	213	38
	Otukpo	Otobi	142	25
		Ogobia	175	31
		Obaganya	231	41
Total	3	9	1845	328

Source: Field Survey, 2025

Primary data were collected using a structured questionnaire developed from an extensive review of literature and previously validated instruments on agricultural extension services, financial access, financial management practices, and agribusiness performance (Anderson & Feder, 2007; Demirgüç-Kunt et al., 2022; FAO, 2023). The questionnaire comprised five sections covering respondents' socio-economic characteristics, access to financial institutions, agricultural extension services, financial management practices, and agribusiness performance. Access to financial institutions was measured using questions on respondents' ability to obtain formal financial services (credit, savings, and related financial products), while extension contact was measured by the frequency of farmers' interactions with extension agents during the preceding production season.

The draft questionnaire was subjected to face and content validity by experts in Agricultural Extension and Rural Development, Agricultural Economics, Rural Sociology, and Measurement and Evaluation to ensure that the instrument adequately measured the study variables. Thereafter, the instrument was pre-tested among (32) smallholder farmers outside the selected study area, and observations from the pilot survey were used to improve the wording, sequencing, and clarity of the questionnaire. Where necessary, the instrument was translated into the local language and back-translated into English to ensure consistency of meaning.

The questionnaire was administered through face-to-face interviews by trained enumerators familiar with the local language and farming systems. Prior to fieldwork, the enumerators received training on the objectives of the study, interview techniques, ethical procedures, and methods of minimizing interviewer and social desirability bias. Participation was voluntary, informed consent was obtained from all respondents, and confidentiality and anonymity were assured by conducting interviews privately and using the information strictly for academic purposes. Secondary data were obtained from peer-reviewed journals, government publications, financial institution reports, and publications of national and international organizations to complement the primary data.

Analytical Technique

Data collected for this study were analyzed using a combination of descriptive and inferential statistical tools to achieve the stated objectives. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to assess the level of farmers' access

to financial institutions and to evaluate their financial management practices. These tools provided a summary of respondents' characteristics and key variables relevant to the study. A Likert-scale analysis was employed to examine the role of agricultural extension services in facilitating access to financial institutions. Responses were measured on a five-point scale ranging from "strongly disagree" to "strongly agree," and mean scores were computed to determine the extent of agreement with each statement. A cut-off mean of 3.0 was used to interpret the results.

Inferential statistical techniques were applied to analyze the relationships among the key variables. Specifically, multiple regression analysis was used to determine the effect of access to financial services and financial management practices on agribusiness performance.

The functional form of the model is specified as:

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

Where:

Y = Agribusiness performance (measured by income, output, or profit)

β_0 = Intercept

$\beta_1 - \beta_6$ = Parameters to be estimated

μ = Error term

X_1 = Access to financial institutions (dummy: 1 = access, 0 = otherwise), X_2 = Extension contact (number of extension visits), X_3 = Financial management practices (composite index from Likert scale), X_4 = Control variables (e.g., education, farm size)

In addition, correlation analysis was used to examine the relationship between extension services and access to financial institutions, as well as between financial management practices and agribusiness performance.

Results and Discussion

Table 2: Distribution of Farmers by Access to Financial Institutions

Access to Financial Institutions	Frequency	Percentage (%)
Access (Yes)	127	38.7
No Access (No)	201	61.3
Total	328	100.0

Source: Field Survey, 2025

The results in Table 2 show that 127 (38.7%) of the respondents had access to formal financial institutions, whereas 201 (61.3%) reported having no access. This indicates that the majority of smallholder farmers in the study area remained outside the formal financial system, suggesting a relatively low level of financial access. The low level of financial access implies that many farmers may have limited opportunities to obtain formal credit, savings, insurance, and other financial services required to support agribusiness activities. Consequently, many smallholder farmers are likely to depend on informal sources of finance such as personal savings, rotating savings groups, cooperatives, or assistance from family and friends, which may not adequately meet their production and investment needs.

The finding is consistent with recent studies which reported that access to formal financial services remains limited among smallholder farmers in Nigeria despite various financial inclusion initiatives. For example, Adegbite et al., (2021) reported that limited access to formal financial services continues to constrain agricultural investment and enterprise development among rural farmers. Similarly, Demirgüç-Kunt et al., (2022) observed that financial access remains uneven in many developing countries due to constraints such as collateral requirements, high transaction costs, limited financial literacy, and inadequate rural

financial infrastructure. Comparable findings were reported by Aminu et al. (2025), who found that many rural farmers continue to experience difficulties in accessing formal financial services despite the expansion of financial inclusion programmes. The observed low level of financial access suggests the need for continued efforts to improve the availability and accessibility of formal financial services for smallholder farmers through appropriate financial inclusion policies, strengthened institutional support, and improved collaboration among financial institutions, extension agencies, and farmer organizations.

Table 3: Farmers' Perceptions of Extension Support in Improving Awareness of Financial

Opportunities and Linkages with Financial Institutions							
Statements	SA	A	N	D	SD	Mean	Decision
Extension agents provide information on available credit facilities	96	110	38	54	30	3.57	Agree
Extension agents link farmers to financial institutions	88	104	42	60	34	3.46	Agree
Extension services improve farmers' awareness of loan opportunities	102	112	36	48	30	3.63	Agree
Extension agents assist in forming cooperatives for credit access	84	98	40	64	42	3.36	Agree
Extension services provide training on loan application procedures	76	96	44	68	44	3.28	Agree
Grand Mean						3.46	Agree

Scale: Strongly Agree (SA = 5), Agree (A = 4), Neutral (N = 3), Disagree (D = 2), Strongly Disagree (SD = 1).

Cut-off Mean = 3.0

The results in Table 3 indicate that respondents generally perceived agricultural extension services as providing support for improving awareness of financial opportunities and strengthening linkages with financial institutions, as reflected by the grand mean of 3.46, which exceeded the benchmark mean of 3.00. Among the statements, respondents expressed the strongest agreement that extension services improved their awareness of loan opportunities (mean = 3.63) and provided information on available credit facilities (mean = 3.57). Farmers also agreed that extension agents linked them with financial institutions (mean = 3.46), assisted in the formation of cooperatives for credit access (mean = 3.36), and provided training on loan application procedures (mean = 3.28). These findings suggest that respondents viewed extension services as an important source of financial information and institutional guidance in the study area. However, the moderate mean scores indicate that, although extension support was positively perceived, there remains scope for improving the frequency and quality of financial advisory services provided to smallholder farmers. The findings are consistent with Aminu et al., (2025), who reported that extension services improve farmers' awareness of financial opportunities and encourage participation in formal financial systems through information dissemination and advisory support. Similarly, Mapiye et al., (2024) observed that extension systems increasingly perform brokerage functions by connecting farmers with service providers, although their effectiveness depends on institutional capacity and resource availability. Davis and Sulaiman (2024) likewise emphasized that modern agricultural extension should extend beyond technology transfer to include advisory services that facilitate farmers' access to markets, financial services, and other institutional opportunities.

In conclusion, the results indicate that farmers perceive agricultural extension services as contributing to financial awareness and institutional linkages, although the findings do not establish that extension support directly improves farmers' actual access to financial institutions. Strengthening the financial advisory capacity of extension services could therefore enhance the support available to smallholder farmers seeking to engage with formal financial institutions.

Table 4: Financial Management Practices among Smallholder Farmers

Statements	SA	A	N	D	SD	Mean	Decision
I keep records of my farm income and expenditures	72	94	46	66	50	3.22	Agree
I prepare a budget before each production season	68	88	52	70	50	3.16	Agree
I properly allocate loan funds to intended farm activities	96	110	38	54	30	3.57	Agree
I monitor and evaluate my farm financial performance regularly	74	92	44	68	50	3.22	Agree
I separate farm income from household expenditure	64	86	48	76	54	3.09	Agree
Grand Mean						3.25	Agree

Scale: Strongly Agree (SA = 5), Agree (A = 4), Neutral (N = 3), Disagree (D = 2), Strongly Disagree (SD = 1)

Cut-off Mean = 3.0

The results in Table 4 show that smallholder farmers exhibited moderate financial management practices, with a grand mean of 3.25, which exceeded the benchmark mean of 3.00. This indicates that respondents generally practiced basic financial management activities in their agribusiness operations. Among the practices assessed, proper allocation of loan funds to intended farm activities recorded the highest mean score (3.57), suggesting that respondents generally utilized borrowed funds for agricultural purposes. Farmers also agreed that they kept records of farm income and expenditures (mean = 3.22) and regularly monitored their farm financial performance (mean = 3.22).

However, relatively lower mean scores were recorded for budgeting before each production season (mean = 3.16) and the separation of farm income from household expenditure (mean = 3.09), indicating that these important financial management practices were less consistently adopted. Weaknesses in these areas may reduce farmers' ability to effectively plan, monitor, and manage financial resources. The findings are consistent with Koomson et al., (2023) who reported that effective record keeping, budgeting, and prudent financial management contribute to improved farm decision-making and enterprise performance among smallholder farmers. Similarly, Koomson et al., (2023) observed that farmers with sound financial management practices are better able to allocate resources efficiently and manage agricultural investments. The findings also support the World Bank (2022), which emphasized that strengthening financial management capacity is essential for improving the productive use of financial resources among smallholder farmers.

The results suggest that although smallholder farmers demonstrated moderate financial management practices, greater emphasis should be placed on improving budgeting, financial planning, and the separation of business and household finances to strengthen agribusiness management and long-term enterprise sustainability.

Table 5: Ordinary Least Squares (OLS) Regression Results for the Relationship between Access to

Financial Institutions and Agribusiness Performance

Variables	Unstandardized Coefficient (β)	Std. Error	t-value	Significance
Constant	1.284	0.312	4.12	0.000***
Access to Financial Institutions	0.438	0.095	4.61	0.000***
Extension Contact	0.276	0.082	3.37	0.001***
Education Level	0.214	0.073	2.93	0.004***
Farm Size	0.189	0.068	2.78	0.006***

R² = 0.52

Adjusted R² = 0.49

F-value = 28.63 (p < 0.01)

Note: *** Significant at 1% level

The results presented in Table 5 examined the relationship between access to financial institutions and agribusiness performance among smallholder farmers in Benue State using the Ordinary Least Squares (OLS) regression model. The overall regression model was statistically significant ($F = 28.63$, $p < 0.01$), indicating that the explanatory variables jointly accounted for variations in agribusiness performance. The coefficient of determination ($R^2 = 0.52$) showed that approximately 52% of the variation in agribusiness performance was explained by access to financial institutions, extension contact, education level, and farm size, while the remaining 48% was attributable to factors not included in the model.

The regression coefficient for access to financial institutions was positive and statistically significant ($B = 0.438$, $t = 4.61$, $p < 0.001$), indicating that farmers with access to formal financial institutions tended to report higher agribusiness performance than those without such access. This finding suggests that access to financial services is positively associated with farmers' capacity to invest in productive agricultural activities, adopt improved technologies, and strengthen their agribusiness enterprises. However, given the cross-sectional nature of the study, the observed relationship should be interpreted as an association rather than evidence of causality.

Extension contact also showed a positive and significant relationship with agribusiness performance ($B = 0.276$, $t = 3.37$, $p = 0.001$), implying that farmers who had more frequent interactions with extension agents reported better agribusiness performance. Similarly, education level ($B = 0.214$, $t = 2.93$, $p = 0.004$) and farm size ($B = 0.189$, $t = 2.78$, $p = 0.006$) were positively and significantly associated with agribusiness performance, suggesting that better-educated farmers and those operating relatively larger farms were more likely to achieve improved business outcomes. The findings agree with Balana et al. (2024), who reported that access to and utilization of formal financial services significantly improved productivity among small-scale cassava farmers in Enugu State, Nigeria, by enabling investment in improved agricultural inputs and production technologies. Likewise, Adegbite et al (2022) found that access to credit facilities and financial literacy were positively associated with the performance of smallholder farmers in Nigeria, emphasizing the complementary role of financial capability in improving enterprise outcomes. Similarly, Adegbite et al (2022) observed that improved access to finance was positively related to agribusiness performance and food security among smallholder farmers, particularly where supportive institutional arrangements existed.

Although, the findings demonstrate a significant positive relationship between access to financial institutions and agribusiness performance, alternative explanations should be considered. Farmers operating larger or more profitable enterprises may be more likely to satisfy lending requirements and obtain financial services than smaller producers. Likewise, farmers who maintain regular contact with extension agents may have been specifically targeted by agricultural programmes that also facilitate financial access. Consequently, the results should not be interpreted as establishing a direct causal relationship but rather as evidence of a statistically significant association between financial access and agribusiness performance within the study area.

Hypothesis 1

H0₁: Access to financial institutions has no significant relationship with agribusiness performance among smallholder farmers in Benue State, Nigeria.

The Ordinary Least Squares (OLS) regression results presented in Table 5 examined the relationship between access to financial institutions and agribusiness performance among smallholder farmers. The regression model was statistically significant ($F = 28.63$, $p < 0.001$), indicating that the explanatory variables jointly explained variations in agribusiness performance. The model accounted for 52.0% of the variation in agribusiness performance ($R^2 = 0.52$), suggesting good explanatory power. The results further showed that access to financial institutions had a positive and statistically significant relationship with agribusiness performance ($B = 0.438$, $t = 4.61$, $p < 0.001$). This indicates that farmers with better access to formal financial services were more likely to report improved agribusiness performance than those with limited access. Extension contact ($B = 0.276$, $p = 0.001$), education level ($B = 0.214$, $p = 0.004$), and farm size ($B = 0.189$, $p = 0.006$) were also positively and significantly associated with agribusiness performance. The null hypothesis was therefore rejected, and the alternative hypothesis accepted, indicating that access to financial institutions had a significant positive relationship with agribusiness performance among smallholder farmers in Benue State. This finding agrees with Adegbite et al (2021), who reported that improved financial access enables farmers to invest in productive inputs and expand agricultural enterprises. Similarly, Adegbite et al. (2022) observed that formal financial services improve farmers' investment capacity and enterprise performance. However, because the study employed a cross-sectional design, the findings should be interpreted as evidence of statistical association rather than causation.

Hypothesis 2

H0₂: Financial management practices have no significant relationship with agribusiness performance among smallholder farmers in Benue State, Nigeria.

The regression results presented in Table 6 examined the relationship between financial management practices and agribusiness performance. The model explained 55.0% of the variation in agribusiness performance ($R^2 = 0.55$), indicating that financial management practices, extension contact, education level, and farm size jointly accounted for a substantial proportion of the observed variation.

The results revealed that financial management practices had a positive and statistically significant relationship with agribusiness performance ($B = 0.512$, $t = 5.82$, $p < 0.001$). This suggests that farmers who practiced effective budgeting, record keeping, financial planning, and prudent utilization of financial resources were more likely to report better agribusiness performance. Extension contact ($B = 0.241$, $p = 0.002$), education level ($B = 0.198$, $p = 0.006$), and farm size ($B = 0.173$, $p = 0.009$) also showed positive and statistically significant relationships with agribusiness performance. Based on these findings, the null hypothesis was

rejected, while the alternative hypothesis was accepted, indicating that financial management practices had a significant positive relationship with agribusiness performance among smallholder farmers in Benue State. The finding corroborates the work of Akinleye et al. (2024), who reported that effective record keeping, budgeting, and financial planning improve enterprise efficiency and profitability among smallholder farmers. Similarly, Koomson et al., (2023) found that sound financial management enhances farmers' capacity to allocate resources efficiently and improve business performance. Nevertheless, since the study relied on cross-sectional data, the observed relationship should not be interpreted as evidence of causality.

Table 6: Ordinary Least Squares (OLS) Regression Results for the Relationship between Financial Management Practices and Agribusiness Performance

Variables	Unstandardized Coefficient (β)	Std. Error	t-value	Significance
Constant	1.106	0.298	3.71	0.000***
Financial Management Practices Index	0.512	0.088	5.82	0.000***
Extension Contact	0.241	0.079	3.05	0.002***
Education Level	0.198	0.071	2.79	0.006***
Farm Size	0.173	0.066	2.62	0.009***
R² = 0.55				
Adjusted R² = 0.52				
F-value = 31.47 (p < 0.01)				

Note: *** Significant at 1% level

The results presented in Table 6 examined the relationship between financial management practices and agribusiness performance among smallholder farmers in Benue State. The regression model was statistically significant ($F = 31.47$, $p < 0.01$), indicating that the explanatory variables jointly explained variations in agribusiness performance. The coefficient of determination ($R^2 = 0.55$) shows that approximately 55% of the variation in agribusiness performance was explained by financial management practices, extension contact, education level and farm size, while the remaining 45% may be attributed to other factors not included in the model.

Financial management practices had a positive and statistically significant relationship with agribusiness performance ($B = 0.512$, $t = 5.82$, $p < 0.001$). This indicates that respondents who reported better financial management practices also tended to report higher agribusiness performance. Specifically, practices such as record keeping, budgeting, prudent utilization of financial resources and routine financial monitoring were positively associated with improved agribusiness outcomes. Because this analysis was based on cross-sectional data, the findings indicate a statistically significant association rather than a causal relationship. Extension contact was also positively and significantly associated with agribusiness performance ($B = 0.241$, $t = 3.05$, $p = 0.002$), suggesting that farmers who interacted more frequently with extension agents tended to report better business performance. Likewise, education level ($B = 0.198$, $t = 2.79$, $p = 0.006$) and farm size ($B = 0.173$, $t = 2.62$, $p = 0.009$) were positively and significantly associated with agribusiness performance. These findings imply that farmers with higher educational attainment and relatively larger farm holdings were more likely to adopt sound financial management practices and achieve better agribusiness outcomes. The findings are consistent with Koomson et al. (2023), who reported that financial management capability and financial literacy improve farmers' resource allocation decisions and enterprise performance. Similarly, Akinleye et al. (2024) found that effective budgeting, record keeping and financial planning were significantly associated with improved profitability among

smallholder agricultural enterprises. Likewise, the World Bank (2022) emphasized that strengthening farmers' financial management capacity enhances the productive use of financial resources and supports sustainable agribusiness development.

Although, financial management practices were significantly associated with agribusiness performance, the results should not be interpreted to mean that financial management is more important than access to financial institutions. The regression coefficients reported in Tables 5 and 6 were estimated from separate models using predictors measured on different scales. Consequently, direct comparison of the unstandardized coefficients is inappropriate. In addition, reverse causality cannot be ruled out, as better-performing farmers may be more likely to adopt sound financial management practices than lower-performing farmers. Therefore, the findings should be interpreted as evidence of a significant statistical relationship rather than causal influence.

Conclusion and Recommendations

Conclusion

This study examined financial access, farmers' perceptions of extension support, financial management practices, and their relationship with agribusiness performance among smallholder farmers in Benue State, Nigeria. The findings showed that access to formal financial institutions among smallholder farmers remained relatively low, while respondents generally perceived that agricultural extension services contributed to improving awareness of financial opportunities and linkages with financial institutions. The study also found that financial management practices were moderate, with weaknesses in budgeting and financial planning.

The regression analyses further revealed that access to financial institutions and financial management practices were each positively and significantly associated with agribusiness performance. Extension contact, education level, and farm size were also significantly associated with improved agribusiness performance. However, because the study employed a cross-sectional design and estimated separate regression models, the findings should be interpreted as statistical associations rather than causal relationships. Overall, the study underscores the importance of improving financial access, strengthening farmers' financial management capacity, and enhancing extension support to promote better agribusiness performance among smallholder farmers.

Based on the findings of this study, agricultural extension services should be strengthened to incorporate financial advisory functions alongside conventional production advisory services. Extension agents should provide farmers with information on available financial products, loan application procedures, and appropriate financial management practices, while collaborating more closely with financial institutions to improve farmers' awareness of available financial opportunities.

Financial institutions should develop more inclusive and farmer-friendly financial products that respond to the needs of smallholder farmers. This may be achieved through simplified loan application procedures, flexible collateral requirements, and credit packages tailored to agricultural production cycles, thereby improving farmers' access to formal financial services. Furthermore, extension agencies, farmer cooperatives, and relevant stakeholders should

organize regular capacity-building programmes on financial management practices, particularly in the areas of record keeping, budgeting, cash-flow management, and financial planning. Strengthening these managerial skills would enable farmers to make more informed financial decisions and improve the management of available financial resources. Farmer cooperatives should also be supported as effective platforms for disseminating financial information, facilitating interactions between farmers and financial institutions, and improving access to financial services.

Finally, future studies should employ longitudinal or panel data and more robust analytical approaches to further examine the relationships among extension support, financial access, financial management practices, and agribusiness performance while accounting for potential issues such as reverse causality, self-selection, and other sources of bias that could not be addressed in the present cross-sectional study.

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