Effect of financial inclusion on maize productivity among rural farming households in Ankpa Local Government Area of Kogi State, Nigeria

International Journal of Business Sustainability

Volume: 1, Issue: 2, 2025

Oluyomi Sunday Moses, Gbenga Opeyemi, Ojonugwa Japheth Salifu
Department of Agricultural Economics and Extension, Faculty of Agriculture, Prince Abubakar Audu University, Ankpa Road, Kogi State, Nigeria

Abstract

Purpose: Farmers' inadequate access to formal financial services has been reported to impede their ability to purchase improved seeds, fertilizers, and equipment, necessary for increasing productivity in Nigeria. However, the paucity of empirical evidence on the effect of financial inclusion on productivity among rural farming households in Kogi State constitutes a gap in the literature.

Design/methodology/approach: This study used primary data gathered through questionnaires. A multi-stage sampling method was applied to select the research participants. The data collected were analyzed using both descriptive and inferential statistical methods.

Findings: Most of the maize farmers were men (52.78%), married (57.64%), and still within their active working age. Most households had between 4 and 6 members. The results showed that Automated Teller Machines (ATMs), savings accounts, Point of Sale (POS) services, visits to the bank, and online transfers had distributions of 89.58%, 81.25%, 80.56%, 86.81%, and 43.66%, respectively. Most households fall within the low (38.89%) and medium (29.86%) inclusion categories. The study also found that age, gender, education level, household size, and access to financial services were the main factors influencing farmers` maize productivity in the area.

Limitations and Research implications: The study utilized cross-sectional data, it is limited in that it does not show the time effect of the effect of financial inclusion on maize productivity.

Practical Implications: The findings of the study showed that having access to financial services had a strong and positive effect on maize production among rural farming families. Therefore, it is important to increase efforts to include more farming households in the financial system, as this can help improve their agricultural productivity.

Originality/value: This study served as eye opener to practitioners and relevant stakeholders of the effect of financial inclusion on rural smallholder farmers' productivity

Keywords: Financial inclusion, productivity, financial services

Received: 10 May 2025
Revised: 12 November 2025
Accepted: 26 November 2025
Published: 28 November 2025

Introduction

Agriculture stands as a fundamental pillar of global economies, sustaining approximately 27% of the world's workforce and contributing around 4% to the global GDP (World Bank, 2021). Within the Nigerian context, the agricultural sector remains critically important, accounting for roughly a quarter of the national GDP and engaging about 35% of the labour force (National Bureau of Statistics, 2021; Abraham & Jankowska, 2025). Maize, globally recognized as the most extensively produced cereal, yields nearly 1.2 billion metric tons annually, driven by its dual significance as a staple food and a vital industrial raw material (FAO, 2020). Its integral role in the global food system is undeniable, providing essential components for human diets, livestock feed, and biofuel production. Across Africa, agriculture forms the bedrock of most economies, employing over 50% of the continent's workforce and contributing approximately

Published by UIR Press
© 2026 The Author(s)
Licensed under CC BY 4.0
e-ISSN: 3110-7737
DOI: 10.25299/ijbs.2025.22377

15% to the GDP (AfDB, 2021). Maize, in particular, is Africa's most crucial cereal, with an annual production nearing 85 million metric tons cultivated across an estimated 35 million hectares, contributing over 30% of the continent's caloric intake (FAO, 2020). Despite this importance, the continent faces a persistent challenge of low productivity, with average yields typically hovering around 2 tons per hectare, notably less than the 5 tons per hectare achieved in many other parts of the world (World Bank, 2021). This significant yield gap underscores the immense potential for improvement through strategic, targeted interventions.

Financial inclusion, at its core, aims to ensure that all segments of the population, especially those in rural and underserved areas, have equitable and affordable access to formal financial services. In the context of this study, financial inclusion encompasses access to essential tools, such as low-cost loans, mobile banking platforms, and various other financial instruments, designed to empower farmers in acquiring crucial inputs, adopting innovative technologies, and managing agricultural risks more effectively. Extensive research, including seminal work by Peprah et al. (2021) and Awotide et al. (2015), consistently underscores the transformative impact of financial inclusion on agricultural productivity and rural livelihoods, highlighting its capacity to elevate subsistence farming into viable, profitable enterprises. Studies by Yasmin and Setiastuti (2023) further reinforce the link between financial inclusion and food security, emphasizing its broader societal benefits.

Although formal financial services have the potential to transform agriculture, they remain largely inaccessible to rural farming households in Nigeria. The result is a cycle of low productivity, as farmers are unable to secure the capital needed for essential inputs, such as improved seeds and fertilizers (Awotide et al., 2015). This challenge is compounded by a deep mistrust of formal banks and low financial literacy, which pushes many to rely on informal credit with exorbitant interest rates (Ilesanmi et al., 2024). This financial barrier exists alongside structural issues; for instance, over 70% of Nigeria's smallholder farmers work on fragmented plots that limit economies of scale (National Bureau of Statistics, 2021), while only 20% have consistent access to extension services needed to learn about modern farming technologies (Federal Ministry of Agriculture and Rural Development, 2020). Farmers often struggle to afford crucial inputs, such as high-yielding seeds and modern machinery, a challenge directly linked to their limited access to affordable credit and savings. For maize farmers in particular, Ogunleye et al. (2024) identified this financial barrier as a primary cause of stagnated productivity, effectively trapping them in cycles of poverty.

According to the CBN (2021), approximately 65% of rural farmers in Nigeria still lack access to affordable credit, which limits their ability to invest in tools, inputs, and technologies that could enhance productivity. This challenge has also been documented in studies by Adigun (2022) and Fadeyi et al. (2021), who point to systemic gaps in financial service delivery to rural areas. In Ankpa Local Government Area (LGA), maize farmers experience several related issues, including small and scattered plots of land, irregular access to essential inputs, and a reliance on less efficient farming methods. Additional problems, such as climate variability, limited agricultural extension services, and weak marketing channels, further constrain productivity (Opaluwa et al., 2015). While national studies, such as Fowowe (2020), show a positive link between financial inclusion and agricultural performance, localized data remain scarce. This research aims to fill that gap by providing more context-specific evidence from Ankpa LGA.

The general objective of the study is to examine the effect of financial inclusion on maize productivity of rural farming households in Ankpa Local Government Area, Kogi State, Nigeria. The specific objectives of the study include to:

1) Describe the socio-economic characteristics of the rural maize farmers in the study area.
2) Identify the formal financial services utilized in the study area.
3) Identify the extent of financial inclusion of the farmers in the study area.

4) Examine the impact of financial inclusion on maize productivity among rural farmers in the study area.
5) Identify the constraints that limit the use of formal financial services in the study area.

International Journal of Business Sustainability

Volume: 1, Issue: 2, 2025

Literature Review

Nigeria's economy is predominantly agrarian, with a large portion of the population residing in rural areas, where farming remains the primary source of livelihood. According to the World Poverty Clock (2023), by the end of 2022, approximately 46.48% of Nigeria's population, equivalent to about 102 million individuals, lived in rural communities. Of this number, 71 million were classified as living in extreme poverty, solidifying Nigeria's reputation as a global epicentre of poverty. In 2022 alone, approximately 90% of the rural population, or 133 million people, lived below the poverty line (National Bureau of Statistics, 2023). A significant challenge faced by many of these rural dwellers is the lack of access to financial resources that could enable them to make meaningful agricultural investments and lift themselves out of poverty. While financial constraints may not directly cause poverty, they certainly reinforce it. Access to credit is widely recognized as a key strategy for enhancing financial inclusion among farmers.

To meet the Central Bank of Nigeria's (CBN) target of achieving 80% financial literacy by 2020 (CBN, 2018), the country must prioritize the sustained inclusion of rural populations, especially farmers, in the financial system. However, formal credit facilities in rural areas remain scarce due to government-controlled credit markets. As a result, many farmers are either unable or unwilling to access institutional loans. Financial inclusion encompasses various services designed to ensure that individuals and households, particularly those in underserved rural regions, can access affordable and user-friendly financial products. These services include credit, insurance, payment systems, and savings, all delivered in an ethical and sustainable manner. Inclusive finance has evolved into a critical tool for promoting economic development and financial stability. Initially conceived as a strategy to address income inequality and poverty, it is now considered essential for broader economic growth. A comprehensive household survey by Badarinza et al. (2017) provided a snapshot of the asset and liability structure of Indian households, demonstrating how financial inclusion contributes to income generation by enhancing the productive capacity of those with limited assets. For Nigeria's agricultural sector to thrive and support rural economic development, there is a pressing need for tailored financial literacy programs that foster inclusivity and productivity (CBN, 2022; EFInA, 2023).

Methodology

This research was conducted in the Ankpa Local Government Area of Kogi State, Nigeria, located along the A233 highway in the eastern region of the state. Geographically, it lies between latitudes 7°15' N and 7°37' N and longitudes 7°30' E and 7°37' E (National Population Commission [NPC], 2006). It shares borders with Benue State to the east, Enugu State to the south, and Omala Local Government Area to the north. The area comprises 18 districts and has an estimated population of 309,930, covering a landmass of approximately 262 square kilometers (NPC, 2006). Agriculture serves as the primary occupation of the inhabitants, with farming traditionally practiced using rudimentary tools such as hoes and cutlasses. Around 90% of the labour force is engaged in crop production. The region's fertile soil supports the cultivation of a diverse range of crops, including tomatoes, okra, yams, maize, cassava, cowpeas, citrus fruits, oil palms, mangoes, and cashews. Livestock farming, primarily involving goats and poultry, is also common.

Published by UIR Press
© 2026 The Author(s)
Licensed under CC BY 4.0
e-ISSN: 3110-7737
DOI: 10.25299/ijbs.2025.22377

Sampling Technique and Sample Size

A multistage sampling technique was used to select respondents. In the first stage, three key districts, Ankpa, Ojoku, and Enjema, were purposively chosen. The second stage involved randomly selecting two rural communities, one from each of the Ankpa, Ojoku, and Enjema districts. In the final stage, twenty-five maize farmers were randomly selected from each of the sampled farming communities, totalling 150 maize farmers. However, only 144 questionnaires were completely filled out and returned for analysis. Primary data were collected through a structured questionnaire. While self-reporting in surveys can introduce biases, efforts were made to mitigate this through the use of clear and unambiguous questions and by ensuring that enumerators were well-trained to clarify any ambiguities during data collection.

Method of Data Analysis

The study utilized both descriptive and inferential statistics. The study constructed a financial inclusion index, estimated a productivity index, and used the ordinary least squares method.

Construction of Financial Inclusion Index

Financial inclusion in this study is conceptualized as access and usage of formal financial services by rural households in the study area (Demirguc-Kunt & Klapper, 2013). Based on the way financial inclusion is conceptualized in this study, ownership of a savings account, access to credit, insurance, and mobile transactions and payments. This study applied equal weights (1/4) to each component, a method chosen for its simplicity and alignment with the approach used by Iddrisu and Danquah (2021). While this method ensures comparability, it is acknowledged as a potential limitation, as it may oversimplify the relative importance of each dimension. Future research could explore alternative weighting techniques, such as Principal Component Analysis (PCA). The research computed a financial inclusion score or index for the study. The overall index ranged from 0 to 1. The financial index computation was adopted according to the measurement of the financial inclusion index by Iddrisu and Danquah (2021).

Measurement of Maize Productivity

To achieve the estimation of maize productivity in the study, Total Factor Productivity (TFP) and Partial Factor Productivity (PFP) were utilized in the estimation of the factors used in the production of maize enterprise, and the productivity index was estimated.

The productivity index is measured as shown in equation 1:

$$\text{TFP} = \frac{\text{Gross Value of Output (₦)}}{\text{Gross Value of All Inputs (₦)}} \quad - \quad - \quad - \quad (1)$$

Where:

Gross Value of Output (N): The total monetary value of maize produced by a farming household.

Gross Value of Inputs (N): The total monetary value of all inputs used in maize production (e.g., seeds, fertilizers, labour).

While the partial factor productivity is shown in equation 2:

$$\text{PFP} = \frac{\text{Value of Output (₦)}}{\text{Value of a Particular Input (₦)}} \quad - \quad - \quad - \quad (2)$$

Value of Output (₦): The monetary value of maize produced;

Value of a particular input (₦): The monetary value of a specific input used (e.g., value of fertilizer used).

International Journal of Business Sustainability

Volume: 1, Issue: 2, 2025

Ordinary Least Squares Method

This technique was employed to investigate the impact of financial inclusion on maize productivity in rural maize farming households within the Ankpa Local Government Area, Kogi State, Nigeria. The linear model was stated with the corresponding a priori expectation as:

$$Y = a + \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \mu. \quad --(3)$$

Where:

Y = maize productivity (productivity index)

X_1 = Age (years)

X_2 = Gender (1 = male, 0 = female)

X_3 = Level of Education (formal education = 1, 0 if otherwise)

X_4 = Household size (number)

X_5 = Farm size (hectare)

X_6 = Credit access (1 = yes, 0 = no)

X_7 = Membership of Association (1 = yes, 0 = no)

X_8 = Financial Inclusion (index)

a = Intercept

$\beta_1 ... \beta_8$ = Coefficients

μ = Error term

Results and Discussion

Socio-Economic Characteristics of The Respondents

As shown in Table 1, the gender distribution among maize farmers in the study area was nearly even, with men accounting for 52.78% and women 47.22%. This near-equal participation is somewhat surprising, given that many agricultural studies in Nigeria tend to report a stronger male dominance in farming roles (Adigun, 2022). This result may suggest that gender-focused initiatives are having some effect in the region or that Ankpa LGA has unique cultural factors influencing women's participation in agriculture (Mbise, 2025).

Table 1 also shows that 57.64% of respondents were married, while 26.30% were single. This finding aligns with those from similar rural studies, where marriage is often prevalent among farming households and may contribute to increased household labour availability (Ilesanmi et al., 2024; Kehinde et al., 2024). When examining the age distribution, the results presented in Table 1 indicate that most farmers fall within the 21- to 50-year-old age range, with 28.47% aged 21–30, 25.00% aged 31–40, and 26.39% aged 41–50. These age groups are generally considered economically active, which may positively influence productivity. This trend has also been observed in other research on smallholder farmers in Nigeria (Kehinde et al., 2024).

Published by UIR Press

© 2026 The Author(s)
Licensed under CC BY 4.0

e-ISSN: 3110-7737
DOI: 10.25299/ijbs.2025.22377

Table 1
Distribution of the Socio-Economic Characteristics of the Respondents

Socio-Economics Characteristics	Frequency	Percentage
Sex		
Male	70	52.78
Female	68	47.22
Marital Status		
Single	38	26.30
Married	83	57.64
Divorced	9	6.25
Widowed	14	9.72
Age		
21-30	41	28.47
31-40	36	25.00
41-50	38	26.39
51-60	16	11.11
>60	12	9.03
Household size		
1-3	35	24.31
4-6	46	31.94
7-9	22	15.28
>9	41	28.47
Education Qualification		
Primary School Leaving Cert.	26	18.06
Secondary School Cert.	68	47.22
Tertiary School	50	34.72
Primary Occupation		
Farming	87	60.42
Trading	34	23.61
Artisanship	7	4.86
Govt. Salaried Job	7	4.86
Private Job	9	6.23
Farm Size (Hectares)		
0.1-2.0	123	85.42
>2.0	21	14.58
Membership of Association		
Yes	110	76.39
No	34	23.61
Access to Credit		
Had access	31	21.53
Had no access	113	78.47
Total	144	100.00

Source: Field Survey

Household size patterns are also notable. According to Table 1, the largest group (31.94%) reported having 4–6 members, while 28.47% had more than nine members. Larger household sizes are typical in rural areas and often provide additional labour for farming activities. This finding is consistent with studies that link larger households to improved labor capacity on small farms (Taremwa et al., 2021). Furthermore, the results in Table 1 highlighted that educational qualifications among respondents were relatively high for a rural area. About 47.22% held secondary school certificates, while 34.72% had tertiary education. This is encouraging, as farmers with more education are often better positioned to adopt new technologies or access financial services that can improve productivity (Kehinde et al., 2024; Adigun, 2022).

The result reveals that farming was the primary occupation for 60.42% of the respondents, reaffirming the agrarian nature of the local economy. The vast majority of these farmers

(85.42%), as indicated in Table 1, operate on small-scale farms ranging from 0.1 to 2.0 hectares. The widespread prevalence of smallholder farming is a well-established characteristic of Nigerian agriculture (Abraham & Jankowska, 2025), and it inherently poses significant challenges for achieving economies of scale and substantially improving overall productivity.

International Journal of Business Sustainability

Volume: 1, Issue: 2, 2025

As shown in Table 1, a high percentage of respondents (76.39%) reported being members of a cooperative association. This suggests a strong presence of social capital and a collective approach to addressing farming challenges. However, this finding presents a notable contrast with studies from other regions of Nigeria, which highlight varying levels of farmer engagement in social capital networks and cooperative societies, influenced by diverse socio-economic factors (Kehinde et al., 2024). This discrepancy may be attributable to variations in specific agricultural sub-sectors or differences in the effectiveness of cooperative promotion efforts tailored to distinct crops. Finally, Table 1 highlights that access to credit remains a significant constraint, with only 21.53% of respondents reporting access to formal credit. For instance, Adigun (2022) highlighted the significant barriers women farmers in Kwara State face in accessing credit, while Ogunleye et al. (2024) specifically examined how credit constraints impact maize farmers in Northern Nigeria, leading to challenges in adopting risk management strategies and improving income.

Utilization of Formal Financial Services

As shown in Table 2, there is widespread adoption of basic financial services. The use of Automated Teller Machines (ATM) was the most prevalent service at 89.58%, followed by savings accounts at 81.25%. This indicates a strong reliance on fundamental banking services for cash withdrawals and savings. The result shows a moderate distribution of checking accounts (63.19%) in the study, but the fair uptake of e-banking (55.42%) and mobile money (46.72%) points to a digital divide. This observation aligns with research highlighting how limited digital literacy and inadequate infrastructure can significantly impede the adoption of digital financial services in rural contexts (Kilombele et al., 2023; Okyere et al., 2024). Table 2 again revealed that 81.25% of respondents utilized savings accounts, while only 18.75% used fixed deposit accounts. This strong preference for liquid savings over long-term investments is typical in rural economies where incomes are often seasonal and unpredictable. Such a preference allows households to maintain flexibility in managing immediate financial needs and unexpected expenses, often leading to a cautious approach towards committing funds to fixed-term investments (Kilombele et al., 2023).

Table 2 further reveals a significant gap in credit availability. While a high percentage of respondents (90.97%) had applied for a loan, only 26.61% were successful in obtaining one. These barriers often include stringent collateral requirements, high-interest rates, and insufficient financial literacy, which collectively limit access to crucial capital for agricultural investment (Adigun, 2022; Ogunleye et al., 2024). This corroborates broader findings that risk-averse policies adopted by financial institutions frequently restrict credit outreach in agrarian communities, hindering their growth potential (Ilesanmi et al., 2024). Insurance coverage, as detailed in Table 2, remains very low, with only 25.00% of respondents using short-term insurance and 16.67% using long-term insurance. This underutilization of insurance products exposes farmers to significant risks. The minimal adoption of insurance in rural Nigeria is often attributed to a combination of factors, including limited awareness of available products, prevailing cultural biases, and a common perception that insurance is an unnecessary or unaffordable expense (Fadeyi et al., 2021).

Published by UIR Press

© 2026 The Author(s)
Licensed under CC BY 4.0

e-ISSN: 3110-7737
DOI: 10.25299/ijbs.2025.22377

Table 2
Distribution of Households according to the Formal Financial Services Utilized in the Study Area

S/N	Usage Dimensions	Services	Percentage *
1	Account Ownership	E-banking	55.42
		Mobile money	46.72
		Automated Teller Machine (ATM)	89.58
		Checking account	63.19
2	Saving Propensity	Saving account	81.25
		Fixed deposit account	18.75
3	Credit Availability	Applied for loan	90.97
		Granted a loan/credit	26.61
4	Insurance cover	Short-term insurance	25.00
		Long-term insurance	16.67
5	Other types	POS	80.56
		Checking of Account balance	76.06
		Online Transfer	43.66
		Visit to Banks for other services	86.81

Source: Field Survey

Table 2 also shows high usage of other accessible financial services. Point of Sale (POS) terminals were used by 80.56% of respondents, indicating the growing importance of agent banking in rural areas. Similarly, 86.81% of respondents reported visiting banks for other services, and 76.06% checked their account balances, indicating a general level of engagement with formal financial institutions. However, online transfers were less common (43.66%), which again points to the challenges of digital adoption in the study area, likely due to factors such as connectivity, digital literacy, and trust (Kilombele et al., 2023).

Extent of Households' Financial Inclusion

As indicated in Table 3, the distribution of financial inclusion levels shows that the majority of households fall within the low (38.89%) and medium (29.86%) inclusion categories. Combined, these two groups account for 68.75% of the sample population, indicating that the respondents were predominantly from low-income or financially included backgrounds in the study area. This finding aligns with broader trends in Nigeria, where efforts by microfinance institutions and financial inclusion initiatives continue to work towards reaching underserved populations (Biala & Galadima, 2024; Fadeyi et al., 2021). Initiatives such as the Central Bank of Nigeria's agent banking model and national financial inclusion strategy may have begun to close some gaps, especially in areas where physical access and financial literacy are known barriers.

Table 3
Distribution of the Extent of Households 'Financial Inclusion in the Study Area

Financial inclusion index	Frequency	Percentage
0.01-0.25 (Low)	56	38.89
0.26-0.50 (Medium)	43	29.86
0.51-0.75 (High)	41	28.47
0.76-1.00 (Very High)	4	2.78

Source: Field Survey

Table 3 also shows that 28.47% of respondents fell into the high inclusion group (0.51-0.75), while only 2.78% reached the very high category (0.76-1.00). The limited representation in these upper tiers highlights persistent challenges, including inadequate credit access, limited

infrastructure, and a lack of tailored financial products, which continue to prevent many rural households from fully participating in the formal financial system (Mahmud, 2021; Ilesanmi et al., 2024).

Nonetheless, it's worth noting that a subset of households had financial inclusion index scores above 0.50, which typically indicates more regular use of tools like savings accounts, mobile transfers, or formal credit services. This group may already be experiencing the benefits of financial inclusion, such as greater savings potential or improved resilience to economic shocks (Kilombele et al., 2023; Okyere et al., 2024). In this context, enhanced access could also support better agricultural investment and income security; however, further study would be needed to confirm this link locally.

International Journal of Business Sustainability

Volume: 1,
Issue: 2, 2025

Level of Maize Productivity

As shown in Table 4, the largest proportion of respondents (40.28%) reported a maize productivity index within the range of 1.10 to 2.00, indicating relatively low productivity. Similarly, 36.11% achieved an index of 2.10-3.00, while only 22.22% recorded productivity in the 3.1-4.0 tons per hectare. Productivity indexes exceeding 4.0 were rare, with only 0.69% of respondents reporting a score of 4.10-5.00 or higher. These figures generally align with observed trends in maize productivity among smallholder farmers in various African contexts, where low outputs are often attributed to challenges such as limited access to quality inputs, poor soil fertility, and inadequate farming practices (Traore & Moussa, 2025; Seidu & Tanko, 2022). Research consistently emphasizes that strategic investments in farmer education and the provision of subsidized inputs can significantly enhance maize yields in similar agricultural settings (Kehinde et al., 2024; Ogunleye et al., 2024).

Table 4
Maize Productivity Levels Among Respondents

Indices	Frequency	Percentage
1.10-2.00	58	40.28
2.10-3.00	52	36.11
3.10-4.00	32	22.22
4.10-5.00	1	0.69
>5.00	1	0.69

Source: Field Survey

Effect of Financial Inclusion on Maize Productivity

Table 5 presents the results of an ordinary least squares regression analysis. The model incorporated eight independent variables, five of which demonstrated statistical significance. The statistically significant variables include age ($p<0.01$), gender ($p<0.01$), level of education ($p<0.05$), household size ($p<0.05$), and financial inclusion ($p<0.001$). The coefficient of determination (R^2) was 0.4991, indicating that approximately 49.91% of the variation in maize productivity can be explained by the independent variables included in the model. With an F-statistic of 13.16 and an overall significance of the regression parameters at $p<0.0000$, the model is statistically significant. The moderate R^2 value suggests that other factors not accounted for in this model, such as climate variability, soil quality, access to irrigation, and specific farming practices, may also influence maize productivity. Future research could explore these additional factors to provide a more comprehensive understanding.

Published by UIR Press
© 2026 The Author(s)
Licensed under CC BY 4.0
e-ISSN: 3110-7737
DOI:
10.25299/ijbs.2025.22377

Table 5
The estimate of the effect of financial inclusion on maize productivity in the study area

Productivity	Coefficient	Std. Err.	T	P>/t/
Age	-0.014	0.003	-4.410	0.000
Gender	-0.226	0.058	-3.900	0.005
Level of Education	0.487	0.227	2.140	0.034
Household size	0.007	0.004	2.090	0.039
Farm size	0.000	0.744	0.000	0.996
Credit access	0.097	0.064	1.520	0.131
Membership of Association	0.063	0.065	0.970	0.333
Financial inclusion index	0.732	0.140	5.200	0.000
_constant	0.963	0.267	3.610	0.000
No. of Observation	144			
F (9,134)	13.160			
Prob > F	0.000			
R-Squared	0.499			
Root MSE	0.300			

A particularly telling result from this study is the negative and significant impact of both age and gender on maize productivity. This finding suggests that in Ankpa LGA, older farmers and female-headed households are at a distinct disadvantage. Our local data powerfully echoes national-level trends reported by the World Bank (2022), which documented a 30% productivity gap between female and male plot managers across Nigeria. While the World Bank (2022) established this trend at a national level, and Adigun (2022) identified similar resource access issues for women farmers in Kwara State, this study provides crucial, empirical evidence at the local government level. This localized data advances the discourse by confirming that these broad trends persist at a micro-level, suggesting that national policies must be complemented by targeted, context-specific interventions to address the unique barriers women face in specific communities, such as Ankpa LGA.

Conversely, the positive and significant coefficients for education level, household size, and financial inclusion highlight their beneficial roles in enhancing maize productivity. Educated farmers are more likely to adopt improved agricultural practices and effectively utilize financial services, resulting in improved productivity. This supports previous findings that education is often linked to better farming outcomes due to improved decision-making and access to information (Kehinde et al., 2024). Likewise, larger households may provide more labor, which is particularly important for labor-intensive crops such as maize. This observation is consistent with studies indicating that household size can significantly influence farm productivity (Taremwa et al., 2021).

Financial inclusion also seems to play a role by improving farmers' ability to access loans and savings products. With this support, they are better positioned to invest in essential inputs such as quality seeds, fertilizers, or machinery. Several studies suggest that such access to finance can have a significant influence on agricultural outcomes, particularly in low-income settings (Traore & Moussa, 2025; Seidu & Tanko, 2022; Peprah et al., 2021).

Barriers to Accessing Formal Financial Services

As indicated in Table 6, the most reported constraint was the perception that there is "no benefit for using the service," cited by 93.75% of respondents. This finding reflects a significant lack of awareness or trust in formal financial institutions among rural households, who may view formal financial systems as detached from their economic realities (Mahmud, 2021). Closely related, 90.91% of respondents reported that they had "tried to open but were turned

down." This barrier points to restrictive policies or complex requirements, such as high initial deposits or stringent identification procedures that exclude potential users. The issue of multiple charges was cited by 89.58% of respondents, reflecting frustrations with high and often non-transparent fees associated with formal financial services, which deter usage and reinforce reliance on informal alternatives (Biala & Galadima, 2024).

International Journal of Business Sustainability

Volume: 1, Issue: 2, 2025

Table 6
Barriers to Formal Financial Service Use by Respondents in the study area.

No.	Constraints	Percentage *
1	I have no money	71.53
2	Living far from bank/service area	72.22
3	No benefit for using the service	93.75
4	Multiple charges	89.58
5	Tried to open but was turned down	90.91
6	Long process involved/cumbersome procedure	86.81
7	Not necessarily meant for me	88.11
8	Illiteracy/language barriers	73.61
9	I don't have the requested documents	81.94
10	Transaction cost	71.23
11	Attitude of the bank employees	69.43
12	"Others, please specify"	43.21

Source: Field Survey

A significant proportion of respondents (88.11%) felt that formal financial services were "not necessarily meant for them." This sentiment underscores the alienation rural households often feel due to the urban-centric nature of many financial services. To better serve rural users, it may be necessary to develop financial products that reflect their realities, such as low-entry savings options or agricultural loans that align with farming cycles (Fadeyi et al., 2021). Additionally, 86.81% of respondents cited long and complicated procedures as a reason for avoiding the use of formal financial systems. This supports earlier research, which shows that excessive paperwork and inefficient service delivery often discourage rural engagement with the formal banking sector (Ilesanmi et al., 2024). Simplifying these steps, for example, by introducing more agent banking options or reducing documentation requirements, could make services more accessible and less intimidating.

Conclusion and Policy Implications

This study aimed to investigate the relationship between access to financial services and maize productivity among rural farmers in Ankpa Local Government Area, Kogi State. The analysis suggests that improved financial access may positively influence maize output, with several socio-economic factors, such as age, gender, education level, household size, and financial inclusion, emerging as key contributors to productivity outcomes. Based on these insights, the study proposes several policy recommendations. First, government agencies and development organizations could consider expanding their support for rural financial services in conjunction with broader agricultural development efforts. Such initiatives would complement the objectives of Nigeria's National Financial Inclusion Strategy (CBN, 2021), especially if adapted to the specific needs of farming communities. Particular attention should be given to older and female farmers, who may encounter distinct barriers. Policy responses might include tailored financial products (such as microcredit with flexible repayment terms for women), along with gender-responsive agricultural extension programs and targeted training initiatives that account for farmers' unique constraints. Promoting financial literacy also appears to be an essential step. Addressing perceptions of exclusion or mistrust toward

Published by UIR Press
© 2026 The Author(s)
Licensed under CC BY 4.0
e-ISSN: 3110-7737
DOI: 10.25299/ijbs.2025.22377

formal institutions requires educational efforts that highlight the practical benefits of savings, credit, and insurance tools, especially in ways that directly relate to agricultural productivity and household resilience. Lastly, there is a need for financial service providers to simplify account-opening procedures, reduce service fees, and expand outreach through agent banking or mobile platforms that are well-suited to the rural context. This would address the high percentage of farmers who were "turned down" or found the processes "cumbersome. Financial institutions should design products specifically tailored for rural farming households, such as seasonal loans, agricultural insurance, and flexible savings schemes that align with farming cycles and income patterns. This would address the sentiment that current services are "not necessarily meant for them. By enhancing financial literacy, improving access to credit, and supporting educational initiatives, these groups can be empowered, leading to increased maize productivity and improved livelihoods in Ankpa LGA and similar rural areas.

Reference

Abraham, A. J., & Jankowska, A. (2025). The potential and productivity of agriculture in Nigeria. *Preprint Series on Agricultural Policy*, *1*, *38*. https://www.preprints.org/frontend/manuscript/3fbac8745f27e5467f22afc08e1c6265/download_pub

Adigun, G.T. (2022). Determinants of credit access among smallholder women farmers in Kwara State, Nigeria. *Nigeria Agricultural Journal*, *53* (2), 121–128. https://www.ajol.info/index.php/naj/article/view/232639

African Development Bank (ADB). (2021). Agriculture and food security in Africa: Transforming agriculture for sustainable development. Retrieved from https://www.afdb.org

Awotide, B.A., Abdoulaye, T., Alene, A. & Manyong, V.M. (2015). Impact of access to credit on agricultural productivity: Evidence from smallholder cassava farmers in Nigeria. https://ageconsearch.umn.edu/record/210969/

Badarinza, C. (2017) The Indian Household Finance Landscape. Vimal Balasubramaniam, Tarun Ramadorai. SSRN, 2017 - 54 pages RN, 2017 - 54 pages.

Badiru, I.O. (2010). Review of small farmer access to agricultural credit in Nigeria. https://cgspace.cgiar.org/items/cb5d4c4a-73e9-497c-929c-1cad9baef1d8

Biala, M.I. & Galadima, H.M. (2024). MICROFINANCE INSTITUTIONS AND THE PERFORMANCE OF AGRICULTURAL SECTOR IN NIGERIA. *Journal of the Management Sciences*, *61*(9), 235–257. https://journals.unizik.edu.ng/jfms/article/view/6032

Central Bank of Nigeria (2018). National financial inclusion strategy (revised)", Abuja Nigeria, https://www.cbn.gov.ng/Out/2019/CCD/NATIONALFINANCIALINCLUSIONSTRATEGY.pdf (accessed 10 July 2019).

Central Bank of Nigeria (CBN). (2021). Annual report on financial inclusion and agricultural productivity. CBN Publications. https://www.cbn.gov.ng/Out/2023/RSD/2021%20CBN%20ANNUAL%20ECONOMIC%20REPORT.a.pdf

Central Bank of Nigeria (2022) Alliance For Inclusion. https://efina.org.ng/wp-content/uploads/2024/03/A2F-2023-Event-Day-Presentation-Version4-1.pdf

Demirgüç-Kunt, A., & Klapper, L. (2013). Measuring financial inclusion: Explaining variation in use of financial services across and within countries. *Brookings papers on economic activity*, *2013*(1), 279-340.https://doi.org/10.1353/eca.2013.0002

EFInA (2023). Enhancing Financial Innovation and Access. The Access to Finance (A2F) survey 2022. https://efina.org.ng/wp-content/uploads/2024/03/A2F-2023-Event-Day-Presentation-Version4-1.pdf

Fadeyi, O. A., Omojeso, B. V., & Ityokumbul, I. S. (2021). A review of microfinance banks effects on smallholder development in Nigeria. *African Journal of Agricultural Research*, *17*(9), 1249-1255. https://academicjournals.org/journal/AJAR/article-full-text/302DBCA67814

Federal Ministry of Agriculture and Rural Development (FMARD). (2020). 2020 Wet Season Agricultural Performance in Nigeria. FMARD. https://naerls.gov.ng/wp-content/uploads/2022/11/Agricultural-Performance-Survey-of-2020-Wet-Season-in-Nigeria.pdf

Food and Agriculture Organization (FAO). (2020). Cereal production statistics 2020. FAO. https://www.fao.org

Fowowe, B. (2020). The effects of financial inclusion on agricultural productivity in Nigeria. *Journal of Economics and Development*, *22*(1), 61-79. https://doi.org/10.1108/JED-11-2019-0059

Iddrisu A.M. & Danquah, M. (2021). "The financial inclusion agenda: Examining the role of conventional banks in deepening access to formal credit," WIDER Working Paper Series wp-2021-74, *World Institute for Development Economic Research (UNU-WIDER)*. *48*(2), 101202.

Ilesanmi, J.O., Bello, T.O. & Peter, O. (2024). Evaluating the Effect of Microcredit on Rural Livelihoods: A Case Study of Farming Households in Southwest Nigeria. *International Journal of Economic, Finance and Business Statistics (IJEFBS)*, *2*(5), 289-302. https://doi.org/10.59890/ijefbs.v2i5.2619.

Kehinde, A. D., Ojo, T. O., & Ogundeji, A. A. (2024). Impact of participation in social capital networks on the technical efficiency of maize producers in Southwest Nigeria. *Agriculture & Food Security*, *13*(1), 12.https://doi.org/10.1186/s40066-023-00464-y

Kilombele, H., Feleke, S., Abdoulaye, T., Cole, S., Sekabira, H., & Manyong, V. (2023). Maize Productivity and Household Welfare Impacts of Mobile Money Usage in Tanzania. *International Journal of Financial Studies*, *11*(1), 27. https://doi.org/10.3390/ijfs11010027

Mahmud, H. (2021). Determinants of level of accessibility to microfinance among loan beneficiaries of some commercial crop production farmers in Niger State, Nigeria. *International Journal of Environment, Agriculture and Biotechnology*, *6*(1), 216-223. https://doi.org/10.22161/ijeab.61.26

Mbise, M. (2025). Economic Activities and Gender Inclusiveness. A Case of Maize Production in Tanzania and Integrated Research Review. *Tanzania Journal of Sociology*, *11*(1), 103-117. https://journals.udsm.ac.tz/index.php/tjsociology/article/view/8801

National Bureau of Statistics (NBS). (2021). Agricultural statistics report. NBS. https://www.nigerianstat.gov.ng

Obisesan, A. A. (2013). Credit accessibility and poverty among smallholder cassava farming households in South West, Nigeria. *Greener Journal of Agricultural Sciences*, *3*(2), 120-127. https://core.ac.uk/download/pdf/227006026.pdf

Ogunleye, A., Akinloye, M. O., Kehinde, A., Ajayi, O. M., & Wongnaa, C. A. (2024). Impacts of credit constraints on adoption of risk management strategies and income of maize farmers in Northern Nigeria. *Agricultural Finance Review*, *84*(2/3), 114-142. https://doi.org/10.1108/AFR-11-2023-0152

International Journal of Business Sustainability

Volume: 1, Issue: 2, 2025

Published by UIR Press

© 2026 The Author(s) Licensed under CC BY 4.0

e-ISSN: 3110-7737
DOI: 10.25299/ijbs.2025.22377

Onogwu, G. O., Audu, I. A., & Igbodor, F. O. (2017). Factors influencing agricultural productivity of smallholder farmers in Taraba State, Nigeria. *International Journal of Agriculture Innovations and Research*, *6*(1), 114-118.

Opaluwa, H. I., Ali, S. O., & Ukwuteno, S. O. (2015). Perception of the constraints affecting maize production in the agricultural zones of Kogi State, North Central, Nigeria. *Asian Journal of Agricultural Extension, Economics & Sociology*, *7*(2), 1-6. https://doi.org/10.9734/AJAEES/2015/16003

Okyere, C. Y., Atta-Ankomah, R., & Asante-Addo, C. (2024). Mobile money adoption, farm performance and household welfare in Northern Ghana. *In Financial Inclusion and Sustainable Rural Development* (pp. 425-450). Singapore: Springer Nature Singapore. https://link.springer.com/10.1007/978-981-97-6132-6_18

Peprah, J. A., Koomson, I., Sebu, J., & Bukari, C. (2021). Improving productivity among smallholder farmers in Ghana: does financial inclusion matter?. *Agricultural Finance Review*, *81*(4), 481-502. https://doi.org/10.1108/AFR-12-2019-0132

Seidu, M. M., & Tanko, M. (2022). Maize productivity amidst northern rural growth credit programme in Ghana. *Heliyon*, *8*(9). https://www.cell.com/heliyon/fulltext/S2405-8440(22)01708-X

Taremwa, N. K., Macharia, I., Bett, E., & Majiwa, E. (2021). Impact of agricultural credit access on agricultural productivity among maize and rice smallholder farmers in Rwanda. *Journal of Agribusiness and Rural Development*, *59*(1), 39-58. https://ageconsearch.umn.edu/record/356124/

Traore, S., & Moussa, R. K. (2025). Digital finance, maize productivity, and welfare of farm households in Burkina Faso. *Cogent Economics & Finance*, *13*(1), 2448226. https://doi.org/10.1080/23322039.2024.2448226

World Bank. (2021). World Development Indicators: Agriculture and rural development. World Bank. https://data.worldbank.org/indicator

World Bank. (2022). Gender Gaps in Agriculture Productivity and Public Spending in Nigeria. World Bank Group. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099091823113036874/p1750950865 10b001080e30d147463456d6

World Poverty Clock. (2023). Over 71m Nigerians In Extreme Poverty. African Inclusion Magazine 2023. https://inclusion.com.ng

Yasmin, Y., & Setiastuti, S. U. (2023). The Effect of Financial Inclusion on Food Security: Evidence from Developing and Developed Countries. *Economics and Finance in Indonesia*, *69*(2), 4. https://lpem.org/repec/lpe/efijnl/202309.pdf

Corresponding Author

Gbenga Opeyemi can be contacted at: opeyemi.g@ksu.edu.ng