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Credit Access and Constraints to Livelihood Diversification among Rural Farmers in Kano State, Nigeria

*Abdulwahab, F.S.[1], Abdullahi, S.[2], Garba, M.[2] and Hamidu, B.[3]

1. *Aliko Dangote University of Science and Technology Wudil, Faculty of Agriculture and Agricultural Technology, Department of Agricultural Economics and Extension, Kano, Nigeria*
2. *Abubakar Tafawa Balewa University Bauchi, Faculty of Agriculture and Agricultural Technology, Department of Agricultural Extension and Rural Development, Bauchi, Nigeria*
3. *Abubakar Tafawa Balewa University Bauchi, Faculty of Agriculture and Agricultural Technology, Department of Agricultural Economics, Bauchi, Nigeria* *Corresponding author's email: farouk_wahab@kustwudil.edu.ng

Abstract

Credit access is a critical enabler of livelihood diversification among rural households, particularly in resource-constrained and climate-vulnerable regions like northern Nigeria. This study examined the extent of credit access, major constraints, and their influence on livelihood diversification among 450 smallholder farmers in Kano State, Nigeria. Data were collected through a multistage sampling procedure and analyzed using descriptive statistics, binary logit regression, and the Simpson Diversification Index. Results revealed that respondents were predominantly male (81.1%), married, and middle-aged, with small landholdings and low monthly incomes. Farming remained the dominant livelihood activity, supplemented by livestock, poultry, and petty trading. Formal credit access was limited (31.8%), with most households relying on informal sources such as friends and relatives. The primary constraints to diversification were limited access to credit, high startup costs, and high input prices. Binary logit and other regression analyses confirmed that financial exclusion significantly hinders diversification efforts. The study concludes that financial exclusion remains the main structural barrier to livelihood diversification. It recommends expanded rural credit delivery, reduced borrowing costs, strengthened cooperative financing, and enterprise support programs to enhance household resilience and welfare in Kano State.

Keywords: Credit access, livelihood diversification, rural farmers, constraints, financial inclusion, Kano State, Nigeria

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Introduction

Agriculture remains the backbone of rural livelihoods in Nigeria, employing a substantial proportion of the rural population and contributing significantly to household income, food security and national economic development. In northern Nigeria, particularly Kano State, smallholder farming constitutes the primary source of livelihood for most rural households. However, increasing climate variability, declining agricultural productivity, market fluctuations, population pressure and limited access to productive resources have heightened the vulnerability of farming households. Consequently, rural households are increasingly adopting livelihood diversification strategies as a means of reducing risk, stabilizing income and improving household welfare (Ojo *et al.*, 2024).

Livelihood diversification refers to the process by which rural households construct a diverse portfolio of activities and social support capabilities to improve their living standards and cope with economic uncertainties. These activities may include on-farm diversification, offfarm employment, petty trading, agro-processing, transportation services, artisanal work and other non-farm enterprises. Evidence from rural Nigeria indicates that livelihood diversification contributes significantly to poverty reduction, income enhancement and resilience against agricultural shocks (Ojo *et al.*, 2024). Similarly, studies among rural farm households have shown that diversification provides alternative income streams that cushion households against production failures and adverse market conditions (Belonwu *et al.*, 2024).

Access to credit is widely recognized as a critical determinant of livelihood diversification. Credit enables rural households to overcome liquidity constraints, invest in productive assets, adopt improved technologies, establish small businesses and participate in non-farm economic activities. According to the Sustainable Livelihood Framework (SLF), financial capital is a key livelihood asset that enhances households' capacity to pursue diverse livelihood strategies and achieve desirable livelihood outcomes. Where financial capital is inadequate, households often face difficulties investing in both agricultural and nonagricultural income-generating opportunities, thereby limiting their ability to diversify livelihoods and improve welfare.

Empirical studies across developing countries consistently demonstrate a positive relationship between access to credit and livelihood diversification. Access to financial resources enables households to invest in enterprises with higher returns, manage risks more effectively, and smooth consumption during periods of economic stress. A recent study by Adebayo *et al.*(2024)found that credit access significantly influences diversification decisions and household food security outcomes among farming households. Likewise, evidence from cocoa-producing households in Nigeria revealed that access to credit enhances diversification and contributes positively to household food security by enabling farmers to allocate resources more efficiently across multiple livelihood activities (Afolabi *et al.*, 2024).

Despite the recognized importance of credit, access to formal financial services among rural farmers in Nigeria remains limited. Many smallholder farmers encounter numerous barriers, including inadequate collateral, high transaction costs, limited financial literacy, information asymmetry, bureaucratic lending procedures and insufficient rural financial infrastructure. These constraints often force farmers to depend on informal credit sources such as relatives, friends, money lenders, rotating savings associations, and cooperative societies, which may provide inadequate financing for meaningful livelihood investments (Danlami & KofarMata, 2025). In Kano State specifically, recent evidence indicates that access to agricultural credit

remains constrained by financial exclusion and weak institutional arrangements despite the existence of several government-sponsored agricultural financing programmes. Access to credit information, ownership of bank accounts, social capital and participation in off-farm businesses significantly influence farmers' participation in credit markets, while reliance on traditional production systems reduces access to formal credit facilities.

Furthermore, studies examining livelihood diversification among rural households in Nigeria identify inadequate access to credit as one of the most important constraints limiting diversification efforts. For instance, research conducted among rural farm households reported that lack of access to credit was the most severe obstacle preventing households from expanding into alternative income-generating activities (Belonwu *et al.*, 2024). Similarly, inadequate credit facilities have been identified as a major constraint affecting rural households' capacity to invest in productive ventures and improve their socioeconomic status.

Given the strategic importance of Kano State in Nigeria's agricultural economy and the persistent challenges surrounding rural finance, there is a need to better understand how credit access influences livelihood diversification and the specific constraints that limit farmers' participation in formal credit markets. Such understanding is crucial for designing evidence-based policies aimed at improving financial inclusion, promoting livelihood diversification, reducing rural poverty, and enhancing household resilience.

Problem Statement

Livelihood diversification has become an increasingly important strategy for rural households seeking to cope with declining agricultural returns, climate-related risks, and socioeconomic uncertainties. Through diversification, households can generate additional income, reduce dependence on agriculture and improve their resilience to shocks. However, the successful adoption of diversified livelihood strategies often requires access to financial resources that enable households to invest in alternative economic activities and productive assets.

In Kano State, where smallholder agriculture remains the dominant livelihood activity, access to formal credit continues to be a major challenge despite various government interventions and agricultural financing initiatives. Recent studies reveal that many rural farmers remain financially excluded due to inadequate collateral, limited access to credit information, low levels of financial literacy, weak institutional support and poor connectivity to formal financial institutions. These challenges constrain farmers' ability to obtain sufficient and timely credit for investment purposes.

Although previous studies have examined agricultural credit access, credit market participation and livelihood diversification independently, limited empirical evidence exists regarding the specific relationship between credit access and livelihood diversification among rural farmers in Kano State. Existing studies largely focus on determinants of credit access, sources of agricultural finance or the general effects of diversification on household welfare without explicitly investigating how credit constraints influence farmers' ability to diversify their livelihoods.

Moreover, evidence from rural Nigeria suggests that inadequate access to credit remains one of the most significant barriers to livelihood diversification, yet little is known about the relative importance of different credit constraints and their implications for diversification decisions among rural farmers in Kano State. Consequently, policymakers and development practitioners

lack sufficient empirical evidence to design targeted interventions capable of addressing financial barriers to livelihood diversification.
Therefore, this study seeks to examine credit access and constraints to livelihood diversification among rural farmers in Kano State, Nigeria. Specifically, it aims to assess the level of farmers' access to credit, identify the major constraints limiting access to financial services, and evaluate how these factors influence livelihood diversification decisions. The findings are expected to provide valuable insights for the formulation of policies and programmes that promote inclusive rural finance, sustainable livelihood development, poverty reduction, and improved household welfare.

Theoretical Framework

Sustainable Livelihood Framework (SLF)

This study is anchored on the Sustainable Livelihood Framework (SLF) developed by the UK Department for International Development (DFID, 1999). The framework explains how households utilize available livelihood assets or capitals to pursue livelihood strategies that lead to desired livelihood outcomes. The framework identifies five forms of capital assets: human, natural, physical, social, and financial capital.

Financial capital, particularly access to credit, plays a central role in enabling rural households to diversify their livelihood activities. Access to credit enhances farmers' capacity to invest in agricultural production, adopt improved technologies, establish off-farm enterprises and engage in non-farm income-generating activities. On the contrary, limited access to credit constrains households' ability to mobilize resources required for diversification, thereby increasing vulnerability to economic and environmental shocks.

Within the SLF perspective, livelihood diversification is considered a strategic response adopted by households to improve income, reduce risk and strengthen resilience. The framework further recognizes that institutional factors such as financial institutions, government policies, market conditions and social networks influence access to livelihood assets and the choice of livelihood strategies.

The relevance of the SLF to this study lies in its ability to explain how access to financial capital (credit) influences the adoption of diversified livelihood strategies among rural farmers. The framework therefore provides an appropriate lens for examining the effects of credit access and credit constraints on livelihood diversification in Kano State, Nigeria.

Conceptual Framework

The conceptual framework assumes that access to credit influences the extent of livelihood diversification among rural farmers. However, the relationship is mediated by several socioeconomic and institutional factors.

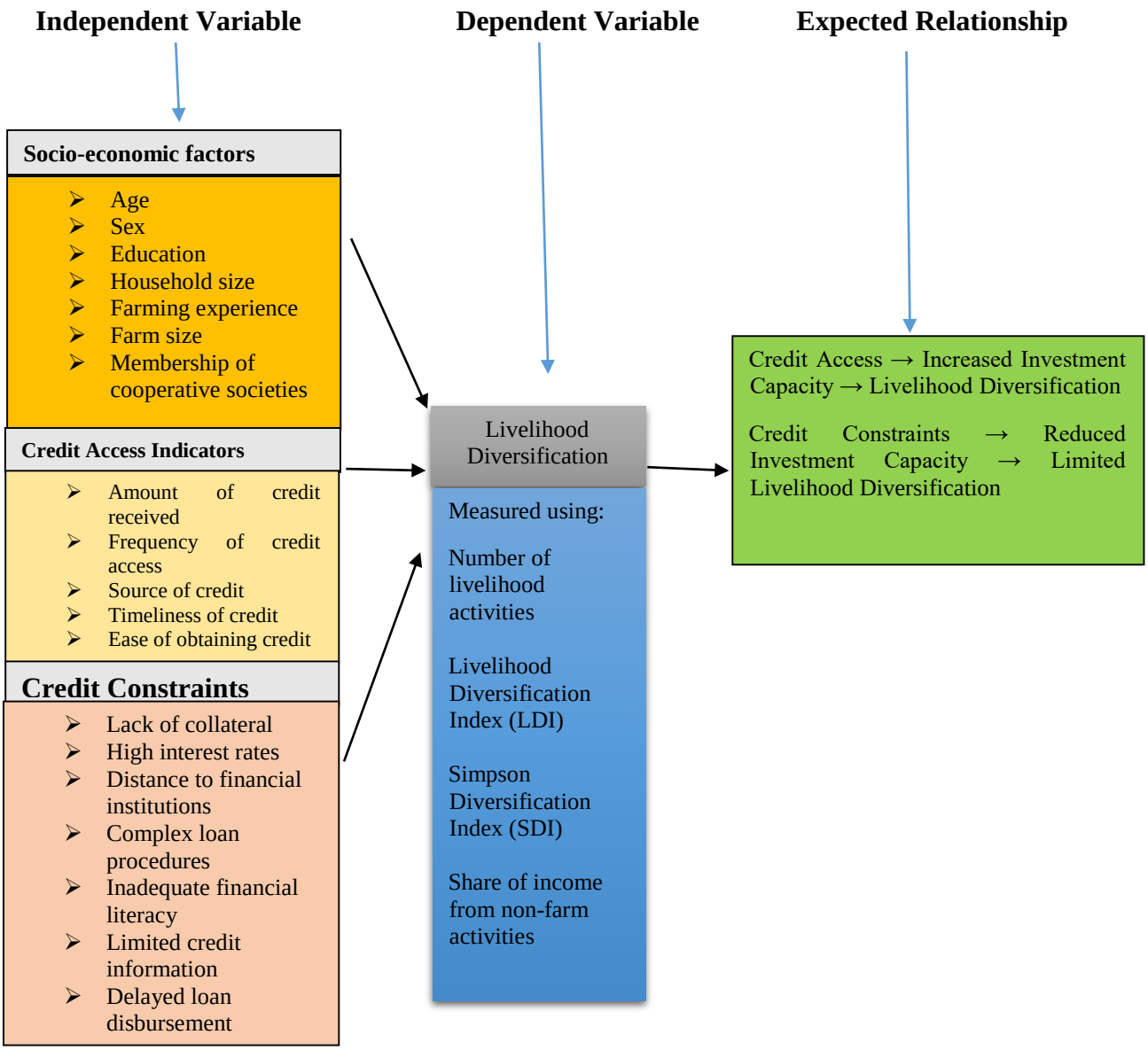


Fig. 1: ***Conceptual Model Showing How Access to Credit Influences Livelihood Diversification***

METHODOLOGY

Study Area

This study was conducted in Kano State, Northwestern Nigeria, an agrarian state characterized by a tropical savanna climate and classified into three agricultural zones by the Kano Agricultural and Rural Development Agency (KNARDA). A cross-sectional mixedmethods research design was adopted, integrating quantitative and qualitative approaches to provide a

comprehensive assessment of livelihood diversification and its effects on household welfare among rural farmers.

Sampling Procedure

This study utilized data from the same household survey database employed in our previous work on determinants of livelihood diversification and its impact on household income and food security among rural farmers in Kano State, Nigeria (Abdulwahab *et al.*, 2026). A multistage sampling procedure was employed. In the first stage, seven Local Government Areas (LGAs) with high agricultural potential were purposively selected from the three agricultural zones of the state: Gwarzo and Kura (Zone I), Dambatta and Makoda (Zone II), and Gaya, Wudil, and Albasu (Zone III). In the second stage, three farming communities were randomly selected from each LGA, resulting in a total of 21 communities. In the final stage, 5% of registered farmers from the sampling frame obtained from Fadama Users' Associations were randomly selected, yielding a sample size of 450 respondents.

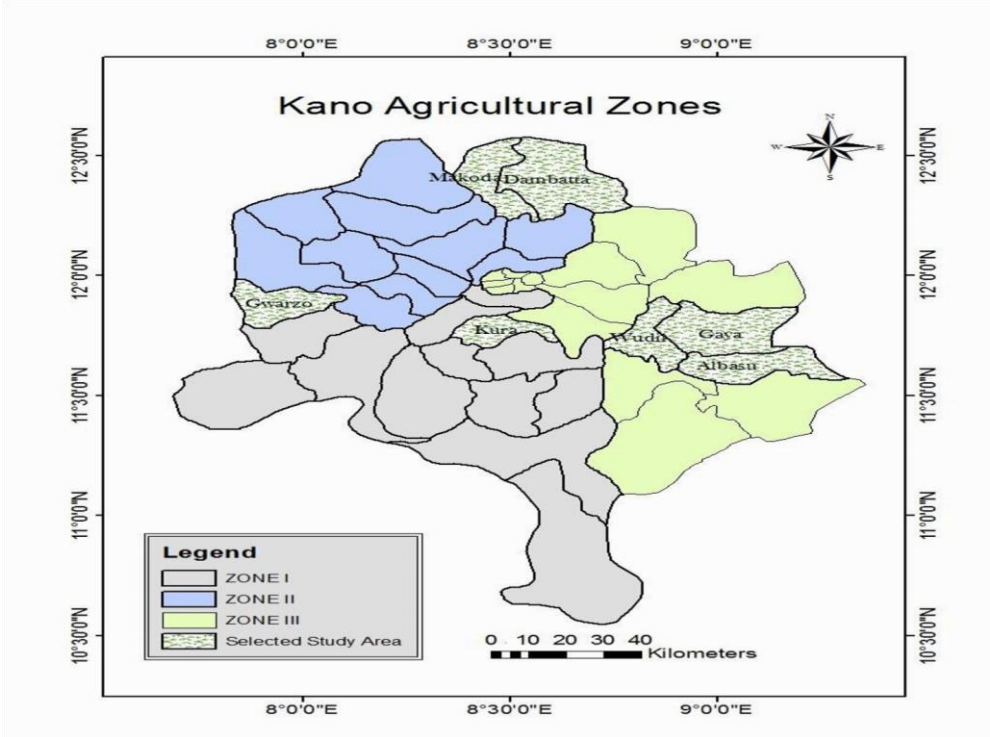


Figure 2: ***Map of the Three Agricultural Zones and the Selected Study Area***
Source: GIS Unit Geography Department ADUSTECH Wudil, 2025

Data Collection

Primary data were collected during the 2025/2026 farming season through structured questionnaires, Focus Group Discussions (FGDs), and field observations. The questionnaire was pre-tested and administered by trained enumerators using both open-ended and closedended questions. Information collected included respondents' socio-economic characteristics, livelihood activities, access to productive resources and services, livelihood diversification patterns, household income, food security status, social networks, social capital, and constraints to diversification.

Methods of Data Analysis

The data were collected and analyzed using both descriptive and inferential statistical techniques. Descriptive statistics such as frequencies, percentages, means, standard deviations, and ranking techniques was employed to summarize the socioeconomic characteristics of respondents, sources of credit and constraints to credit access. Inferential statistics was used to determine the factors influencing credit access and the effect of credit access and constraints on livelihood diversification among rural farmers in Kano State.

Socioeconomic Characteristics of Respondents

Descriptive statistics including frequencies, percentages, means, and standard deviations will be used to describe respondents' socioeconomic characteristics such as age, gender, educational level, household size, farming experience, farm size, and cooperative membership.

Measurement of Livelihood Diversification

The extent of livelihood diversification among rural farmers will be measured using the Simpson Diversification Index (SDI). The index captures both the number of livelihood activities and the distribution of income among those activities. The SDI has been widely applied in livelihood diversification studies because it accounts for both diversity and evenness of income sources (Minot et al., 2006; Asante et al., 2021).

The Simpson Diversification Index is specified as:

$SDI = 1 - \Sigma(Pi^2)$(Ellis, 2000; Alemu, 2023)

Pi is the proportion of income from the ith livelihood activity. SDI ranges from 0 to 1.

Where 0 indicates complete specialization in a single livelihood activity (no diversification) and 1 indicates a high level of livelihood diversification.

Analysis of Constraints to Credit Access

Constraints affecting access to credit will be analyzed using a five-point Likert scale and mean score ranking technique. Respondents will rate each constraint as:

Very Severe = 5
Severe = 4
Moderately Severe = 3
Slightly Severe = 2
Not Severe = 1
Determinants of Credit Access

A Binary Logit Regression Model will be used to identify factors influencing farmers' access to credit because the dependent variable is dichotomous (access or no access to credit). The binary logit model has been extensively applied in agricultural finance studies due to its suitability for analyzing qualitative dependent variables (Gujarati & Porter, 2009; Wooldridge, 2020).

The model is specified as:

Binary Logit Model
Pi = 1 / (1 + e^(−Zi))

Used to estimate determinants of credit access.

Logit Transformation
$\ln(Pi/(1-Pi)) = \beta_0 + \beta_1X_1 + \beta_2X_2 + ... + \beta nXn + \varepsilon i$(Harris, 2021)

βi are parameters to be estimated. Where:

P_i = Probability of accessing credit

1 - P_i = Probability of not accessing credit
β_0 = Constant term β_i=

Parameters to be estimated X_i =

explanatory variables.

εi = Error term Definition
of Variables

Variable	**Measurement**
Credit Access (Y)	1 = Accessed credit, 0 = Otherwise
Age	Years
Sex	1 = Male, 0 = Female
Education	Years of schooling
Household Size	Number of household members
Farm Size	Hectares
Farming Experience	Years
Cooperative Membership	1 = Yes, 0 = No
Extension Contact	Number of contacts

Effect of Credit Access on Livelihood Diversification

Since the Simpson Diversification Index is bounded between 0 and 1, a Fractional Logit Regression Model is appropriate for estimating the effect of credit access on livelihood diversification (Papke & Wooldridge, 1996). The model accommodates dependent variables expressed as proportions and provides consistent parameter estimates.

The model is specified as:

Fractional Logit Model
$E(Yi|Xi) = G(Xi\beta)$

Appropriate because SDI is bounded between 0 and 1.

Logistic Function
G(z) = e^z / (1 + e^z)

Transformation function for the fractional logit model.

Credit Access and Livelihood Diversification Model

$$SDIi = \beta_0 + \beta_{1CreditAcess} + \beta_{2CreditAmount} + \beta_{3Age} + \beta_{4Education} + \beta_{5HouseholdSize} + \beta_{7FarmSize} + \beta_{7CooperativeMembership} + \beta_{8ExtensionContact} + \varepsilon i$$

To examine how specific credit constraints influence livelihood diversification, an additional Fractional Logit model will be estimated as:

Credit Constraints Model

$$SDIi = \beta_0 + \beta_{1COLL} + \beta_{2INT} + \beta_{3INFO} + \beta_{4DIST} + \beta_{5DELAY} + \beta_{6FLIT} + \varepsilon i$$

Where:

COLL = Collateral constraint

INT = Interest rate constraint

INFO = Information constraint

DIST = Distance to financial institutions

DELAY = Loan disbursement delay

FLIT = Financial literacy constraint

Ethical Considerations

This study adhered to established ethical principles governing social science research involving human participants. Prior to data collection, respondents were informed about the objectives, significance, and procedures of the study. Participation was entirely voluntary and informed consent was obtained from all participants before administering questionnaires or conducting Focus Group Discussions (FGDs). Respondents were assured that they had the right to decline participation or withdraw from the study at any stage without any negative consequences.

Confidentiality and anonymity of participants were strictly maintained throughout the research process. Personal identifiers such as names, addresses, and contact information were not included in the final dataset or research report. Information obtained from respondents was used solely for academic purposes and stored securely to prevent unauthorized access. The study also ensured that data collection procedures did not expose participants to physical, psychological, social or economic harm.

Furthermore, cultural norms, values, and traditions of the study communities were respected during fieldwork. Enumerators were trained to conduct interviews professionally, respectfully and without bias. The findings of the study were reported honestly and objectively, ensuring that data were accurately represented without fabrication, falsification or misinterpretation.

RESULT AND DISCUSSION

Socioeconomic Characteristics of Respondents

The findings reveal that the average respondent was 43 years old, had a household size of 10 persons, and possessed approximately 20 years of farming experience. The predominance of male-headed households (81.1%) and married respondents (87.6%) reflects the socio-cultural structure of rural farming communities in northern Nigeria, where men often control productive resources and household decision-making. The relatively high educational attainment observed

among respondents suggests that education may facilitate access to information, technologies, and alternative livelihood opportunities. Similar findings were reported by Abdulai and Huffman (2022), who found that education enhances farmers' capacity to adopt income-generating activities beyond agriculture. The relatively young and economically active farming population presents opportunities for livelihood diversification interventions. Policies aimed at improving educational attainment and skill acquisition could enhance farmers' ability to diversify income sources and improve household welfare. **Table 1. Socioeconomic Characteristics of Rural Farmers in Kano State (n = 450)**

Variable	Mean	SD
Age (years)	43.0	
Household Size (persons)	10.0	
Farming Experience (years)	20.4	
Farm Size (ha)	2.69	2.03
Monthly Income (₦)	162,009	

Additional Distribution

Variable	Category	Percentage (%)
Gender	Male	81.1
	Female	18.9
Marital Status	Married	87.6
Education	Secondary/Tertiary	>50
Income	Below ₦200,000/month	79.0

Source: Field Survey, 2026.

Access to Credit and Financial Services

The study found that only 31.8% of respondents had access to formal credit, while agricultural insurance coverage was extremely low (4.7%). These findings indicate persistent financial exclusion among rural households despite ongoing financial inclusion initiatives. Recent studies have shown that inadequate access to formal financial services remains a major obstacle to rural enterprise development and livelihood diversification in sub-Saharan Africa (Akinwale & Grobler, 2023; World Bank, 2024).Limited access to formal finance restricts farmers' ability to invest in productive activities, acquire improved technologies, and establish non-farm enterprises. Expanding rural financial inclusion through affordable credit schemes and agricultural insurance programs could enhance resilience and livelihood diversification.

Table 2. Access to Credit and Financial Services among Rural Farmers (n = 450)

Variable	Frequency	Percentage (%)
Access to Formal Credit	143	31.8
No Formal Credit Access	307	68.2
Agricultural Insurance Access	21	4.7
No Agricultural Insurance	429	95.3
Access to Irrigation Facilities	307	68.2
Land Ownership	292	64.9

Source: Field Survey, 2026.

Sources of Credit among Respondents

Friends and relatives constituted the primary source of credit, followed by cooperative societies and microfinance institutions. Formal lending institutions such as commercial banks and the Bank of Agriculture ranked lowest. This finding corroborates recent evidence that rural households often rely on informal credit markets due to collateral requirements, high transaction costs, and bureaucratic lending procedures associated with formal institutions (Olagunju et al., 2022).The dominance of informal credit sources suggests weaknesses in the rural financial system. Strengthening cooperative financing arrangements and designing farmer-friendly credit products could improve access to capital for livelihood diversification.

Table 3. Major Sources of Credit among Respondents

Credit Source	Rank
Friends and Relatives	1
Cooperative Societies	2
Microfinance Institutions	3
Commercial Banks	4
Bank of Agriculture	5

Source: Field Survey, 2026.
Note: Most respondents relied on friends and relatives rather than formal financial institutions.

Livelihood Activities of Respondents

Food crop production remained the dominant livelihood activity, while livestock production, poultry farming, and trading served as important supplementary activities. The prevalence of trading as the most common non-farm activity indicates that rural households increasingly combine farm and non-farm activities to stabilize income and reduce vulnerability to agricultural shocks. This finding aligns with the observations of Davis et al. (2023), who reported that diversification into non-farm enterprises improves rural household resilience. Promoting value-added agricultural enterprises, agro-processing and rural entrepreneurship could broaden livelihood options and reduce dependence on primary agricultural production.

Table 4. Livelihood Activities of Respondents

Livelihood Activity	Status
Food Crop Production	Primary Activity
Livestock Rearing	Major Secondary Activity
Poultry Production	Major Secondary Activity
Trading	Most Common Non-farm Activity
Formal Employment	Limited Participation
Agro-processing	Low Participation

Source: Field Survey, 2026.

Livelihood Diversification Indicators

The Livelihood Security Index value of 0.47 suggests a moderate level of livelihood security among respondents. Although households engage in multiple livelihood activities, on-farm income remains the dominant source of earnings. According to the Sustainable Livelihood Framework, households with moderate livelihood security remain vulnerable to environmental

and economic shocks because their asset portfolios are not sufficiently diversified (Scoones, 2021).

Table 5. Livelihood Diversification Indicators

Indicator	Value
Livelihood Security Index (LSI)	0.47
Security Level	Moderate
Dominant Income Source	On-farm Activities
Annual Household Income (₦)	1,960,000

Source: Field Survey, 2026.

Determinants of Livelihood Diversification

The OLS regression results indicate that educational status, monthly income, livelihood security index, and remittance receipt positively influenced livelihood diversification, while vocational training and extension contact exerted significant negative effects. The positive influence of education supports findings by Ibrahim et al. (2023), who observed that educated farmers possess greater entrepreneurial capacity and are more likely to identify alternative income opportunities. Similarly, higher income and remittance inflows provide financial resources necessary for investment in diversified livelihood activities. **Table 6. Determinants of Livelihood Diversification (OLS Regression)**

Variable	Coefficient (B)	t-value	p-value
Educational Status	0.010	1.819	0.070*
Vocational Training	-0.074	-4.501	0.000***
Monthly Income	6.02E-08	1.686	0.093*
Extension Contact	-0.043	-2.656	0.008**
Access to Credit	-0.015	-0.957	0.339
Livelihood Security Index	0.315	3.556	0.000***
Remittance Receipt	0.031	1.963	0.050*

Source: Field Survey, 2026.

Model Statistics:

Statistic	Value
R^2	0.147
Adjusted R^2	0.123
F-value	6.253

The positive effect of livelihood security indicates that households with stronger asset bases are better positioned to engage in multiple income-generating ventures. On the contrary, the negative effects of vocational training and extension contact reflects the production-oriented nature of existing agricultural training programs, which often emphasize farming practices rather than enterprise development and non-farm opportunities.

Access to credit was not statistically significant, suggesting that access alone may not be sufficient to promote diversification if credit is inadequate, poorly targeted, or diverted to consumption needs.

Role of Credit and Financial Services in Facilitating Livelihood Diversification

The binary logit results reveal that age negatively influenced the likelihood of using credit and financial services for livelihood diversification, suggesting that younger farmers are more willing to explore alternative income opportunities. Monthly income and livelihood security significantly increased the probability of diversification, indicating that financially stable households are better able to undertake investment risks associated with new livelihood activities.

Table 7. Role of Credit and Financial Services in Facilitating Livelihood Diversification

Variable	B	Sig.	Exp(B)
(Binary Logit)			
Age -0.044 0.012* 0.957			
Monthly Income	Positive	0.000***	1.000
Livelihood Security Index	9.971	0.000***	21,402.281
Extension Contact	-1.104	0.000***	-
Educational Status	NS	0.786	-
Farming Experience	NS	0.671	-

Source: Field Survey, 2026.

Model Statistics:

Statistic	Value
Cox & Snell R^2	0.186
Nagelkerke R^2	0.261
-2 Log Likelihood	469.964

The strong positive effect of the Livelihood Security Index demonstrates that asset accumulation and household stability are critical prerequisites for successful diversification. Similar findings were reported by FAO (2023), which emphasized that financially secure households exhibit greater adaptive capacity and entrepreneurial behaviour.

Constraints to Credit Access and Livelihood Diversification

Limited access to credit emerged as the most severe constraint (73.1%), followed by high startup costs (51.1%) and high input costs (45.8%). Other constraints included pest and disease incidence, poverty, market instability, weak government support, and climate-related challenges. These findings are consistent with recent evidence indicating that financial constraints remain the primary barrier to livelihood diversification among rural households in developing countries (IFAD, 2024).

The prominence of production-related and market-related constraints further suggests that diversification decisions are influenced not only by financial factors but also by institutional and environmental conditions.

Table 8. Constraints to Credit Access and Livelihood Diversification (n = 450)

Constraint	Frequency	Percentage (%)	Rank
Limited Access to Credit/Finance	329	73.1	1st
High Startup Costs	230	51.1	2nd
High Cost of Inputs	206	45.8	3rd
Pest and Disease Incidence	137	30.4	4th
Poverty and Low Household Savings	129	28.7	5th
Market Instability	122	27.1	6th
Weak Government Support	92	20.4	7th
Limited NGO/Cooperative Support	90	20.0	8th
Climate Change and Erratic Rainfall	77	17.1	9th

Source: Field Survey, 2026. *Multiple Response

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary

This study examined access to credit, the determinants of livelihood diversification and the constraints affecting livelihood diversification among rural farmers in Kano State, Nigeria. The findings revealed that rural households predominantly depend on small-scale agricultural production as their primary livelihood activity, while engaging in livestock rearing, poultry production, and trading as supplementary income-generating activities. Despite the importance of diversification in improving household welfare and reducing vulnerability, access to formal credit and other financial services remains limited among the majority of respondents.

The results further showed that educational status, monthly income, remittance receipts, and livelihood security significantly influence livelihood diversification decisions. In contrast, access to credit did not exert a significant direct effect on diversification, suggesting that the effectiveness of credit depends on its adequacy, utilization, and supporting institutional mechanisms. The binary logit analysis also indicated that livelihood security and income level positively enhance the role of financial services in facilitating diversification. Furthermore, limited access to credit, high start-up costs, and high production input costs emerged as the most critical constraints facing rural households.

Conclusion

The study concludes that livelihood diversification remains an important strategy for enhancing rural household income and resilience in Kano State. However, its potential is constrained by inadequate financial inclusion, weak institutional support and limited access to productive resources. Therefore, improving access to financial services and strengthening livelihood support systems are essential for promoting sustainable rural development and poverty reduction.

Recommendations

Based on the findings of the study, the following recommendations are proposed:

1. Government, financial institutions, and development partners should expand access to affordable and timely credit for rural farmers through low-interest agricultural loan schemes, simplified lending procedures, and reduced collateral requirements to enable farmers invest in both farm and non-farm livelihood activities.
2. Since cooperative societies constitute one of the major sources of credit, efforts should be made to strengthen their financial capacity through government support, capacity building, and improved access to agricultural financing programs.
3. Agricultural extension services should be redesigned to incorporate entrepreneurship development, business management, value addition, agro-processing, and non-farm income opportunities rather than focusing solely on agricultural production.
4. Rural development programs by NGOs and Development Partners should prioritize adult education, vocational skills acquisition and entrepreneurship training to equip farmers with the knowledge and competencies required for successful livelihood diversification.
5. Given the extremely low participation in agricultural insurance, stakeholders should organize awareness campaigns with subsidized insurance products introduced to protect farmers against production and climate-related risks and encourage investment in diversified livelihood activities.
6. Government agencies and development organizations should provide start-up grants, equipment support, and business incubation services for small-scale rural enterprises, particularly in agro-processing, livestock production, and rural trading activities.
7. Policies aimed at subsidizing agricultural inputs, improving access to modern farming technologies, and facilitating collective input procurement through cooperatives should be implemented to reduce production costs and improve profitability.
8. Social investment programs, rural infrastructure development and targeted poverty alleviation initiatives should be expanded to improve household livelihood security and enhance the capacity of farmers to engage in diversified economic activities.
9. Considering the effects of climate variability and erratic rainfall, farmers should be supported through irrigation development, climate-smart technologies, weather information services, and sustainable natural resource management practices.
10. Increased collaboration among government agencies, financial institutions, nongovernmental organizations, and development partners is necessary to create an enabling environment that promotes rural livelihood diversification and sustainable economic development.

Limitations of the Study

Despite the valuable insights provided by this study, certain limitations should be acknowledged. First, the study was based on cross-sectional data collected at a single point in time, which limits the ability to establish causal relationships between access to credit and livelihood diversification outcomes. Consequently, the findings primarily reflect associations rather than long-term causal effects.

Second, the study relied largely on self-reported information obtained from respondents. As a result, some responses regarding income, credit utilization, and livelihood activities may have been affected by recall bias or deliberate underreporting and overreporting.

Third, the study was conducted among rural farmers in Kano State, Nigeria. Therefore, the findings may not be fully generalizable to urban households or rural communities in other regions with different socioeconomic, institutional, and environmental conditions.

Fourth, although the regression models explained a significant proportion of the variation in livelihood diversification, other relevant factors such as social networks, market access, cultural influences, infrastructure quality and behavioral characteristics were not explicitly captured in the analysis and may also influence diversification decisions.

Finally, the study focused primarily on access to credit and financial services as drivers of livelihood diversification. Other forms of capital within the Sustainable Livelihood Framework, including social, natural, and physical capital, were not examined in equal detail and may warrant further investigation in future studies.

Contribution of the Study

This study contributes to the existing body of knowledge on rural livelihoods and agricultural finance in several important ways.

1. The study provides empirical evidence on how access to credit and financial services influences livelihood diversification among rural farmers in Kano State, Nigeria.
2. It establishes that livelihood security, education, income and remittances are more influential determinants of livelihood diversification than mere access to credit.
3. It identifies key financial and institutional constraints limiting diversification and offers policy-relevant insights for improving rural livelihoods, financial inclusion, and poverty reduction.

Competing Interest

Authors have declared that no competing interests exist.

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