RETHINKING RURAL DEVELOPMENT: DETERMINANTS OF NON-FARM PARTICIPATION IN NIGERIA

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Abstract: This study explores the determinants of the probability of rural household involvement in non-farm income-generating activities (NFIGAs) in Northeastern Nigeria. The research is driven by the growing threats to rural livelihoods from climate change, insecurity and poor agricultural yields. This study used a mixed-method approach that combines quantitative data from a survey of 380 rural households with qualitative data from interviews and focus group discussions. A structured questionnaire was developed using KoboCollect and data were analysed using descriptive statistics and binary logistic regression. The findings demonstrate that education, age, family size, number of spouses, access to formal credit, road access and market access have a significant effect on NFIGA participation. In particular, credit and education have significant and positive impacts suggesting that financial access and human capital play a significant role in driving livelihoods diversification. On the other hand, religion, marital status and remittances are statistically insignificant. The results confirm the Sustainable Livelihoods Framework and Push-Pull Theory, which implies that both push and pull factors are involved in the decision-making to engage in non-farm activities. The research suggests that access to credit, infrastructure development and education and skills training are key determinants of participation in non-farm income-generating activities. It calls for policies that foster inclusive rural development, address gender gaps and incorporate non-farm enterprises into poverty reduction programs.

Keywords: *Rural households, non-farm income, livelihood diversification, logistic regression, Northeastern Nigeria*

1.0 Introduction

Poverty in rural areas is a critical development issue, especially in Sub-Saharan Africa where rural households are still heavily dependent on agriculture. While agriculture is still the mainstay of rural livelihoods, its ability to support households has diminished as a result of climate change, insecurity, limited infrastructure, market inefficiency, and low productivity. According to the World Bank (2024), 64% of the world's poor reside in rural areas, and Sub-Saharan Africa is home to many of those living below the extreme poverty line. This is why diversification is crucial for rural livelihoods.

In Nigeria, rural households predominantly rely on agriculture for their livelihoods, but the sector is vulnerable to a range of risks including flooding, drought, insurgency, banditry, inflation and lack of access to agricultural inputs and markets. In Northeastern Nigeria, the situation is worse due to insecurity and displacement, which has led to loss of access to farmlands and reduced crop production (Okonkwo et al., 2021). Consequently, many

households have engaged in non-farm income-generating activities like petty trade, transportation, tailoring, carpentry, agro-processing, local crafts, and small-scale services for their livelihoods (Kehinde & Ogundeji, 2023; Okonkwo et al., 2021).

Non-farm income-generating activities matter because they increase income, diversify livelihoods away from seasonality in agriculture, create jobs and enhance resilience. Researchers have demonstrated that households participate in non-farm activities as a survival strategy to escape poverty and as a strategy of enhancing their welfare (Kazmi et al., 2023; Tesfaye & Nayak, 2022; Kerorsa, 2022). The attached thesis considers non-farm activities as important components of rural livelihood strategies, particularly in cases where agriculture is unable to support rural households.

However, not all households engage in non-farm activities. Households vary in participation due to factors such as low education, limited access to credit, and low social capital, as well as poor road networks, remoteness from markets, gender constraints, and lack of productive assets. This suggests household participation is determined by socio-economic, demographic, institutional and infrastructural factors.

Previous research has focused on the factors affecting non-farm activities in Nigeria and other developing nations, which include age, education, household size, gender, access to credit, land holding, remittances, association membership and road access (Tesgera et al., 2023; Kehinde & Ogundeji, 2023; Khurana et al., 2023; Kazmi et al., 2023). But, the attached thesis highlights that there is a lack of empirical evidence in the context of Northeastern Nigeria, particularly with respect to rural households facing conflict, poverty, and shocks.

Against this background, this paper investigates the determinants of the probability of rural household participation in non-farm income activities in Northeastern Nigeria. This research is relevant because it gives insight for policy development to promote rural enterprise creation, poverty alleviation, income diversification, and resilience.

2.0 Literature Review

2.1 Conceptual Review

Non-farm income is income from activities other than crop farming, livestock, fishing and hunting. This can be self-employment or wage employment, trading, artisanal work, agricultural processing, transport, services, remittances and small-scale manufacturing (Tesfaye & Nayak, 2022; Kerorsa, 2022). Non-farm activities are crucial in rural communities because they help earn a living during the off-farm season, and help rural households survive in times of poverty and shocks.

Rural households are households in rural areas where the main livelihood activity is farming. But farming is not the sole livelihood activity in rural areas. Rural livelihoods include both agriculture and non-agriculture and households may engage in multiple livelihood activities to make a living (Lanjouw & Lanjouw, 2001; Barrett et al., 2001).

Non-farm rural livelihoods include small-scale trading, food processing and preservation, transport and tailoring, carpentry and blacksmithing, construction, crafts, small-scale enterprises and services. Some activities might be low returns and easy entry or high returns

and skill intensive. Engagement is linked to household capital in terms of human, financial, physical, social and natural capital (Reardon et al., 1998; Galfato, 2021).

2.2 Theoretical Review

The research is based on the Sustainable Livelihoods Framework, which states that households have different livelihood assets, such as human, financial, physical, social and natural capital. Households with greater access to the assets are more likely to participate in non-farm activities (Scoones, 2009; Rakodi, 2002).

It is also supported by the Utility Theory, which assumes that households engage in activities that maximise welfare and income (Fishburn, 1968). Rural households choose to engage in non-farm activities if they believe these will yield higher welfare than farming alone.

Participation is also explained by the Push-Pull Theory. Push factors are poverty, farm risk, climate shocks, insecurity and farm income, while pull factors are higher income opportunities, market access and business opportunities (Ellis, 2000; Reardon et al., 1992).

2.3 Empirical Review

Table 1: Summary of Empirical Literatures

Author(s)	Focus	Key Finding
Kehinde & Ogundeji (2023)	Rural non-farm activities in Nigeria	Education, credit access, and infrastructure influence participation.
Tesgera et al. (2023)	Rural livelihood diversification	Household size, education, and age affect participation in non-farm work.
Kazmi et al. (2023)	Income diversification	Non-farm income helps households manage agricultural risk and income instability.
Nkegbe et al. (2022)	Rural enterprise participation	Market access and social networks increase participation in non-farm enterprises.
Itunnu & Joseph (2021)	Non-farm income and welfare	Non-farm activities improve household welfare but are limited by finance and infrastructure.

3.0 Methodology

The present study uses a mixed-methods approach, combining quantitative and qualitative methods to gain deeper insights into the determinants of rural household involvement in non-farm income-generating activities (NFIGAs). The quantitative part of the study is a cross-sectional household survey of 380 rural households in selected states in Northeastern Nigeria (Adamawa, Borno and Gombe), complemented with key informant interviews (KIIs) and focus group discussions (FGDs) to provide insights and corroborate the survey results. A multi-stage sampling strategy was adopted: first, states were purposively selected based on their rural nature and vulnerability to livelihood shocks; second, Local Government Areas (LGAs) were randomly selected; third, rural communities were identified; and lastly, households were systematically sampled. This sampling strategy guaranteed the representativeness and quality of the data.

Data collection involved the use of a questionnaire administered via the KoboCollect platform to improve efficiency, quality and monitoring of data collection. KoboCollect was set up to include skip patterns, constraints, and geolocation to reduce errors and ensure all responses were complete. Enumerators were trained to deliver the questionnaire using Android devices, focusing on socio-economic attributes, assets, sources of income, access to credit, infrastructure, and non-farm activity participation. The KoboCollect application also allowed for secure data storage, real-time data backup to a central database, and better data quality management than would be achieved using paper-based methods. Additional qualitative data from household interviews and FGDs offered insights into household dynamics, gender roles and constraints to participation in non-farm activities.

In terms of data analysis, the study used descriptive statistics and inferential econometrics such as the binary logistic regression model to estimate the likelihood of household participation in NFIGAs. The response variable is binary (1 = participates; 0 = otherwise) and the explanatory variables include age, gender, education level, household size, credit access, remittances, association membership and access to infrastructure and markets. The choice of the logistic regression model is justified by its suitability for binary dependent variables, and the ease of interpretation through odds ratios. Before estimation, tests for multicollinearity (Variance Inflation Factor), normality and specification were performed to test the validity of the model. The findings were tabulated and interpreted in accordance with empirical evidence in the literature to draw inferences and conclusions and to inform policy.

4.0 Results and Discussion

Table 2: Descriptive Statistics of Key Variables (n = 380)

Variable	Mean	Std. Dev.	Minimum	Maximum
Participation in NFIGAs	0.62	0.49	0	1
Age of Household Head	44.85	12.73	20	78
Gender	0.78	0.41	0	1
Education Level	6.92	5.14	0	16
Household Size	7.56	3.21	2	18
Number of Wives	1.43	0.67	1	4
Access to Formal Credit	0.36	0.48	0	1
Remittance	0.29	0.45	0	1
Association Membership	0.41	0.49	0	1
Distance to Road	3.12	1.27	1	5
Access to Market	0.57	0.50	0	1

Source: Field Survey, 2025

The descriptive statistics give a clear picture of the socio-economic profile of rural households and their engagement in non-farm income-generating activities (NFIGAs). First, the mean value for participation in NFIGAs (0.62) suggests that 62% of households participate in non-farm activities while 38% do not. This implies that non-farm income-generating activities are relatively common in the study region and are an important means of diversifying rural livelihoods. The standard deviation (0.49) shows some variability, as is normal for a binary variable.

The mean age of household heads (44.85 years) is relatively high with a large variance (20-78 years), suggesting most respondents are of working age. This implies that the decision to participate is made by experienced adults. The gender variable (mean = 0.78) reveals that 78% of households are headed by males, suggesting that men are the dominant decision-makers in households, which could affect resource allocation and participation decisions.

The mean education of 6.92 years implies that most household heads have primary or basic education, but the standard deviation (0-16 years) shows human capital differences. This can influence participation, as education is often a key to non-farm activities. Likewise, the average of 7.56 members per household suggests that households are relatively large, which could provide a labour force for both farm and non-farm activities, but could also increase dependency ratios.

The average number of wives (1.43) represents polygamous households in the study area. This might affect labour and earning strategies. When it comes to financial inclusion, only 36% of households access formal credit, which is a key barrier to investing in non-farm activities. Similarly, 29% of households are receiving remittances, which implies that family support through remittances is limited.

Social capital appears to be moderate as 41% of the household is a member of an association, which may provide access to information, credit and market opportunities. The average distance to road (3.12, on a scale of 1-5) implies moderate accessibility and 57% of households access markets, suggesting that a substantial proportion of households do not have easy access to markets.

Table 3: Logistic Regression Results for Factors Influencing likelihood of a household participating in non-farm income-generating activities

Variable	Coefficient (β)	Odds Ratio (OR)	Standard Error (SE)	Z-statistic	P-value
Intercept (β_0)	1.52	4.57	0.62	2.45	0.014 **
Age of Household Head ($AHHi$)	0.03	1.03	0.01	2.92	0.003 ***
Household Head's Gender ($HHGi$)	0.68	1.97	0.32	2.12	0.034 **
Household Head's Education ($HHEi$)	0.51	1.67	0.19	2.68	0.007 ***
Household Head's Religion ($HHRi$)	0.12	1.13	0.13	0.92	0.360
Household Head's Marital Status ($HHMSi$)	0.35	1.42	0.22	1.59	0.112
Number of Wives ($NWHHi$)	0.25	1.28	0.11	2.27	0.023 **
Household Size (HSi)	0.06	1.06	0.02	3.23	0.001 ***
Access to Formal Credit ($AFCi$)	0.75	2.12	0.31	2.42	0.016 **
Remittance to Household (RHi)	0.18	1.20	0.15	1.20	0.229
Membership of Association (MAi)	0.47	1.60	0.28	1.67	0.095*
Distance to Road (DRi)	0.31	1.36	0.14	2.22	0.027 **
Access to Market (AMi)	0.45	1.57	0.21	2.14	0.033 **

Source: Author's computation using STATA 19

Table 3 reveals that as shown by the logistic regression results, there are some socio-economic, demographic and institutional determinants that significantly affect the probability of rural households engaging in non-farm income-generating activities (NFIGAs) in Northeastern Nigeria. The results indicate that the age of the household head is positively and statistically significant for participation ($\beta = 0.03$, $p < 0.01$), suggesting that older household heads are more likely to undertake non-farm activities. This could be because of the experience gained, a larger social network, and greater awareness of livelihood opportunities. The findings are consistent with the findings of Kehinde and Ogundeji (2023) and Tesgera et al. (2023) which indicated that there is positive relationship between age and rural livelihood diversification and non-farm business participation. Again, gender plays a significant role in participation, with male headed households more likely to participate in NFIGAs than female headed households. This could be the gender disparities in the rural communities' access to productive resources, finance, education, and mobility. Education was also shown to be a positive and significant factor and more educated heads of households are more likely to be involved in non-farm employment and entrepreneurial activities. The result confirms the claims made by Barrett et al. (2001) and Kerorsa (2022) that human capital helps to diversify livelihoods and access information, skills and income opportunities beyond agriculture.

The results also show that household characteristics and labour force participation are meaningful factors affecting non-farm participation. The participation rate is significantly positively associated with the household size indicating that the larger the size, the more labour resources available to be devoted to farm and non-farm activities. This finding corroborates the findings by Tesgera et al. (2023) who noted that bigger household size is likely to have more livelihood requirements to meet and hence a greater likelihood of diversifying their sources of income. Similarly, the more wives a household has, the higher participation, as extended and polygamous family systems tend to be common in the study area where family members are involved in different livelihood diversification strategies. Availability of formal credit was among the most significant factors associated with participation, such that those who had access to credit were more than twice as likely to participate in NFIGAs as those who did not. This result supported the findings of Kehinde and Ogundeji (2023) as well as Itunnu and Joseph (2021) that financial access positively contributes to the development of rural enterprises and income diversification. There is also evidence that collective organisations and social capital have a positive relationship with participation, which has been demonstrated through the involvement in associations. This finding dovetails with that of Nkegbe et al. (2022) who noted that social networks are useful in augmenting the involvement of rural enterprises.

Other factors related to infrastructure and markets were also determined to have significant impacts on non-farm activity involvement. Household involvement in NFIGAs is positively associated with access to markets and proximity to roads, suggesting that better infrastructure lowers transaction costs, improves mobility, and opens up better access to customers and business opportunities. This finding supports the argument of Reardon et al. (1998) and Ellis (2000) that physical infrastructure is essential for promoting rural non-farm employment and livelihood diversification. The positive correlation between market access and participation also underscores the role of physical and institutional investments in improving the development of rural businesses. Other variables like religion, marital status, and remittances, however, were not statistically significant; this means they do not significantly account for the difference in the household's involvement in non-farm activities in the study area. The overall results confirm the Sustainable Livelihoods Framework and Push-Pull Theory which states that livelihood diversification depends on human capital, household labour capacity,

financial access, social capital and infrastructure. All of these are important factors that can improve sustainable rural livelihoods and mitigation of vulnerability of rural households in the northeast region of Nigeria.

5.0 Summary and Conclusions

The study adopted a mixed method analysis of quantitative and qualitative data to look at factors affecting the involvement of rural households in non-farm income generating activities (NFIGAs) in Northeastern Nigeria. The findings revealed that non-farm activities have become an important livelihood strategy among rural households due to the growing challenges associated with agriculture such as climate change, insecurity, low productivity, and limited economic opportunities. The logistic regression analysis revealed that age, gender, education, household size, number of wives, access to formal credit, road access and market access significantly affects the participation in NFIGAs. Education and access to credit were noted as having a positive impact on livelihood diversification, reflecting the role of human and financial capital in boosting rural livelihood resilience. By contrast, the factors of religion, marital status and remittances were found to have no significant impact on participation.

The study conclude that non-farm income generation activities are critical to enhancing rural livelihoods, decreasing household vulnerability and increasing household resilience in the north-eastern part of Nigeria. The results are in keeping with the Sustainable Livelihoods Framework and the Push-Pull Theory, both of which underscore that the multiple livelihoods of rural households serve as coping strategies to agriculture risk and as a way of enhancing their welfare. However, access to infrastructure, financial services and education remains a constraint on large-scale access to non-farm activities. Thus, the study suggests that it is important to encourage rural credit schemes, enhance the infrastructure, market access and education and vocational training and integrate non-farm enterprises into rural development policies in order to sustainable rural development and poverty reduction in the region.

Recommendations

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

i. Government and development partners should expand access to rural credit facilities through microfinance institutions, cooperative societies, and agricultural development programmes to enable rural households establish and expand non-farm enterprises.
ii. Rural infrastructure such as roads, electricity, storage facilities, and market centres should be improved to reduce transaction costs, enhance mobility, and facilitate access to markets and business opportunities.
iii. Adult education, vocational training, and entrepreneurship development programmes should be strengthened to improve human capital, entrepreneurial skills, and the capacity of rural households to engage in profitable non-farm activities.
iv. Policies aimed at promoting financial inclusion and enterprise development should specifically target women and vulnerable groups by improving their access to credit, training, productive assets, and market opportunities.
v. Government should integrate non-farm income-generating activities into rural development and poverty alleviation policies as a sustainable strategy for livelihood diversification, employment creation, and economic resilience in Northeastern Nigeria.

vi. Rural households should be encouraged to participate in cooperative societies and community associations to strengthen social capital, improve access to information, and enhance opportunities for business networking and collective support.

vii. Development agencies and policymakers should promote rural enterprise development programmes that support small-scale businesses such as agro-processing, transportation, tailoring, crafts, and other non-farm activities capable of generating sustainable income for rural households.

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