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Analysis of Livelihood Diversification Strategies Among Settled Agropastoralists in Northeastern Nigeria

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Abstract

This paper identified livelihood diversification strategies adopted by settled agropastoralists in the study area, their levels of income diversity, and factors influencing their choice of livelihood diversification strategies. The study was conducted in Gombe State, Nigeria. It is in the center of the Northeastern part of Nigeria, thereby bordering virtually all other States in the region. Data were collected from 316 randomly selected agropastoralists across 18 communities within the State using computer-based questionnaire via Open Data Kit. Descriptive Statistics, Simpsons Index of Diversification, and Multinomial Logistic Regression were used for data analysis. The agropastoralists in the study area were involved in three main livelihood strategies; on-farm, non-farm, and off-farm activities. About 52% of the agropastoralists were engaged in only on-farm activities, while 30% and 10% combined on-farm + off-farm and on-farm + non-farm activities respectively. Only 8% practised a combination of the three livelihood strategies (on-farm, off-farm, and non-farm). Ninety-seven percent of those who diversified their livelihood activities were men. The level of income diversity across on-farm activities was 35.1%, while income diversities for on-farm + off-farm, and on-farm + non-farm were 43.4%, and 52.9%, respectively. The combination of on-farm + off-farm + non-farm activities exhibited the highest level of income diversity (59.2%). The result of the Multinomial Logit analysis showed that sex, age, education, period of residence, dependency ratio, extension contacts, cooperative membership, and access to credit had a significant influence on agropastoralists' choice of livelihood diversification strategies. The findings suggest that motivating the agropastoralists to engage in multiple income-generating activities in addition to their involvement in on-farm activities can increase their overall household income and reduce their vulnerability to poverty.

Keywords: Agropastoralists, income diversity, livelihood strategies, northeast Nigeria

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Introduction

In developing nations, rural households frequently employ diversification as a means of subsistence. Depending on the unique circumstances of each household, diversification may be required or voluntary (Musamba *et al.*, 2022). Livelihood diversification is the process by which rural families engage in diverse income-generating activities to survive and raise their living standards (Ellis, 1998). Engaging in multiple livelihood activities by households aims to combat poverty and enhance livelihood quality by generating more revenue (Onyekwere & Kanu, 2022). To achieve a sustainable source of income, many rural households are diversifying their livelihoods into non-farm and off-farm activities, even while agriculture remains the major source of livelihood (Jatto *et al.*, 2021). It has become imperative to understand and identify the determinants, patterns, and outcomes of livelihood diversification among the agropastoral communities, particularly in relation to its effectiveness in alleviating poverty. This study, therefore, seeks to analyse the livelihood diversification strategies adopted by settled agropastoralists, their levels of income diversity, and factors influencing their choice of livelihood diversification strategies in Gombe State, northeast Nigeria.

Materials and Methods

The study was conducted in Gombe State, Nigeria. It is located in the Northeastern part of Nigeria. Multistage sampling procedure was used to select 316 settled agropastoralists across 18 communities within the State. Data

were collected using computer-based questionnaire via Open Data Kit. Descriptive Statistics, Simpsons Index of Diversification (SID), and Multinomial Logit (MNL) regression model were used for data analysis.

Results and Discussion

This study categorized the livelihood diversification strategies pursued by agropastoralists into on-farm, off-farm, and non-farm activities. About 52% of the agropastoralists were engaged in only on-farm activities, while 30% and 10% combined on-farm + off-farm and on-farm + non-farm activities respectively. Only 8% practised a combination of the three livelihood strategies (Fig. 1).

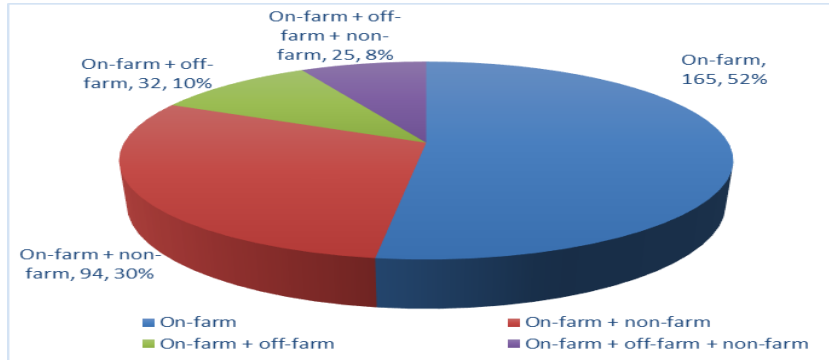


Fig. 1: Choice of livelihood diversification strategies adopted by the agropastoralists

There was medium income diversity across on-farm activities (35.1%), on-farm + off-farm (43.4%) and on-farm + non-farm (52.9%), while the combination of the three livelihood activities showed a high-income diversity (59.2%) (Tab. 1). This suggests that combining multiple income sources is the most effective strategy for achieving robust income diversification. These findings are in line with the study by Oladapo *et al.* (2024), who found that households with access to diverse income streams, including non-agricultural activities, are better able to withstand economic shocks and sustain their livelihoods.

Tab. 1: Level of income diversity in livelihood strategies

Income diversity livelihood strategies	Index Range	Freq.	%	Mean
On-farm activities				
High diversity	0.72-1.00	104	32.9	0.86
Medium diversity	0.42-0.64	111	35.1	0.53
Low diversity	0.00-0.36	101	32	0.18
Total		316	100	
On-farm+off-farm				
High diversity	0.71-1.00	59	18.7	0.86
Medium diversity	0.40-0.68	137	43.4	0.54
Low diversity	0.00-0.38	120	38	0.19
Total		316	100	
On-farm+non-farm				
High diversity	0.71-1.00	42	13.3	0.86
Medium diversity	0.40-0.68	167	52.9	0.54
Low diversity	0.00-0.38	107	33.9	0.19
Total		316	100	
On-farm+off-farm+non-farm				
High diversity	0.74-1.00	187	59.2	0.87
Medium diversity	0.42-0.68	128	40.5	0.55
Low diversity	0.11-0.38	1	0.3	0.25
Total		316	100	

Note: low diversity as $SID < 0.4$, medium diversity as $0.4 \leq SID < 0.7$, and high diversity as $SID \geq 0.7$

Multinomial logit (MNL) regression model was used to evaluate the determinants of livelihood diversification strategies pursued by agropastoralists with four alternative categories. The alternative “on farm” was used as a base category. The result of the MNL is presented in Table 2. The LR χ^2 value of 294.33 shows that the model is statistically significant. This means that the independent variables included in the model explained the differences in diversification strategies among the agropastoralists. Factors that significantly influenced agropastoralists' choice of livelihood diversification strategies were age ($p < 0.05$), education ($p < 0.05$), period of residence ($p < 0.10$), dependency ratio ($p < 0.10$), extension contacts ($p < 0.01$), cooperative ($p < 0.10$) and access to credit ($p < 0.01$).

Tab. 2: Multinomial Logit analysis showing factors affecting livelihood diversification among agropastoralists

Variables	On-farm+off-farm			On-farm+non-farm			On-farm+non-farm+off-farm		
	Coef.	SE	ME	Coef.	SE	ME	Coef.	SE	ME
Constant	22.222	501.897		-2.107	2.882		-17.249	4.81	
Marital Status	-11.678	501.882	0.0319	-1.193	0.744	0.007	-0.838	1.963	-0.0478
Age	0.014	0.036	0.0319	0.033**	0.014	-0.031	0.058	0.044	-0.0478
Educational level	1.288**	0.52	0.1857	0.005	0.137	-0.078	1.092*	0.557	0.0585
Dependency ratio	0.012	0.076	-0.0175	-0.042*	0.025	0.014	-0.069	0.086	-0.0075
Credit utilized	3.288***	0.963	0.3291	-0.423	0.604	-0.057	-2.723	2.962	0.0095
Extension contacts	0.005	0.011	0.0084	-0.011***	0.003	-0.006	-0.024**	0.011	-0.002
Cooperative society	0.003	0.013	0.1279	0.002	0.004	0.096	-0.030*	0.018	-0.0094
Land ownership	-0.004	0.5	-0.3861	0.258	0.164	0.073	0.581	0.507	-0.0562
Market access	-0.005	0.02	-0.0347	-0.001	0.006	0.015	-0.006	0.018	0.0081
Period of residence	0.018	0.061	-0.0598	-0.070*	0.04	-0.009	0.032	0.025	0.02
The reference category is: 1 (On-farm only)									
Dependent variable	Livelihood diversification strategies								
Number of observations	316								
LR χ^2 (39)	294.33								
Prob > χ^2	0.000								
Pseudo R ²	0.413								
Log likelihood	-209.505								

Note: ***, ** and * significant at 1%, 5% and 10% levels of probability

Coef, SE, ME (dy/dx) represents coefficient, standard error, and marginal effect, respectively.

Conclusions and Outlook

The research revealed that more than half of the population of agropastoralists in the study area were engaged in on-farm activities as their sole source of household income. The study affirms that agropastoralists who engaged in all three activities (on-farm, off-farm, and non-farm) exhibit the highest level of income diversity. Livelihood diversification strategies were determined by the age of household head, education status, periods of residence, dependency ratio, extension contacts, cooperative membership and access to credit. The findings suggest that motivating the agropastoralists to engage in multiple income-generating activities in addition to their current involvement in on-farm activities can increase their overall household income and reduce vulnerability to poverty.

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