



ANALYSIS OF LIVELIHOOD DIVERSIFICATION STRATEGIES BASED ON THE SOURCES OF INCOME OF WOMEN CROP FARMERS IN GOMBE STATE, NIGERIA

¹Tata, L. A.*, ²Abu, I. A., ³Garba, A. and ⁴Abdullahi, S.

¹Department of Agricultural Economics and Extension, Faculty of Agriculture,
Federal University of Kashere, Gombe State

²Department of Agricultural Extension Services, Faculty of Agriculture,
University of Maiduguri, Borno State

³Department of Agricultural Extension and Rural Development,
Federal University Dutsi, Jigawa State.

⁴Department of Agricultural Extension and Rural Development,
Abubakar Tafawa Balewa University Bauchi, Bauchi State.

***Corresponding Author's Email address:** libnahtata@gmail.com, **GSM:** 08024690008

ABSTRACT

The study analyzed the livelihood diversification strategies based on the sources of income of women crop farmers in Gombe State, Nigeria. A multi-stage sampling procedure was used in selecting 416 respondents. Data were collected using structured questionnaire and analyzed using descriptive statistics. The major sources of income as perceived were on-farm activities which included livestock farming (62.5%) and crop production (54.8%) while off-farm activities were marketing (65.4%) and processing (54.3%) of farm produce whereas basket weaving (68.3%), laundry cleaning (65.9%) and tailoring (63.7%) were the major non-agricultural livelihood activities. The result also shows that majority (72.8%) of the respondents had access to extension agents and 35.7% were frequently visited monthly. Furthermore, the result revealed that marital status ($P<0.01$), years of membership ($P<0.01$), access to credit ($P<0.05$), land ($P<0.05$), household head ($P<0.10$) and household size ($P<0.10$) were the factors influencing livelihood diversification in the study area. The result of propensity score matching of the livelihood diversification index on income showed ($P<0.05$) between the treatment and the control. The study concluded that marital status, years of membership, access to credit, and household size were the major factors influencing livelihood diversification in the study area. It is recommended that women should be encouraged to diversify and participate more in extension programs for exposure to communication media and embrace more diversification opportunities.

Keywords: Livelihood, Sources and Income.

INTRODUCTION

Agriculture is often cited as the most important contributor to rural livelihood in developing countries around the world (Aggarwal, 2018; Kassie *et al.*, (2017) postulated that many households in mountainous terrains use livelihood diversification in creating a variety of income sources as a risk management strategy to survive, improve ones' living standard and to cope with economic uncertainties. Livelihood diversification is a process of combining both agricultural and nonagricultural activities to survive and improve the standard of living (Pritchard *et al.*, 2019). Livelihood diversification plays a crucial role in promoting economic growth and reducing rural poverty in developing countries (Loison, 2015). Farming households get their income from farm produce which is not enough to meet their basic needs due to



various factors like diseases and natural disasters (Damilola *et al.*, 2022). These consequences of unpredicted natural disasters and shocks in agriculture drives farming households to diversify their means of livelihood (Olajide *et al.*, 2022). Women are key partners in economic and social development and also comprise an average of 43% of the agricultural labor force of developing countries. In fact, in many countries they are the backbone of local and national food security and a critical force in reducing poverty, malnutrition and hunger, and in promoting development (Okere and Shittu, 2013). Yet, when it comes to investments and policies, women's contribution to food security and agricultural production is often unpaid, largely invisible, frequently ignored and generally under supported. Rural economies of developing countries are high dependent on agriculture which is prone to shocks such as weather and natural disasters and financial risks (Reddy, 2015). In the event of a shock to the agricultural sector, livelihoods of agriculture-dependent communities are severely affected (Abid *et al.*, 2016; Imran *et al.*, 2018). Furthermore, the prevalence of non-agricultural activities in rural households' dates back in time with studies over several decades highlighting the increasing importance of non-agricultural income to households. The focus on livelihood diversification constitutes the process and scope targeted at broadening income and livelihood strategies away from a mono-economy of agricultural production to include both farm and nonfarm activities. This study is very important in Gombe State as it will be useful for economic policy makers in making policy that support livelihood diversification activities for women. There are existing studies on income diversification but not particularly on women crop farmers in Gombe state.

The broad objective of the study was to analyze the livelihood diversification strategies based on the sources of income of women crop farmers in Gombe State, Nigeria. The study was therefore carried out to identify the sources of income of women crop farmers based on their perceived livelihood diversification activities and determine the factors influencing livelihood diversification of women crop farmers.

METHODOLOGY

The Study Area

This study was conducted in Gombe State, Nigeria. The State is located in North-East Nigeria. It lies between latitude 90° 3'N and 120° N and longitude 80 45'E and 90° 3'E GMSG (2016). It covers a land area of about 20,365 square kilometers. It has a projected population of 3,960,100 in 2022 using 3.3% annual growth rate as reported by NBS (2022). 1,123,157 are female while 1,230,722 are male, National Population Commission, NPC (2006). Major crops grown are maize, guinea corn, millet, cotton, groundnut and cassava, Gombe State Government, GMSG (2016). Livestock rearing include poultry, sheep, goat cattle among others, GMSG, (2016). Major agricultural business activities include fruits and vegetable selling, oil milling, farming, petty trading, tailoring among others. The climate is characterized by wet and dry seasons. The wet season starts from April / May and ends in November. The average rainfall of the study area is 850mm, GMSG (2016). The city averages a yearly temperature of 30.54 °C (86.97 F). Gombe is endowed with both human and natural resources, most of its inhabitants are commercially oriented. Ethnic groups comprise of Fulani, Hausa, Tangle, Tera, Waja, Cham, Dadiya, Tula, Jara, Kamo, Kanuri, Pero people.

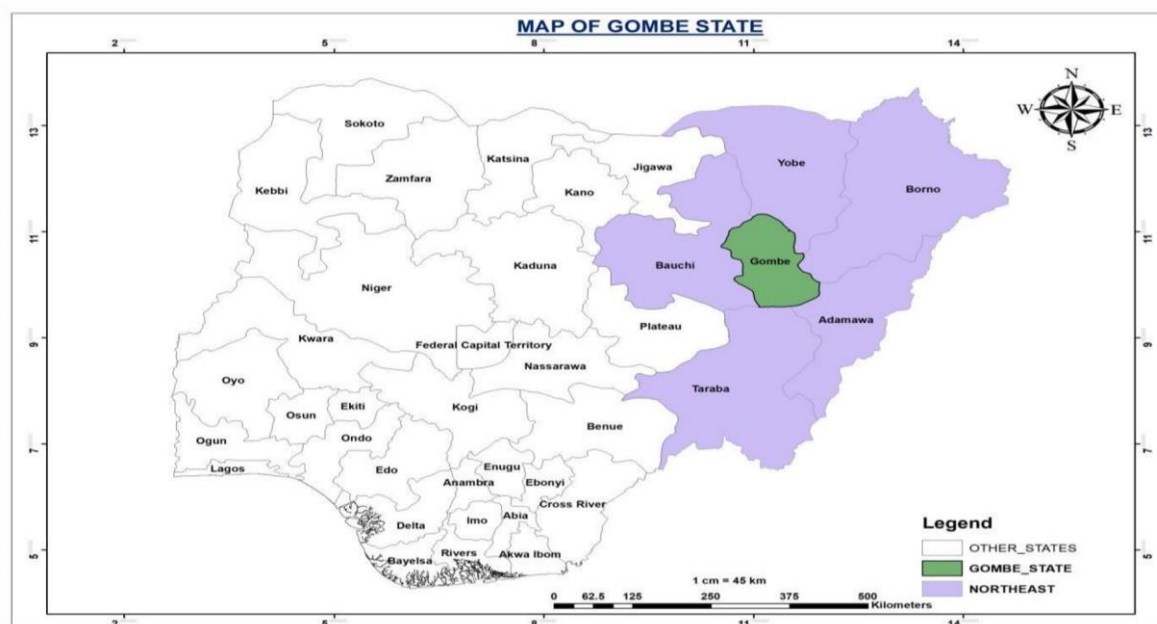


Figure 1: Map of Nigeria Showing Gombe State.

Sampling Technique and Sample Size

A multi-stage sampling procedure was used for the study. In the first stage, two wards from the 11 Local Government Areas in Gombe State were selected based on agrarian communities of women crop farmers. In the Second stage, two groups of women crop farmers were randomly selected from each of the selected LGA making a total of 22 groups and in the final stage, 70% respondents each from the selected 22 groups of women crop farmers were randomly selected to make a total of 416 respondents as sample size.

Table 1: Sample size selection plan of the Study

LGA	Ward	Sample Frame	Sample size (70%)
Kaltungo	Kaltungo west	32	22
	Kalaring	30	21
Shongom	Lapan	20	14
	Boh	20	14
Billiri	Billiri north	30	21
	Banganje south	30	21
Akko	Kumo east	55	38
	Kumo centre	25	18
Yamaltu Deba	Kuri/lano/lambam	25	18
	Deba ward	48	34
Balanga	Talasse	30	21
	Rema	18	13
Dukku	Waziri north	21	15
	Waziri south	20	14
Funakaye	Bage	11	08
	Jillahi	30	21
Gombe	Jekadafari	26	18
	Tudun wada	30	21
Kwami	Bojude	25	18
	Gadam	25	18
Nafada	Nafada east	20	14
	Nafada west	20	14
TOTAL		591	461

Source: *Field Survey, 2023.*

Data Collection

Primary data was used for the study. Data were through the administration of structured questionnaires administered to the respondents drawn from the study.

Method of Data Analysis

Both descriptive and inferential statistics were used to analyze the data. Descriptive statistics such as frequency distribution, percentage and mean were used to achieve objective i and Tobit regression model was used to achieve objective ii. **Descriptive Statistics**

Frequency distribution: It recorded the number of responses for the particular variable during the period of this study.

Percentage: this was calculated by dividing the frequency of that particular value by the total number of respondents interviewed multiplied by hundred during the period of this study.

Mean: this was simply calculated by the adding up the number of responses and divide by the number of observations. It is also known as the average value.

Tobit regression Model: the variables influencing livelihood diversification were evaluated using tobit model. The models assume a threshold value of zero, assigned to respondents that are not diversified and with no saving. For the remaining respondents, the variables take a wide range of values above the limit. the model is specified as:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \dots + \beta_nX_n + U_i \quad \text{where;}$$

Y = Livelihood diversification (diversity index)

X₁ = Age (Years)



- X_2 = Years of Membership of association (< 5 years= 1, >5 years= 0)
 X_3 = Household head (Yes= 1, No= 0)
 X_4 = Access to credit (1= Yes, 0=No)
 X_5 = Years of Education (Number)
 X_6 = Access to electricity (Yes= 1, No= 0)
 X_7 = Farm size (Hectare)
 X_8 = Household size (No of persons)
 X_9 = Access to good road network (Yes= 1, No= 0)
 X_{10} = Access to land (Yes =1, NO =0)
 X_{11} = Income (Naira)
 X_{12} = Extension agent contacts (1= if there is contact, 0= if no contacts)
 X_{13} = Marital Status (1=Single, 2= Married, 3= Divorced, 4=Widowed)
 X_{14} = Distance to market
 U= error term

RESULTS AND DISCUSSIONS

Distribution of Respondents According to Sources of Income based on their Livelihood Diversification Activities

The result from Table 2 revealed that majority (62.5%) of the respondents practiced livestock farming and more than half (54.8%) were into crop production as on-farm activities reported by the respondents. This implies the major source of income of the respondent are gotten from on-farm activities.

Table 2: Distribution of the Respondents According to Sources of Income based on their Perceived Livelihood Diversification Activities

Activities	Frequency	Percentage*
Agricultural activities		
On-farm		
Crop production	228	54.8
Livestock	260	62.5
Off-farm		
Processing farm produce	226	54.3
Marketing farm produce	272	65.4
Non-Agricultural Activities		
Civil service	235	56.5
Non-governmental job	260	62.5
Trading	234	56.3
Tailoring	265	63.7
Hairdressing	224	53.8
Grinding	259	62.3
Food vendor	225	54.1
Laundry cleaning work	274	65.9
Basket weaving	284	68.3

Source: Field Survey, (2023).

*Multiple response

The result from the Table 2 further showed that off-farm activities engaged by the respondents were marketing of farm produce (65.4%) and processing of farm produce (54.3%).

This implies that respondents' despite being engaged in on-farm activities, respondents are also engaged in off farm activities to diversify their livelihood. The result also revealed that the major non-agricultural activities engaged by the respondents as the sources of livelihood diversification include basket weaving (68.3%), laundry cleaning (65.9%), tailoring (63.7%), non-governmental job (62.5%) and grinding (62.3%) in the study area. The result generally implies that majority of the respondents perceived non-agricultural activities (basket weaving, laundering cleaning and tailoring) as their major sources of income. This is contrary to the findings of Babatunde and Qaim (2009) in a study on patterns of income diversification in rural Nigeria, where arable crop production was found to be the most important single source of income.

Distribution of Respondents based on Yield and Monthly Income

The result in the Table 3 below shows that majority (69.2%) of the respondents harvest between 1-20 bags while 19.2%, 5.3%, 5.0% and 1.2% harvest between 21-40, 81 and above, 41-60 and 61-80 bags respectively. The mean yield obtained by the respondents is 62 bags. This implies that there is high return to scale in the study area. The result of the respondents' monthly income further revealed that majority (67.8%) of the respondents had less than ₦100,000 as monthly income while 13.7%, 11.1%, 6.0% and 1.4% of the respondents had above ₦401,000, ₦101,000-200,000, ₦201,000-300,000 and ₦301,000- 400,000 respectively as monthly income with a mean of ₦82,718.98. The result implies that the respondents were average income earners as depicted by their average monthly income. Yishak *et al.* (2014) and Seid (2016) agree that income of the household were found to have a positive and significant influence on the household's choice of on-farm plus non-farm, and a combination of on-farm, non-farm, and off-farm livelihood diversification strategies.

Table 3: Distribution of Respondents based on Yield and Monthly Income (n = 416)

Variable	Frequency	Percentage	Mean (Bag)
Yield (bags)			
1 – 20	288	69.2	62
21 – 40	80	19.2	
41 – 60	21	5.0	
61 – 80	05	1.2	
81 and above	22	5.3	
Income (₦)			
Less than 100,000	282	67.8	₦82,718.98
101,000 – 200,000	46	11.1	
201,000 – 300, 000	25	6.0	
301,000 – 400, 000	6	1.4	
401,000 and above	57	13.7	

Source: Field Survey, 2023.

Factors Influencing Livelihood Diversification

The result from Table 4 disclosed the determinants of livelihood diversification among the respondents in the study area. Marital status and years of cooperative membership were all found to be positive and significant ($P < 0.01$) which imply that married respondents have more family responsibility and tends to diversify their income sources to meet their needs, also, as years of membership of association increases, income diversification also tends to increase.

This could be attributed to the fact that awareness level increases and ideas, innovations and knowledge also increases among respondents on better ways of improving their living standards. The result further shows access to credit and land were statistically significant and positive ($P < 0.05$). This implies that increase in access to credit and land have a positive and significant influence on livelihood diversification as credit will be available for the respondents to venture into another business and also increase in land access will help the respondents in increasing the production capacity of their farms. The result further shows that household head and household size were statistically significant and positive ($P < 0.10$). Which implies that increase in size of the household will also increase the diversification by the respondents in the study area. The finding conformed with the *a priori* expectation and was not consistent with Oluwatayo (2019) who deduced that farm households with formal education (especially those educated up to tertiary level) are engaged in better and well-paid salaried jobs than those with no formal education hence they have lower likelihood of combining two or more jobs (multiple job holding). This is because education enhances the potential of respondents and makes them grab available opportunities with little or no stress. The result again is not in conformity with the findings of Ibekwe *et al.*, (2016) who reported that where the educational status of farm household workers is higher, they are reluctant to work in the farm sector as they have better prospects elsewhere.

Table 4: Factors Influencing Livelihood Diversification

Variable	Coef.	St. Err	t-value	p-value
Age	.003	.009	0.33	.743
Years of membership	.039	.014	-2.73	.006***
Household head	.269	.146	1.84	.065*
Access to credit	.347	0.142	2.43	0.015*
Years of Education	-.026	.07	-.37	.714
Access to electricity	-.023	.364	-0.06	.95
Farm Size	.051	.031	1.61	.107
Household size	.051	.027	1.89	.058*
Access to good road	.223	.255	0.88	.381
Access to land	.712	.299	2.38	.17**
Monthly income	0	0	.99	.32
Extension contacts	-.142	.254	-0.56	.576
Marital Status	.398	.123	3.25	.001***
Distance to market	-.018	.015	-1.19	.234
Constant	.212	.928	0.23	.819

*** P, 0.01, ** P, 0.05, * P, 0.1

Source: *Field Survey*, (2023).

The result is in line with the findings of Kassie *et al.*, (2017) who reported that institutional factors including land ownership and being a member of a cooperative was found to influence farm households' decision into livelihood diversification. Also, Ayantoye *et al.*, (2017) also studied the factors that influenced rural farm households' livelihood diversification in Nigeria; basic occupation, sex, being married, poverty status, and membership of an association were found to be driving farm households' decision into livelihood diversification.



CONCLUSION AND RECOMMENDATION

The study concluded that the respondents had more than one source of income due to household size. Also, marital status, years of membership, access to credit, and household size were the major factors influencing livelihood diversification. Based on the result of this study, it can be recommended that women should be encouraged to diversify and participate more in extension programs for exposure to communication media and embrace more diversification opportunities.

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