



## ANALYSIS OF FACTORS INFLUENCING LIVELIHOOD DIVERSIFICATION AMONG RURAL FARMERS IN GIWA LOCAL GOVERNMENT AREA OF KADUNA STATE, NIGERIA

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### ABSTRACT

This study was carried out to analyze factors influencing rural farmer's engagement in livelihood diversification activities in Giwa Local Government Area of Kaduna state. The specific objectives were to identify farmer's reasons for engagement in livelihood diversification activities determine the institutional and environmental factors influencing livelihood diversification and examine the effect of livelihood diversification on rural households poverty reduction (food security). Data for the study were collected using a questionnaire administered to 120 randomly selected respondents and analyzed by means of descriptive statistics, logistic regression model and Chi-square. It was found that the main reason why farmers engage in livelihood diversification activities was to raise household's income portfolio. The logistic regression analysis indicates that membership to farmers organizations (8.42) and natural disaster (5.59) had greater contributing influence on farmers engagement in livelihood diversification activities at 0.05 percent level of significance. Chi-square analysis for cumulative food security index indicates that diversified farmers were relatively food secured ( $\chi^2=87$ ) than undiversified farmers ( $\chi^2=13$ ) at 0.05 percent level of significance. It was therefore recommended that enabling environment in relation to electricity, small scale industries, access roads, training centers be provided to enable rural farmers, actively engage in varied livelihood sources in addition to farming so as to increase their income sources and address their poverty situation.

**KEYWORDS:** Factors, Influencing, Livelihood, Diversification, Rural farmers

### INTRODUCTION

The existing gaps in poverty, unemployment and inequality between the urban and the rural sectors of the world have attracted the attention of social scientists to the study of rural livelihood (Grown and Sen, 1987). Butler and Mazur (2004) equally observed that the African rate of development, which is lagging significantly behind much of Global South despite decades of assorted development approaches, has been receiving increased attention as the United Nation's Millennium Development Goals (MDGs) provide the goal for international development effort through 2015.

The concern and attention shown on lagging areas have called for change from emphasis on development strategies that focus on problems identification and needs assessment to approaches that place priority on the livelihood systems of the poor, and ways in which rural people adapt to maintain their livelihood under severe environmental, economic and political stress. The starting point is to understand the 'wealth' of the poor, which may be reflected in such assets as indigenous knowledge, special skills, individual and group resourcefulness and social support system, and the strategies that people use to cope with formidable hardships (Hussein and Nelson, 1998).

The rural poor have developed the capacity to cope with increasing vulnerability associated with agricultural production - diversification, intensification and migration or moving out of farming (Ellis, 1998). Diversification as

a strategy involves the attempt by individuals and households to find new ways to raise income and reduce environmental risk, which differs sharply by the degree of freedom of choice (to diversify or not) and the reversibility of the outcome (Hussein and Nelson, 1998). It is evident that rural households in Nigeria engage in multiple livelihood activities such as trading (marketing or adding value to commodities), small scale business enterprises (carpentry, radio and bicycle repairs), and processing of agricultural goods and arts and craft (weaving, mats and basket making) in order to supplement earnings from agriculture (Edna *et al.*, 2007); Ekong, 2003). These activities (livelihood diversification) are influenced by certain factors which operate at both internal and external environments of rural households (Kinsella *et al.*, 2000; Bateman and Ray, 1994; Butler and Mazur, 2004).

### METHODOLOGY

The study was conducted in six (6) villages of Giwa Local Government Area of Kaduna State, Nigeria, namely; Giwa, Iyatawa, Gangara, Fatika, Shika and Zongon Tama. The Local Government Area is located northward of Zaria in the transition zone between Northern Guinea and Sudan Savannah. The six villages were selected out of 43 villages by random sampling procedure. In each of the sampled village 10% of households out of a total of 1,161 households were randomly selected for the study. This gave a sampling size of 120 households and the respective household heads constituted the respondents for the study.

Primary and secondary sources of information were used. The primary data were obtained by means of a questionnaire administered to the respondents between the months of October, 2008 to early January, 2009 to obtain information on farmers' reason for engaging in livelihood diversification, institutional and environmental factors influencing livelihood diversification and the effect of livelihood diversification on household's poverty reduction (food security). The data collected were analyzed using descriptive statistics (percentage, frequency counts and means); Logistic regression model and Chi-square.

The logit model used is specified as:

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots + \beta_{15} x_{15} + U$$

Where:

Y = Livelihood diversification (1= yes, 0= otherwise)

X<sub>1</sub> = Market accessibility (distance in kilometers)

X<sub>2</sub> = Credit received (amount in naira value)

X<sub>13</sub> = Membership of farmers' organizations (number)

X<sub>4</sub> = Natural resource materials (number of materials)

X<sub>5</sub> = Natural disaster (number of disasters)

X<sub>6</sub> = Proximity to cities (km)

X<sub>7</sub> = Season of the year (number of months)

β<sub>0</sub> = constant term

x<sub>1</sub> - x<sub>15</sub> = Regression coefficients

U = Error term

The Chi-square denoted by the Greek letter  $\chi^2$ , is frequently used in testing a hypothesis concerning the difference between a set of observed frequencies of a sample and a corresponding set of expected or theoretical frequencies. In this study the Chi-square was used to test the hypothesis which stated that there is no relationship between livelihood diversification and rural household poverty reduction (food security).

The Chi-square model is specified as:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Where:

$\chi^2$  = Calculated Chi-square

$\sum$  = Summation sign

O = Observed frequency (calculated cumulative food security index)

E = Expected frequency (theoretical food security index = 22.82)

$\chi^2$  with Yate's correction and Phi (  $\theta$  ) rho the specifications are:

$$(i) \text{ Yate's correction} = \sum \frac{[(O_i - E_i) - 0.5]^2}{E}$$

$$(ii) \text{ Phi}(\theta) = \sqrt{\frac{\chi^2}{N}}$$

Where:

$\chi^2$  = Chi-square value

N = number of observations in the table

## RESULT AND DISCUSSION

### Reasons for Livelihood Diversification

The first objective of this study was to identify the reasons why rural households engage in livelihood diversification activities besides farming. To fulfill this objective data were obtained on four commonly identified reasons which are to; increase income, ensure food security, avoid risk associated with farming, and to meet family necessities. The respondents were asked to rank these reasons on the basis of priority, that is, from the first to the fourth. The key in the bar chart (R1-R4) indicates the ranking and the colors of the ranks represents the value for each bar.

The result of this analysis reveals that 38.9 percent of the respondents reported income as their first priority for engaging in livelihood diversification, 19.7 percent considered food security as their first or most important reason, 18.8 percent reported risk aversion as their first reason and 14.5 percent reported family necessities as their first reason. The finding shows that the main reason why rural people engaged in livelihood diversified activities was to raise household's income portfolio. This is because among the reasons for engaging in livelihood diversification, income had the highest score (38.9%) as the first, against the other reasons for engaging in livelihood diversification. This finding corroborates those of Ellis (1998), Gordon (2000) and Dercon and Krishnan (1996) who's studies show that rural farmers diversify sources of livelihood to increase households' income portfolios.

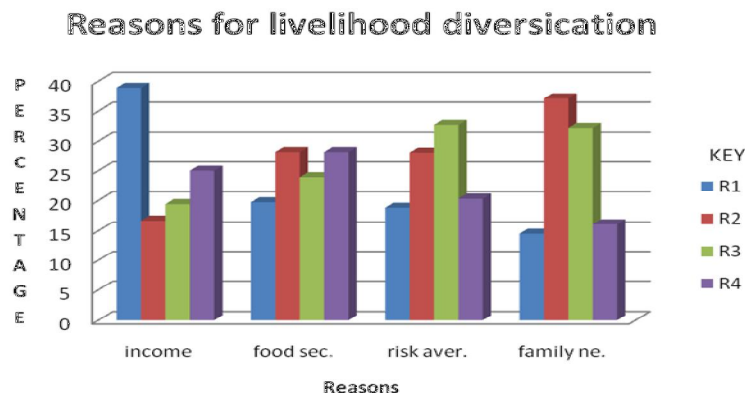


Fig. 1: Bar Chart showing Reasons for Involving in Livelihood Diversification

### Factors Influencing Farmers' Livelihood diversification

The model classification (Tables 1 and 2) indicates the goodness of fit of the model, 100% of farmers were correctly classified by the model. The 2 log likelihood ratio test (-2ll) shows that the estimated model including a constant and the set of explanatory variable fit the data better compared with the model containing the constant only. This implies a better relationship between odds ratio (or log of odds), probability of factors influencing livelihood diversification and the explanatory variables included in the model collectively contribute significantly to the explanation of farmers influence in livelihood diversification. Although on individual basis, some coefficients were not significant. The  $R^2$  value, model Chi-Square and overall percentage of correct prediction also suggested that the estimated model has an excellent explanatory power.

In the study it was hypothesized that there is no significant relationship between institutional factors – market, credit and farmer's organization and livelihood diversification of farmers. Table 1 show the analysis carried out using logit regression model. Forward stepwise selection approach was adopted; market ( $X_1$ ) and proximity to cities ( $X_6$ ) were found not to be significant at 0.05% level of

significant. Amount of credit received by farmers has a positive influence on farmers' livelihood diversification. The result shows that a unit change in the amount of money obtained by farmers ( $X_2$ ) would result in an increase of farmer's engagement in livelihood diversification by 0.657. This mean that the entire model was able to explain that credit contribute 0.66 prediction of farmer influence into livelihood diversification. This finding corroborates the finding of objective 2, which reveals that farmers engage in livelihood diversification to raise households' income portfolio. This is an indication that farmers who obtain credit are more likely to engage in livelihood diversification activities. For farmers organization a unit change in number of membership to farmers' organizations ( $X_3$ ) will raise the probability of farmers' engagement in livelihood diversification by 0.842. The implication of this finding suggest that belonging to farmers organization would significantly influence farmers into livelihood diversification activities besides farming, because the experience of working and sharing ideas and common problems in groups would educate the farmers and also enable them to learn more about other opportunities which may exists outside his immediate engagement and environment.

**Table 1:** Logit model estimate of institutional factors influencing livelihood diversification  
Overall number of farmers predicted were 100%

Institutional variables	B	SE	T	P	Remark
Market	0.089	0.167	0.533	0.594	NS
Credit	-0.657	0.136	4.831	0.014	Sig
Farmers' organizations	-0.842	0.059	14.27	0.0001	Sig
Constant			4.327		
Model chi-square		65.75			
- 2 log likelihood		0.00			
Cox and Snell R-square		0.87			
Nagelkerke R-square		1.00			

The second objective of the study equally examines environmental factors influencing livelihood diversification of farmers such as; natural resources, natural disaster, proximity to cities and season of the year which were equally hypothesized to have no significant relationship with livelihood diversification. This hypothesis was tested by means of logit regression model. The result Table 2 indicates that natural resources ( $X_4$ ), has significant influence on farmers livelihood diversification. This is an indication that a unit change in natural resources would increase the likelihood of farmers' engagement in livelihood diversification by 3.79. This means that the entire model was able to explain that natural resources contributed 3.79 prediction of farmers' engagement in livelihood diversification activities. As reported by Ellis (1998), certain activities depend on natural resource base, therefore, their availability would encourage farmers' participation in livelihood diversification. For natural disaster ( $X_5$ ), a unit change would result in 5.59 increase in livelihood diversification of farmers. This is very natural, because as people experience a disaster, the solution is often to seek

alternative ways of making a living. Therefore, rural dwellers often times find themselves in situations of this nature. This may force them to diversify sources of livelihood. Table 2 indicates that holding other factors constant, a unit change in season of the year ( $X_7$ ), would raise the probability of farmers engaging in livelihood diversification activities by 18.84. The finding of the study has shown that among the environmental factors, natural disaster ( $X_6$ ) has the highest probability (5.585) of influencing rural farmers into livelihood diversification activities.

### Chi-Square ( $\chi^2$ ) Result of Cumulative Food Security Index

To determine whether there exist statistical significant difference among livelihood diversified and undiversified farmers, it was hypothesized that livelihood diversification has no significant relationship with rural households' poverty reduction (food security). Table 3 shows the analysis of households coping strategies and cumulative food security index for both livelihood diversified and undiversified groups.

**Table 2:** Logit model estimates of environmental factors influencing livelihood diversification

Environmental variables	B	SE	T	P	Remark
Natural resource	3.79	1.45	2.57	0.05	Sig
Natural disaster	5.59	1.79	3.12	0.02	Sig
Physical proximity	2.03	1.56	1.30	0.21	NS
Season of the year	1.88	0.96	1.96	0.05	Sig
Constant		-13.46			
Overall number of farmers predicted				100%	
Model chi-square				62.45	
- 2 log likelihood				0.000	
Cox and Snell R-square				0.97	
Nagelkerke R-square				1.00	

**Table 3:** Household heads coping strategies and cumulative food security index

Farmers groups	Eating less preferred food	Limiting portion size	Borrow food or Money	Paternal/ Maternal Buffering	Skipping meal	Skipping days	Cumulative index
Diversified	0.75	0.00	0.00	0.00	1.25	0.00	2.0
Undiversified	1.00	0.25	0.75	0.25	1.25	0.00	2.5
Diversified	10.5	7.50	5.00	4.75	3.00	0.25	31.0
Undiversified	4.00	3.25	3.25	1.75	2.25	0.25	14.75
Diversified	4.50	4.00	5.00	4.25	4.25	3.00	25.00
Undiversified	1.50	1.25	1.75	1.50	2.00	1.00	9.00
Diversified	5.50	9.75	11.25	12.25	12.75	18.00	78.50
Undiversified	1.75	3.75	2.50	4.75	4.00	7.25	20.25

The result of cumulative food security index reveals that the  $\chi^2$  value of undiversified farmers was significantly different from the  $\chi^2$  value of diversified group at 0.05 percent level of significance. This means that the null hypothesis which states that there is no relationship between livelihood diversification and rural households' food security is rejected. This is an indication that livelihood diversified farmers adopt less severe coping strategies to cope with food insecurity than the undiversified farmers. The result also shows that when comparing farmers on the basis of livelihood diversification in respect to food security, diversified farmers are relatively food secured than the undiversified farmers. The relationship between livelihood diversification and rural households' food security shows that there is a strong positive association between livelihood diversification and rural households' food security. This is because the phi ( $\theta$ ) rho which is a measure of association reveals that farmers in livelihood diversification (Phi ( $\theta$ ) rho = 0.80) were strongly associated with more food security than the undiversified group (Phi ( $\theta$ ) rho = 0.50) which shows a weak association. The finding of this study suggests that livelihood diversification is an antidote to rural households' quest for poverty reduction, as it keeps them away from the vulnerability of food insecurity. This supports the fact that poor rural producers' over-dependence on agricultural production would mean depleting the only of food and income source, thereby

exposing them to more risk of income failure and food insufficiency. Therefore, multiplying food and income sources through livelihood diversification is a positive undertaken to run away from vicious circle of poverty, unemployment and inequality bedeviling poor rural producers and their families.

### CONCLUSION

The result of this study has revealed that farmers' involvement in livelihood diversification activities is as a result of overwhelming need to increase households' income portfolio and to maintain livelihood. The quest for improved standard of living which has been sought after by rural dwellers and their sympathizers would be met with higher successes when rural people realize the potentiality and effectiveness of livelihood diversification in the overall scheme of rural poverty reduction especially in rural communities of low income countries. It is therefore, the general conclusion of this study that livelihood diversification is a positive undertaken and an antidote to the chronic menace of poverty ravaging rural areas. This is because it enables rural people increase their income portfolio and insures households from insufficiency of food, thereby improving their food security status, while equally lessening their vulnerability to hunger, diseases and sudden deaths. Based on the findings of the study, it is recommended that rural farmers should be given opportunity to participate in varied income generating activities in both agriculture and non-agricultural ventures and rural development programmes

which would enhance their livelihood diversification activities and living standard be initiated and encouraged.

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