

# Evaluation of Choices of Livelihood Strategy and Livelihood Diversity of Rural Households in Ondo State, Nigeria

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## Abstract

The study empirically examined the livelihood strategies and livelihood diversity of rural households in Ondo State, Nigeria. Primary data were employed for this study and the data were collected from 120 rural household heads using well-structured questionnaire based on the specific objectives of the study. Data collected were analysed using descriptive statistics, Simpson index and multinomial logit regression. The result revealed that 80.8% of the respondents were male and 82.5% were married. Majority (83%) of the respondents had at least primary school education. The primary occupation was farming and 73.3% of the respondents were seen to combine both farm and non-farm strategies. Other observed non-farm income sources were carpentry, welding, trading, tailoring, hunting, lumbering, civil service among others. Results of the Simpson livelihood diversification index showed a risk neutral value of 0.64 with about 73.3% having more than one income source. The multinomial logit analysis showed that age, household size, level of education and farm size were the main factors that significantly influenced respondents' choice of livelihood strategy. Inadequate asset/capital, infrastructural problem, lack of access to natural resources, awareness and training and cultural problems were identified as constraints to livelihood diversification efforts of household heads. Conclusively, rural livelihood is moderately diversified with households have more than one income sources. Also, diverse income sources provide a suiting relief to rural households as it builds up their total income.

## Keywords

Livelihood Strategy, Diversity, Households, Multinomial Logit, Simpson Index, Nigeria

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## 1. Introduction

The contribution of diverse livelihood strategies to rural sector development is germane considering Nigeria's economy. The inevitable role played by livelihood as made it a subject of utmost importance to human existence. A livelihood is much more than a job as it covers a whole range of things people do to make a living [1]. Livelihood is a

manner of living and a way an individual or household supports itself to ensure a sustainable life. The word livelihood is defined as the capabilities, assets (stores, resources, claims and access) and activities required for a means of living [2]. The livelihood also comprises the assets (natural, physical, human, financial and social capital), the activities and the access to these assets (mediated by institutions and social relations) that together determine the

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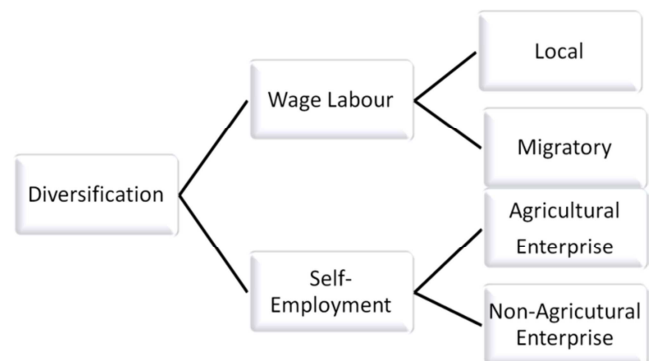
living gained by an individual or household or a community [1]. Again, it was described as a material means whereby one makes a living and livelihood generation refers to the bundle of activities that people undertake to provide for their basic needs (or surpass them) [3]. The definitions of scholars above denote an important feature of livelihood as they direct attention to the links between assets people possess in practice to pursue alternative activities that can generate the income level needed for survival.

Assets which people can rely upon play a crucial role in the livelihoods framework. Those with more assets are more likely to have greater livelihood options with which to pursue their goals and reduce poverty to achieve better welfare. Traditionally, five categories of assets or capitals (human, social, natural, physical, and financial) are identified, although subsequent adaptations have added others [4]. Some other livelihood in the literatures further classified assets into: capital (land, and productive tools), human capital (educational status, skills, health and experience), social capital (networks and organizations), natural capital (common properties, natural resources) and financial capital (sources of income, availability of cash, savings, credit, remittances, e.t.c) [5 – 8]. Policies, institutions and processes refer to the complex social, economic and political context within which people pursue their livelihood strategies. They can have a great influence on access to assets – creating them, determining access, and influencing rates of asset accumulation.

Moreover, livelihood strategies are the combination of activities that people choose to undertake in order to achieve their livelihood goals [4]. They further described livelihood strategies to include productive activities, investment strategies and reproductive choices. The choice of strategies is not a rigid decision but a dynamic process in which people combine activities to meet their changing needs. That is, there are possibilities of the choice of strategies to change and the household needs change. For instance, in farming households, livelihood activities are not necessarily confined to agriculture but often include non-farm activities in order to diversify income and meet household needs especially during the off-season. In regards to strategies, agricultural intensification, livelihood diversification and migration are mentioned as the three core livelihood strategies [9]. These three core strategies reflect an element of one in another. That is, diversification strategy can be through wage labour (working as an employee), which could be within the rural community or migrating out of the community.

On the other hand, diversification can take the form of self-employment whereby an individual decides to concentrate effort on the agricultural enterprise and/or combine non-agricultural enterprises, just to enhance household income

sources. Diversification of livelihood is the most popular among the three strategies. The reason being that, the decision of the household head to concentrate either on on/off farm and non-farm livelihood activity begins with the fundamental opinion of the best strategy to adopt. Therefore, diversification can be used to capture agricultural intensification activities of the household head when he decides to fully depend on agricultural activities or moving away from agricultural activities and/or out of the community in search of greener pastures. The figure 1 shows the basic alternatives in rural diversification with the elements of the other strategies in it.



**Figure 1.** Basic Alternatives in Rural Diversification Strategies.

Source: Modified from [10]

Agricultural intensification is a deliberate effort towards increasing agricultural production using every available factors of production. The nature of rural agriculture has made this unpopular among the rural households who practice subsistence agricultural. They engage in other non/off farm activities to augment income sources. Some household heads totally stop farming and migrate out of the community to achieve better livelihoods. Mostly, benefits earned from migrants' engagements are sent to the rest of the household in the form of remittances.

People pursue livelihood strategies with the expectation of attaining some level of outcome called livelihood outcomes which according to [4] are the goals to which people aspire, the results of pursuing their livelihood strategies, such as increased income, reduced vulnerability, increased well-being, improved food security, and more sustainable use of natural resources. Livelihood outcomes are important because they help the analyst to understand the results of peoples' livelihood strategies in a particular context, why people pursue particular strategies and what their priorities are, and how people are likely to respond to new opportunities or constraints which mitigates their choices.

With majority of Nigerians residing in rural areas, rural Nigeria is characterized by agrarian livelihood and about two-thirds are engaged in crop and livestock production as

well as certain other primary production activities for their own use and market sales. The traditional image of farm households in developing countries has been that, they focus almost exclusively on farming and undertake little rural non-farm economic activities [11]. Agricultural-based livelihood in rural Nigeria is described as having a higher level of poverty than other occupational groups. Rural agriculture is subjected to local variations in weather conditions, and thus expected variations in income levels and thus access to food [12]. The insufficiency of farming to meet the needs of these rural households makes them to take up other activities (mostly non-farm activities) as a livelihood strategy to sustain their family. These activities include among others trading, fishing, hairdressing/barbing, craftwork, tailoring etc. The high level of rural poverty which is attributable to rural agriculture has brought about an increased popularity of diverse income sources among rural households in Nigeria.

Despite the increased popularity of livelihood diversification rural households does not appear to be better off and this has been attributed to several factors including household assets and access to assets that allows rural households to dive among several options. Therefore, this study critically looked into the factors influencing choices of livelihood strategy and livelihood diversity of rural households in Ondo State, Nigeria. The study aimed at achieving the following objectives: ascertain the socio-economic characteristics of rural household heads; determine livelihood diversity of rural household heads; determine the factors that influence the choice of livelihood strategy adopted by the respondents; and identify constraints to diversifying of livelihood by respondents.

## 2. Methodology

### 2.1. Study Area

The study was conducted in Ondo State in South-West Nigeria. The State is situated between longitudes  $4^{\circ} 15^1$  E and  $6^{\circ} 00^1$  E of the Greenwich meridian and latitudes  $5^{\circ} 45^1$  N and  $7^{\circ} 45^1$  N which is the North of the equator in the South western Nigeria [13]. Its land area is about 15,500 square kilometres. The climate of Ondo State is of the lowland tropical rain forest type, with distinct wet and dry seasons. Ondo State is bounded on the east by Edo and Delta States, on the west by Ogun and Osun States, on the north by Ekiti and Kogi States and to the south by the Bight of Benin and the Atlantic Ocean. The State is richly blessed with varied and favourable ecology and climatology conditions while the vegetation ranging from mangrove swamps of the southern coastal riverine areas through the rainforest of the midlands to the derived savannah in the northern part of the State [14].

Administratively, Ondo state is made up of 18 Local Government Areas (LGAs) with an estimated population of 3,441,024 [15]. These Local Governments are classified under three senatorial districts and each district consists of six LGAs. Ondo State is an agrarian state and a large number of the population are engaged in small scale farming with the cultivation of major arable crops including maize, cassava, yam, cowpea, and sorghum while the tree crops cultivated include cocoa, kolanut, oil palm, cashew, and rubber. Besides farming and fishing, the inhabitants are also engaged in various occupations such as trading, manufacturing, commerce and government works (civil service). Ondo State is equally blessed with extensive deposits of crude oil, bitumen, glass sand, kaolin, granites and limestone. Agricultural production is usually for family consumption, market and cash for sustainability [16].

### 2.2. Data Collection and Sampling Technique

Primary data were used for this study. The data were collected through direct personal interview and structured questionnaire. Multistage sampling procedure was used to select respondents. The first stage of the sampling technique involved the purposive selection of two agro-ecological zones based on proximity and the predominantly rural nature of the areas. These are the Rainforest and derived savannah zones. In the second stage, three LGAs were randomly selected from the two zones. These Local Governments are Owo, Odigbo and Ifedore. In the opinion of [17] population remains the main characteristic that differentiates rural from urban areas, especially in the developing countries. In this regard, in Nigeria an area with a population of 20,000 people and below is classified as a rural area [17]. Therefore, the third stage of the sampling involved the random selection of two (2) rural communities from each LGAs to make a total of six (6) rural communities. The last stage involved the random selection of twenty (20) households from each selected rural community. That is, forty (40) respondents from each local government area and a total of one hundred and twenty (120) households were sampled and used for the analysis of this study.

### 2.3. Analytical Procedure

The data collected were analysed using descriptive statistics such as frequencies, percentages to examine the socio-economic characteristics of rural households in the study area. Simpson Index was used to analyse the level of livelihood diversity of the respondents, while multinomial logit (MNL) model was used to determine factors that influenced choice of livelihood strategy adopted by rural households.

### 2.3.1. Livelihood Diversity: Simpson Index

The Simpson livelihood diversification index was used to measure the diversity of strategies adopted by households in the study area. The Simpson index was used because the index is simple to compute, robust and widely applicable [18]. The formula for Simpson index is given below:

$$S.I = 1 - \sum_{i=1}^N P_i^2 \quad (1)$$

Where,

S. I= Simpson Index

$\sum$ = summation

N= total number of income sources

$P_i$  = income proportion of the  $i^{\text{th}}$  income source.

The value of the Simpson index lies between 0 and 1. The value of the index is zero when there is a complete specialization and it approaches one as the level of diversification increases.

### 2.3.2. Multinomial Logistic Regression

This was used to analyse the factors that determine the choice of livelihood strategy adopted by respondents. When there is a dependent categorical variable, the multinomial logistic regression model is commonly used. That is, when the dependent variable is nominal and it is more than two categories. The explanatory variables are the same across all choices for each observation. The model is specified as:

$$P_{r(Y_i=j)} = \frac{\exp(X_i\beta_j)}{\sum_{j=0}^J \exp(X_i\beta_j)} \quad j=0, \dots, 3 \quad (2)$$

Where,

$\beta_j$ = vector of coefficients of each explanatory variable,  $X_i$

$(Y_i=j)$  = Dependent variable that is,  $j^{\text{th}}$  adopted strategy options

$X_i$  = explanatory variables

$i$  =  $i^{\text{th}}$  explanatory variable

For this study, the strategy options or response probabilities are four based on the observed number of income sources respondents have:

$Y_i$  = Four unordered number of income sources adopted by the respondents:

$Y_0$  = adopted one income source (no diversification);

$Y_1$  = adopted two income sources;

$Y_2$  = adopted three income sources;

$Y_3$  = adopted four income sources;

We can normalize equation (2) to remove indeterminacy in

the model by assuming that  $\beta_0 = 0$  and the probabilities can be estimated as:

$$Prob \left( Y_i = \frac{j}{x_i} \right) = \frac{e^{\beta_j x_i}}{1 + \sum_{k=1}^j e^{\beta_k x_i}}, \quad j = 0, 2 \dots j, \beta_0 = 0 \quad (3)$$

Estimating equation (3) yields the J log-odds ratios:

$$\ln \left( \frac{p_{ij}}{p_{ik}} \right) = x_i (\beta_j - \beta_k) = x_i \beta_j, \quad \text{if } k = 0 \quad (4)$$

The dependent variable is therefore the log of one alternative relative to the base alternative.

The explanatory variables include:

$X_1$  = Age of the household head (years)

$X_2$  = Gender of the household head (Male=1; Female=0).

$X_3$  = Marital status of the household head (Married=1; Single=0).

$X_4$  = Household size (Number)

$X_5$  = Educational status of the household head (Number of years).

$X_6$  = Living in Own house (Yes=1; No=0)

$X_7$  = Membership of cooperatives (Yes=1; No=0)

$X_8$  = Farm size (Ha)

$X_9$  = Total monthly income (₦)

## 3. Results and Discussion

### 3.1. Socio-Economic Characteristics

The socio-economic characteristics of the respondents are very pertinent as they determine the choice of strategy adopted and the overall outcome of their diverse livelihood activities. According to Table 1, the findings revealed that majority of the respondents (38.3%) were aged between 40 and 49 with the mean age 44.58 years. This shows that sampled respondents are economically active and energetic to engage in agricultural production as well as other livelihood activities. The pattern of gender distribution of household head from the survey revealed that 80.8% of the respondents male while 19.2% were female. The rural Nigeria is a patriarchy society [19] with the male dominating as household heads; hence they are saddled with the responsibility to cater for the welfare of the family.

Analysis of the household size of the respondents revealed that majority (48.3%) of the respondents had household size of 4-6 people. The mean household size (5.0) is moderate compared to the fact by the Nigerian Demographic and Health Survey [20] which found Nigeria's average household size to be 4.6 people. The moderateness of the rural

households can be attributed to the positive influence of birth control sensitisation on rural Nigeria. It could also be as result of the stress that large household size places on household income and household heads have come to understand the need for family planning. Household size is an indicator of the level of responsibility the household head is expected to carry.

From the sampled respondents, majority (82.5%) of the respondents were married, 10.8% of them were single and about 6.7% were widowed. The responsibility that comes with marriage may necessitate diversification of livelihood. Improved education and high literacy level is an important tool for a household head to react smartly to declining disposable income. It was also shown that 17.5% of the respondents had no formal education while majority (82.5%) of the respondents are literates with at least primary school education. The high level of literacy observed is good for the respondents as they are expected to have greater knowledge of the importance of diverse income source. The analysis of the respondents' major occupation revealed that 54.4% respondents had farming as their primary occupation while 45.6% had other non-farm economic activities as their primary occupation. This shows that both farming and non-farming livelihoods are equally important to the rural economy.

Migration is one form of livelihood strategy adopted by rural households. People move from one area to another in search of better livelihood sources. Majority (64.2%) of the respondents were migrants to the area while 35.8% are natives of the study area. This shows that the natives of the study area are accommodating and has experienced large turn-in of migrants due to an enabling environment for agriculture and other non-farm economic activities. Analysis of the respondents' monthly income revealed that a considerable number (50.8%) of the respondents had a monthly income between ₦10,001 - ₦30,000, closely followed by ₦30,001 - ₦50,000 range with 32.5%, while 5.8% had their monthly income more than ₦90,000.

The mean monthly income of the respondents in the study area was ₦34,855; and this indicates that despite the respondents' diversification efforts, the outcome has been majorly for survival rather than totally coming out of poverty. The analysis of income is important because income has been a vital tool in assessing human well-being [21]. It is also revealed that majority (73.3%) of the respondents adopted the farming and non-farming combination as a strategy, while 15.8% and 10.8% adopted only the non-farming strategy and farming strategy respectively. Adopting a combination of livelihood strategies is easier than to resolve to switch between either. This finding corroborates with that of [22] that diverse income portfolio creates more income and allows the even distribution of income.

**Table 1.** Socio-economic characteristics of household heads in the study area.

Socio-economic characteristics	Frequency	Percentage	Cumulative Percentage
Age (years)			
20-29	8	6.7	6.7
30-39	32	26.7	33.4
40-49	46	38.3	71.7
50-59	21	17.5	89.2
≥60	13	10.8	100
Mean=44.58			
Gender			
Male	97	80.8	80.8
Female	23	19.2	100
Household Size			
1-3	26	21.7	21.7
4-6	58	48.3	70.0
7-9	30	25.0	95.0
≥10	6	5.0	100.0
Mean=5			
Level of education			
No formal education	23	17.5	17.5
Primary school education	33	27.5	45.0
Secondary school education	43	35.8	80.8
Tertiary education	21	19.2	100.0
Marital status			
Single	13	10.8	10.8
Married	99	82.5	93.3
Widow/Widower	8	6.7	100.0
Residential status			
Migrant	77	64.2	64.2
Native	43	35.8	100
Type of strategy adopted			
Farming only	13	10.8	10.8
Non-farming only	19	15.8	26.6
Farming and Non-farming	88	73.3	100.0
Primary occupation			
Farming	72	54.4	54.4
Non-farming	48	45.6	100.0
Monthly Income (₦)			
≤10000	7	5.8	5.8
10001-30000	61	50.8	56.6
30001-50000	39	32.5	89.1
50001-70000	2	1.7	90.8
70001-90000	4	3.3	94.1
>90000	7	5.8	100
Mean=34,855			
S.D=23,932.85			

Source: Field survey, 2017

### 3.2. Livelihood Diversity of the Respondents

This section presents the diversity of livelihood in the study area using the Simpson diversification index. Households are classified based on the number of livelihood sources that they have. Table 2 shows that 73.3% of the respondents had more than one livelihood sources while 26.7% relied on onelivelihood. The livelihood diversification index stood at



0.64. This is an indication of the moderately diversified nature of rural livelihood. That is, an average rural household is likely to have at least two livelihood sources. It also depicts that as much as rural household heads take part in livelihood diversification efforts; they are mere survival strategies and have not been able to take rural households out of poverty. The result is similar to the findings of [23] that an average Nigeria rural household is risk neutral with diversification index of 0.53.

**Table 2.** Distribution of Respondents According to Livelihood Diversity using Simpson Index.

Income source outlets	Frequency	Percentage
1	32	26.7
2	63	52.5
3	15	12.5
4	10	8.3
Total	120	100.0
S.I = 0.64		

Source: Field Survey, 2017

### 3.3. Factors Affecting Choice of Livelihood Strategy

The factors that determine respondents' choice of livelihood strategy is shown by the results of the Multinomial logit regression model on Table 3. The livelihood strategy was analysed using the observed number of income sources adopted by the respondents. The likelihood ratio statistics as indicated by the Chi-square value (34.13) which was significant at 1%, ( $P < 0.0024$ ) suggests that the model has a good fit for the data. The estimated coefficients were compared with the base category of "one income source only" (No diversification). The variables that were found to significantly influence the choice of livelihood strategy adopted by households were age, household size, education and farm size.

Age: The coefficient of age was positive under the 2-income

source and 3-income source options but negative under the 4-income source option. A year increase in the age of the household head is associated with having 2 or 3 income sources being more likely by 5% or 6% respectively but reduce the probability of adopting 4 income sources by 19%. The possible reason for this result may be due to several health challenges related to old age. The result also suggests that there is a peak to the number of income sources a household head can adopt for effective management reasons.

Household size: This also influences the choice of the household head as regards number of income sources they adopt. The coefficients were positive and statistically significant across the three options. Specifically, a member increase in the size of household results to 2-income source, 3-income source and 4-income source being 0.9%, 6% and 7% more likely diversified respectively. Since household size is synonymous to dependency ratio. Increased household size will make the household head pursue diverse income sources so as to be able to meet the food need of the family.

Level of Education: The coefficient of level of education was positive and statistically significant under the three options. The result shows that a change in the educational status of the household head from non-educated to educated, the more likely the adoption of more than one income source by 20.4%, 19.3% and 15.8% respectively. Reason being that an educated household head is believed to have a better understanding of how to combine several livelihood alternatives.

Farm Size: The coefficient of farm size was negative and statistically significant. This implies that an increase in the hectares of land cultivated by the household head results in the adoption of more than one income source being less likely by 0.1%, 1% and 0.1% respectively. *Ceteris paribus*, for a predominant farmer a large farm size will make the farmer to specialise in one income source which is farming. This is because land is an important factor in agriculture.

**Table 3.** Estimates of the MNL model on the factors affecting the choice of strategy adopted.

Explanatory variables	2 income sources		3 Income sources		4 Income sources	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
Age	0.0503***	0.000	0.0600***	0.000	-0.1976**	0.048
Gender	0.7054	0.276	-0.5989	0.503	1.7569	0.223
Marital status	0.0827	0.906	0.3417	0.735	1.6386	0.265
Household size	0.0096**	0.031	0.0601***	0.000	0.7062**	0.037
Education	0.2041**	0.031	0.1937**	0.017	0.1584**	0.022
Living in own house	0.4537	0.430	0.9343	0.274	0.1344	0.886
Membership of cooperatives	0.1343	0.353	0.2962*	0.097	1.1602	0.175
Farm size	-0.0001***	0.000	-0.0198**	0.048	-0.0001*	0.075
Total monthly income	9.80e <sup>-07</sup>	0.579	8.45e <sup>-07</sup>	0.572	1.73e <sup>-06</sup>	0.273

Note: \*, Significant at 10%, \*\*, Significant at 5%, \*\*\*, Significant at 1%

LR Chi<sup>2</sup> (9) = 34.13\*\*\*; Log likelihood = -121.867; Pseudo R<sup>2</sup> = 0.1228; Base category = 1 income source (No diversification)

Source: Field Survey, 2017

### 3.4. Constraints to Diversifying Livelihood (Income Sources)

The distribution of constraints faced by respondents is shown on Table 4. The leading constraints faced by the respondents were inadequate access to formal loan and credit (28.49%) followed by inadequate asset or capital (21.2%). These two constraints are in consonance with [11] and explainable because the level and the quality of assets available to the household affects their choice of strategy. This could be the reason for the moderately diversified nature of livelihoods in the study area. Another constraint identified is infrastructural problem (20.7%) which is evident in bad roads, poor electricity among others stops household heads from adopting some form of livelihood as it increases the cause of establishment and operation. For example, bad road networks between communities increase the cost of transportation to the market where large income could be attained in form of profit. There are several bans on natural resources such as land, forest and water bodies due to the cultural values and norms of the study area. These cultural norms and values are likely to prevent household head from considering livelihood activities related to natural resources. Some cultural norms also prevent women from accessing several benefits in the rural areas. Thus, limits access to some resources gender wise. The emphasis on funds as a constraint faced by the respondents show that the financial capability of the respondents will determine the income diversification options they can adopt. Households' are reduced to taking up activities with low entry barriers in term of technical skills and capital/equipment as some livelihood activities have funds and property rights as their entry barriers. These constraints pose serious threat on the expected outcome of households' livelihood diversification efforts.

**Table 4.** Constraints to diversifying livelihood by respondents.

Constraints	Frequency	Percentage
Inadequate asset/capital	38	21.2
Infrastructural problem	37	20.7
Inadequate access to formal loan and credit	51	28.5
Lack of access to natural resources	20	11.2
Distance to market	19	10.6
Awareness and training	14	7.8
Cultural problems	20	11.2
Total	179*	100

Source: Field Survey, 2017; \*, Multiple responses

## 4. Conclusion and Recommendations

In conclusion, many of the respondents are still young and economic active with potential to adopt a combination of

livelihood strategies for a living standard. They combine both farming and non-farming activities as strategies despite the fact that they are primarily farming households. The nature of rural livelihood diversity is moderate and this is traceable to constraint that access to diversification assets and opportunities place on the diversification effort of household heads. Many of the respondents only adopt two sources of livelihood strategies and this concludes that the rural households have not been able to fully harness all diversification options due to the constraints their current economic status places on the effort to achieve an outcome that is better off. It is therefore recommended that as a way of encouraging the identified relevance of diverse livelihood sources household welfare, government should improve on the provision of basic infrastructures such as good roads, electricity, health facilities, schools and others. This will improve the variety of non-farming income generating activities that rural households can engage in to improve their income and meet their needs. The establishment of skill acquisition centres where rural dwellers especially women can acquire entrepreneurial skills so as to boost remunerative livelihood strategies that conforms to the norms, values and beliefs of the communities. Trainings and seminars on livelihood diversification strategies should be provided by private organisations with the necessary support of the government. This will enlighten the rural dwellers on how best to distribute their eggs among baskets and withstand shock that could arise from the failure of their major livelihood source. Government should also make formal credit available at one digit interest rate. This will encourage them and as well boost their standard of living by generating more revenue to the household.

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