ASSESSMENT OF THE LIVELIHOODS OF THE RURAL VULNERABLE GROUP IN NIGERIA

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Abstract

The vulnerable group is susceptible to various economic and social challenges. Understanding their livelihood is a prerequisite to addressing these menaces. Therefore, this study assessed the livelihoods of the vulnerable group and the factors responsible for their diversification in rural southwest Nigeria. Data collected were analysed using descriptive statistics, principal component analysis, the Simpson index, and the Tobit regression model. Results revealed that food crop production, cash crop production, livestock and fishing, forest and forest products, artisanship, remittances, wages and salaries from non-agriculture, and trading were the different means of livelihood among the rural vulnerable group. All the vulnerable groups derived income from farming. Cash crops, food crops, and livestock and fishing contributed 26.1%, 22.7% and 17.9% to household income, respectively. Thus, agriculture contributed the most (66.7%) to their total household income.This is followed by wages and salaries from non-agriculture (12.1%), trading (9.3%), artisanship (8.1%), remittance (2.2%) and forest and forest products (2.0%). The vulnerable group had a low level of livelihood diversification. Educational level, farming experience, total income, access to credit, age, and distance to the market were responsible for their level of livelihood diversification. This calls for government and non-governmental intervention to support the vulnerable group by providing financial assistance (credit or grants), farming inputs, and education to improve their livelihood and enhance their livelihood diversification.

Key words: *diversification, income, livelihood strategies, rural households, vulnerable people*

INTRODUCTION

The majority of residents of developing countries live in rural areas and rely on agricultural activities for a living [30, 32, 36,39]. Rural areas contribute significantly to national development through their various economic roles such as food supply, labour, market, and raw materials [13, 20]. Despite these contributions, rural areas are typically defined by agrarian activities, strong social cohesion and control, low living standards, a lack of amenities such as clean water, electricity, quality food, good health services, adequate transportation and road network, and industries, among other things [1, 29, 38]. They are also confronted with some constraints, including institutional constraints, marketing constraints, environmental constraints, inadequate infrastructure, and technological constraints. These constraints impede rural productivity and make it increasingly difficult to secure adequate livelihoods for rural populations in developing countries such as Nigeria.

Livelihood is defined as the various resources people combine and activities they undertake to secure a means of living [1, 9]. Sustainably generated income is required for economic sustainability and development [26,35]. The sustainability of livelihood is highly dependent on its capacity to satisfy the immediate needs of people without threatening its ability to satisfy future needs. That is, a sustainable livelihood should be highly resilient and adaptable to current and future shocks without jeopardizing the natural

resource base [12, 19, 25]. Achieving a sustainable rural livelihood is an important component in which human development and economic growth are deeply rooted.

Certain groups, particularly in rural society, are vulnerable and face a greater risk of achieving a sustainable livelihood, and their development needs are frequently overlooked as a result of their exclusion from decision-making processes. People who are vulnerable are those who are easily frightened by shocks. For example, they include widows, physically challenged women, the elderly, poor people, children, the homeless, smallholders, and people living with chronic health conditions [15].

For most rural communities in developing countries such as Nigeria, the main source of income is farming, which is supplemented by other activities such as weaving, arts and crafts, pottery, and petty trading [19,28]. Agriculture's reliance on weather variations causes fluctuations in income and food accessibility [1, 33]. These fluctuations destabilize the rural dwellers and increase their poverty level, which further increases their vulnerability level. An increase in income and their sources will reduce poverty, increase their access to basic needs, and consequently enhance their well-being [27]. As a result, rural households, particularly vulnerable groups, must diversify their sources of income.

Livelihood diversification is an important pathway to boost income, reduce environmental risk, and consequently reduce poverty, especially among smallholders [4, 5, 17, 23]. It is also needed for rural growth, shifting from farm to non-farm activities, and household risk management mechanisms [24]. It is thus pertinent to assess the livelihood of the vulnerable group in rural societies.

Available studies on rural livelihoods concentrated on general rural households [2, 3, 8, 17, 18, 19, 22, 24, 28, 31, 34, 40]. Thus, the present study aims to fill the gap and add to the existing knowledge on rural livelihood. Based on the foregoing, the study's objectives are to identify the rural vulnerable group's various levels of access to livelihood assets; identify the rural vulnerable group's various livelihood strategies and their contribution to income; examine the choices of their livelihood strategies; determine the vulnerable group's level of livelihood diversification; and identify the determinants of the vulnerable group's livelihood diversification strategies. The results of this study would thereby assist in formulating policy-based recommendations that would reduce poverty and improve the welfare of these vulnerable rural dwellers. This would further increase their resilience and ability to withstand shocks. It will also help to understand the livelihood strategies used by these vulnerable groups and look for ways to improve them.

MATERIALS AND METHODS

Study area

The study area is Osun State, located in southwestern Nigeria. The state is divided into three agricultural zones: Iwo, Ife, Ijesha, and Osogbo, each with its zonal headquarters in Iwo, Ilesha, and Osogbo, respectively. It has a landmass of 14,875 km^2. Agriculture is of great importance in the state, as most of its population is engaged in farming, especially rural people. Annual crops in the region include maize, yam, cassava, banana, okra, and cowpea, among others, and recently watermelon and cucumber. Tree crops include oil palm, citrus, kola nuts, and cocoa. Livestock production activities mainly involve the keeping of animals like cattle, sheep, goats, poultry, snails, and pigs.

Sampling technique and data collection

The vulnerable group in the rural area makes up the population for the study and were selected using a two-stage sampling technique. Three blocks were purposively selected from each of the three agricultural zones based on the concentration of the vulnerable group in the first stage. Iwo, Ola-Oluwa, and Isokan were selected from the Iwo Zone; Osogbo, Odo Otin, and Ede North were selected from the Osogbo Zone; Ife-North, Oriade, and Atakunmonsa West were selected from the Ife-Ijesha Zone. A random selection of 20 members from each block of the three zones was carried out in the second

stage. This made up a total of 180 respondents in all. Table 1 presents the summary of the sample design.
Data were collected using structured questionnaires and scheduled interviews.

Table 1. Summary of sample design

Zone	Block	Freq.	Percent
Iwo	Iwo	20	11.11
	Ola-Oluwa	20	11.11
	Isokan	20	11.11
Osogbo	Osogbo	20	11.11
	Odo-Otin	20	11.11
	Ede north	20	11.11
Ife-Ijesha	Ife north	20	11.11
	Oriade	20	11.11
	Atakunmonsa West	20	11.11
Total		180	100

Source: Authors' computation.

Methods of data analysis
Descriptive statistics, the Simpson diversification index, Tobit regression, and the Likert scale were used to analyse the data. Descriptive statistical tools were used to describe the socioeconomic characteristics and to assess the level of access to the livelihood asset.

Principal component analysis (PCA)
The PCA is a dimension-reduction tool used to reduce a large variable set to a small variable set that retains the same information as the large set. It identifies patterns in data and expresses the data in a way to highlights their similarities and differences [21, 40]. The PCA was used to identify the major livelihood strategies adopted by the vulnerable group.

Simpson diversification index (SDI)
The SDI was used to analyse the livelihood diversification of the vulnerable group. This used eight (8) total income sources: food crops, cash crops, wages and salaries from non-agriculture, remittances, forest products, fisheries and livestock, artisanship, and trading.

Simpson index $= 1- \sum_{i=1}^{n} Pj^2$ ....(1)

where:= total number of income sources and Pj = percentage of j-th income source.

Both the number of income sources and the distribution of income among various sources affect the SDI. The SDI has a range of 0 to 1. An SDI of less than 0.01 indicates no diversification of sources of income, 0.01 to 0.25 indicates a low level of diversification, 0.26 to 0.50 indicates a medium level of diversification, 0.51-0.75 indicates a high level of diversification, and more than 0.75 indicates a very high level of diversification[6].

Tobit regression
The factors influencing livelihood diversification by the vulnerable group were investigated using Tobit regression. The model was explicitly stated as:

$$y_i = \begin{cases} 0 \ if \ y_i^* \leq 0, \\ y^* \ if \ y_i^* > 0. \end{cases}$$

....(2)

where:
y_i is the observed variable (livelihood diversification index), and y_i^* is the latent variable explained by:

$$y_i^* = \beta_0 + \beta_1 G + \beta_2 Ag + \beta_3 HS + \beta_4 Ed + \beta_5 MS + \beta_6 FE + \beta_7 TI + \beta_8 FS + \beta_9 C + \beta_{10} TFA + \beta_{11} DM + \mu$$

....(3)

where:
G = Gender (male = 1, female = 0), Ag = Age of the respondents in years, HS = Household size (number), Ed= Education (years spent in school), MS = Marital status (married = 1, otherwise = 0FE = Years of farming experience, TI= Total income per year in naira, FS= farm size in hectare, C = Amount of credit received in naira, TFA = Total farm asset in naira, DM = Distance to the market (km), β_0= Intercept, $\beta_1 - \beta_{11}$ = Coefficients to be estimated and μ = Error term.

RESULTS AND DISCUSSIONS

Socio-economic characteristics of the vulnerable group
Table 2 provides information about the socioeconomic features of the vulnerable group. Female domination among the

vulnerable group is evident from the fact that the majority of respondents (65.6%) were female.Their average age of 52 years suggests that they are old, which could have an impact on their economic activity given the nature of their employment. A higher percentage of them (53.3%) had no formal education; indicating a high level of illiteracy among the vulnerable group. This could have a negative influence on their decision-making, productivity, and economic activities [7, 14, 16]. The majority of the respondents were married (62.2%), 23.9% were widowed, and 8.9% were divorced, while those who were single accounted for just 5% of the respondents. The vulnerable group had a larger household size of seven people. The analysis further shows that their mean farming experience was 23 years, which indicates that they are experienced farmers. The physically challenged made up a bigger share of the vulnerable category (39.5%), followed by the aged (23.9%), widowed (19.4%), the diseased (12.2%) (including those with leprosy and epilepsy), and the young (5%).Additionally, the bulk of them were women, and they were all small-scale farmers.

Table 2. Socio-economic characteristics of vulnerable group

Variable	Category	Frequency	Percentage	Mean
Gender	Male	62	34.4	
	Female	118	65.6	
Age	≤30	10	5.6	52
	31-40	39	21.7	
	41-50	38	21.1	
	50-60	48	26.7	
	>60	45	25.0	
Educational level	No formal education	96	53.3	
	Primary	51	28.3	
	Secondary	29	16.1	
	Tertiary	4	2.2	
Marital status	Single	9	5.0	
	Married	112	62.2	
	Widowed	43	23.9	
	Divorced	16	8.9	
Household size	≤5	48	26.7	7
	6-10	122	67.8	
	<10	10	5.6	
Farming experience (years)	≤10	48	26.7	
	11 – 20	42	23.3	23
	>20	90	50.0	
Nature of vulnerability	Aged	43	23.9	
	Widowed	35	19.4	
	Youth	9	5.0	
	Diseased	22	12.2	
	Physically challenged	71	39.4	

Source: Field Survey, 2022.

Household assets of the vulnerable group
Table 3 shows the distribution of the different types of assets among vulnerable groups. The distribution of the respondents based on their financial assets shows that a larger proportion of the respondents sourced capital through personal savings. This was followed by family and friends, cooperative societies, money lenders, grants from the government, and grants from NGOs. Furthermore, the majority do not have access to credit facilities.
This is an indication that the vulnerable group had low access to external funding (credit), which could further increase their susceptibility to poor livelihood and inhibit their livelihood diversification. In addition, 81.9% of those who received financial help obtained N50,000 (USD 112.40) or less from external sources, and only 18.1% obtained

between N50,000 (USD 112.40) and N100,000 (USD 224.90). This indicates a low level of financial support given to the vulnerable group, which consequently indicates a low financial asset among them.

Table 3. Household assets of the respondents

Types	Variables	Category	Frequency	Percent
Financial asset	Source of capital	Self	108	60.0
		Loans from the money lender	11	6.1
		Family and friends	32	17.8
		Grants from government	8	4.4
		Grants from NGO	1	0.6
		Loan from cooperatives	20	11.1
	Access to credit	Yes	63	35.0
		No	117	65.0
	Amount obtained (₦)	≤50,000	59	81.9
		50,001-100,000	13	18.1
Physical asset	Farm size	0.1 - 1.0	116	64.4
		1.1 - 2.0	64	35.6
	Land ownership	Inheritance	119	66.1
		Rent	59	32.8
		Purchase	2	1.1
	Access to drinkable water supply	Not accessible	56	31.1
		Less accessible	49	27.2
		Moderately accessible	49	27.2
		Accessible	16	8.9
		Highly accessible	10	5.6
	Access to machinery	Yes	86	47.8
		No	94	52.2
	Expenses on inputs and implements	< 20,000	154	85.6
		20,001 – 40,000	24	13.3
		>40,000	2	1.2
Natural asset	Access to farmable land	very low	12	6.7
		moderately low	18	10.0
		Average	39	21.7
		moderately high	89	49.4
		very high	22	12.2
	Access to forest resources	Yes	101	56.1
		No	79	43.8
Social asset	Membership in a cooperative	Yes	68	37.8
		No	112	62.2
	Contacts with extension agents	Yes	30	16.7
		No	150	83.3
	Source of information	Extension agents	29	16.1
		Co-farmers	54	30
		Television	16	8.8
		Radio	81	45
	Access to market information	Yes	170	94.4
		No	10	5.6
	Agricultural training	Yes	147	81.7
		No	33	18.3
Human asset	Type of labour use	Family labour	141	78.3
		Hired labour	12	6.7
		Both	27	15

Source: Field Survey, 2022.

The results based on the respondent's physical assets show that the majority (64.4%) had a farm size of 0.1 to 2 hectares, and 35.6% had a farm size of 1.1 to 2 hectares. Their average farm size was 0.96 hectares, which indicates that the vulnerable group were smallholder farmers. The largest proportion (66.1%) of the respondents got land ownership through

inheritance, 32.8% through rent, and only 1.1% through purchase. Regarding portable water access, 31.1% and 27.2% had no access or less access to a drinkable water supply, respectively. This indicates that the lack of a portable water supply is a serious threat to the vulnerable group. The result further shows that the majority (52.2%) of them did not have access to farm machinery. The majority (85.6%) spent less than N20,000 on farm inputs per season, 13.3% spent between N20,000 (USD 44.96) and N40,000 (USD 89.92), and only 1.2% spent above N40,000 (USD 89.92).

The result based on their natural assets shows that 49.4% had moderately high access to farmable land, 21.7% had average access to farmable land, and 12.2% had very high access to farmable land. However, 10% and 6.7% had very low and moderately low access to farmable land, respectively. The results further show that 56.1% had access to forest resources, while 43.9% did not.

The result from the distribution of respondents based on their social assets shows that the majority (62.2%) were not members of a cooperative society, while only 37.8% were members of an association. Access to extension services was very low among the vulnerable group, as only 16.7% had contact with extension agents. Furthermore, a larger proportion (45%) of the respondents sourced for information through radio, 30% sourced for information through co-farmers, 16.1% sourced for information through extension agents, and 8.8% sourced for information through television. Regarding access to market information, the majority (94.4%) had access to market information, and a larger percentage (81.7%) did not receive formal training in agriculture.

The distribution of respondents based on their human assets shows that the majority (78.3%) used family labour, 15% used both families and hired labour, and just 6.7% used hired labour in their agricultural activities. This implies that the vulnerable rural group had human assets used as family labour for their farming activities. This is a result of their large family size.

Livelihoods activities engaged in by the vulnerable group and their contribution to income

The result in Table 4 shows that all the vulnerable group derived income from farming, which contributed the most (66.7%) to total household income. Crop production, which is by far the single largest source of income, provides 48.8% of total income. Thus, agriculture is the major means of livelihood and source of income among the vulnerable group. This supports the finding of [15] that vulnerable groups are mostly engaged in farming activities as their means of livelihood. About 19.6% of the total household's income comes from off-farm sources. The main components of these off-farm sources are selling agricultural and non-agricultural items, remittances, handicrafts, and local services. About 12.1 percent of total income is derived from non-agricultural wages and salary activities.Manufacturing, construction, administration, and other services provided non-agricultural wages.

Table 4. Livelihoods activities engaged in by the vulnerable members and their contribution to income

Diversification	Household income	Percentage of total income
Food crop	55,488.88	22.7
Cash crop	63,597.76	26.1
Livestock and fishing	43,679.78	17.9
Total on-farm income	162,766.4	66.7
Forest and forest product	4,855.56	2.0
Artisanship	19,854.74	8.1
Remittance	5,474.86	2.2
Wages and salaries from non-agriculture	29,519.66	12.1
Trading	22,765.36	9.3
Total income in naira	243,966.8	

Source: Field Survey, 2022.

Additionally, 9.3%, 8.1%, 2.2%, and 2% of the total income within the vulnerable category came from trading, artisanship, remittances, and forest and forest products, respectively.

Choices of the livelihood strategies among the vulnerable group

The result in Table 5 shows that PCA extracted five principal component factors with eigenvalues greater than 1. Component 1 from the table includes salaries and wages from non-agricultural activities, which are negative, and artisanship, which is positive. Therefore, the first extracted component from PCA for this study is artisanship and wages and salaries from non-agricultural activities. This suggests that households involved in artisanship like carpentry, shoemaking, fashion designing, barbing, and black smiting are less likely to engage in non-agricultural activities like teaching, corporate jobs, and clerk jobs. This could be a result of the time factor, as those engaged in artisanship may not have time for wages and salary work.

Component 2 consists of negative livestock and fisheries as a livelihood strategy, positive cash crops as a strategy, and positive food crop production as a livelihood strategy employed by the respondent. This implies that households that were involved in cash crop production (like cocoa, cashew, palm, mango, etc.) and food crop production (like cassava, maize, yam, vegetables, etc.) were likely not to be involved in livestock and fishing as means of livelihood.

The third component includes highly positive remittance income and lowly positive food crop production. This suggests that households that survive on remittance income may be involved in small food crop production to complement the remittance income. Some members of an elderly, vulnerable group embarked on small-scale food crop production to supplement the income received from remittances from their family members.

Component 4 is made up of three livelihood strategies: negative wages and salaries from non-agriculture, negative artisanship, and positive trading. This suggests that those households that were into trading as their major source of livelihood were likely to be less or not involved in wages and salaries from non-agriculture and artisanship. This could be because of the time required for trading in rural areas, which does not leave time for salary work in the non-agricultural sector.

The fifth component is made up of negative wages and salaries from non-agriculture, negative artisanship, positive cash crops, and positive forest and forestry. This implies that households earning income from cash crops and forest products were less or not likely to be involved in non-agricultural jobs and artisanship-based income.

Table 5. Choices of the Livelihood Strategies among the Vulnerable Group

	Component				
	1	2	3	4	5
Wages and salaries from non-agriculture	-.802			-.285	-.338
Artisanship	.791			-.350	-.270
Livestock and fishing		-.766			
Cash crop		.742			.353
Remittance			.809		
Food crop		.275	.675		
Trading				.963	
Forest and forest product					.858

Source: Field survey, 2022.

Livelihood diversification level by the vulnerable group

Table 6 shows the degree of the vulnerable group's diversification of sources of income. Almost all of them (98.9%) diversified their livelihoods and, thus, received income from multiple sources. However, the majority (75.6%) had a low level of income diversification. This was followed by a medium level (16.7%), a high level (6.7%)

and zero level (1.1%) of livelihood diversification among the vulnerable group. These results imply that the majority of the vulnerable group diversified their livelihoods at a low level. This supports [28], who found a low level of income diversification among rural households. Thus, there is still room for the vulnerable group to increase their level of livelihood diversity by engaging in several more income-generating activities. For instance, they can combine food crops, cash crops, livestock and fishing, artisanship, and forest and forest products to increase their level of livelihood diversification.

Table 6. Livelihood diversification Index

Level	Livelihood diversification index	Frequency	Percentage
No	<0.01	2	1.1
Low	0.01 - 0.25	136	75.6
Medium	0.26 - 0.50	30	16.7
High	0.51 - 0.75	12	6.7
	Total	180	100

Source: Field survey, 2022.

Driving factors of the extent of livelihood diversification
Table 7 shows the factors influencing the level of livelihood diversification among the vulnerable group. The regression result shows that educational level, farming experience, total income, and credit were the positive and significant factors contributing to livelihood diversification, while age and distance to the market were negatively significant.
Age was negatively related to involvement in numerous livelihood activities (P<0.05). This suggests that as their age increases, their level of livelihood diversification reduces. This is becausethe human strength needed to engage in several income activities reduces as age increases. This is in line with the finding of [22]who reported that farmers' level of income sources reduced as their age increased.
Education was positively related to vulnerable group livelihood diversification (P<0.01). This indicates a strong relationship with the livelihood diversification drive. This implies that vulnerable groups with higher education are more likely to seek more sources of income generation than those with less education. This is similar to [10], [11], and [18], who found that education positively influenced livelihood diversification.
Farming experience also influenced vulnerable groups' livelihood diversification (P<0.01). This implies that as the farm experience of the vulnerable group increases, it leads to an increase in the diversification of

their livelihoods. This may be more important, especially for those who are mainly engaged in agricultural-related activities among them.
Household income was positively related to livelihood diversification (P<0.05). This implies that the vulnerable group with the higher income is much more likely to engage in other sources of income, most likely due to the abundance of capital for business ventures. As a result, vulnerable groups with higher incomes diversified into more livelihoods than their counterparts. [4] and [37] also reported that income enhanced livelihood diversification.
Furthermore, the credit had a positive influence on the vulnerable group's level of livelihood diversification (P<0.05). This implies that the vulnerable group having more access to credit is more likely to diversify their livelihood sources. This could be because credit provides the needed capital for people to invest in both farm and non-farm activities, which consequently boosts their income. This supports [6], [10], and [37], who reported that credit enhances livelihood diversification.
In addition, distance to the market negatively influenced the livelihood diversification of vulnerable groups (P<0.1). This indicates that the vulnerable groups that live farther away from the market are less likely to diversify their income sources. This could be because travelling a long distance to the market lowers

their likelihood of seeking non-farm employment.

Table 7. Factors affecting the extent of livelihood diversification

Variables	Coefficient	Standard error	T value	p>t
Gender	0.0005	0.0211	0.02	0.980
Age	-0.0022**	0.0011	-2.00	0.047
Household size	0.0024	0.0041	0.58	0.564
Education	0.0079***	0.0021	3.99	0.000
Marital status	0.0228	0.0149	1.54	0.127
Farming experience	0.0031***	0.0009	3.20	0.002
Total income	3.97e-07**	1.55e-07	2.56	0.011
Farm size	-0.0051	0.0055	-0.92	0.361
Credit	1.98 e-07**	1.01e-07	2.06	0.039
Total farm asset	-5.21 e-07	5.90e-07	-0.88	0.379
Distance to market	-0.0041*	0.0022	-1.89	0.061
Constant	0.1272	0.0561	2.27	0.024
Sigma	0.1023	0.0072		
LR chi^2 (11)	47.59			
Prob > chi2	0.0000			
Log-likelihood	127.47036			
Pseudo R^2	0.2295			

***, **, * significant at 1%, 5% and 10%, respectively
Source: Field Survey, 2022.

CONCLUSIONS

This study assesses the livelihood diversification strategies of rural vulnerable groups. The study shows that the vulnerable group derived income from farming, where crop production is the single largest source of income. It can therefore be concluded that crop production is a major strategy employed by the vulnerable rural group.The vulnerable group's level of livelihood diversification is low. However,few of them have a medium and a high level of livelihood diversification. The major factors that determine their level of livelihood diversification are the amount of credit received, age, educational level, total income, farm experience, and distance to market. This study recommends the following to improve the livelihood of rural vulnerable groups. Formal and informal financial institutions, including governmental and non-governmental organizations as well as donor agencies, should give credit facilities to the rural vulnerable group to improve their livelihood. This can be done by linking farmers to credit through reduced interest rates. Extensive awareness of the importance of formal education should be made to enhance vulnerable groups' level of livelihood diversification. The government should help subsidize agrochemicals, farm inputs, and farm machinery, which should be made readily available to farmers at a very affordable price. In addition, people should be educated on how to relate to vulnerable groups, especially the diseased and physically challenged. The vulnerable group should not be deprived of their basic human rights and other amenities.

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