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FOOTNOTES should be avoided as much as possible. Acknowledgements should appear after Conclusion before the reference list.

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MULTIDIMENSIONAL WELLBEING ANALYSIS OF WOMEN FARMERS IN AKWA IBOM STATE, NIGERIA

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ABSTRACT

Women farmers remain a vital segment of the rural population and create critical links between the present generation of farmers and the future. The rationale for more studies on the issues of their wellbeing is anchored on the sustained development of approaches that give a better understanding of the phenomenon. This study examined the multidimensional wellbeing of women farmers in Akwa Ibom State using a functioning approach. The study specifically assessed the socio-economic characteristics of the farmers and analysed the wellbeing of the farmers using six functioning dimensions including information access, employment, education, nutrition and health, autonomy, housing, and sanitation. Primary data were obtained from 300 respondents selected from the agricultural zones in the state through a multi-stage sampling procedure. Data analysis was done using descriptive statistics and fuzzy set analysis. The mean age of women farmers in the zones was 46 years and their mean household size was six. Majority (76%) of the respondents from Eket agricultural zone fell within 0.401-0.50 wellbeing index spread across four of the six dimensions considered, 67% of the respondents in Uyo agricultural zone fell within 0.301-0.40 wellbeing index while 56% of the respondents from Abak agricultural zone fell within 0.20 – 0.30 wellbeing index across the dimensions. Although the wellbeing status of women farmers from Eket agricultural zone was relatively better, the results showed that the wellbeing of the women farmers across the agricultural zones was generally low. Interventions in employment, education, and information access are needed for the women farmers, especially, in Abak agricultural zone.

Keywords: Multidimensional, Wellbeing, Women farmers, Agricultural zones, Akwa Ibom state

INTRODUCTION

Undoubtedly, rural women and men play complementary roles in guaranteeing food security in society, but women tend to play a greater role in natural resource management and ensuring adequate nutrition (FAO, 2013). Women often grow, process, manage and market food and other natural resources, raise small livestock, manage vegetable gardens, and collect fuel and water (FAO, 2013). For example, in Southeast Asia, women provide up to 90 per cent of labour for rice cultivation and in sub-Saharan Africa, they are responsible for 80 per cent of food production. Dennison (2013) in an interdisciplinary research discourse organized by the postgraduate school of the University of Ibadan on “the burden of our women” commented that everyone has a mother, sister, or daughter and therefore is bound to experience their importance in their lives. Women are regarded as agents of change whose activities affect almost all facets of a society’s life. To take good care of their family needs, women carry a lot of burdens both physically and emotionally to make sure that every member of the household is comfortable. Many women have to deal with the stress of having two jobs; one as an executive in the office and the other as an unpaid job at home doing childcare and housework. Many indigenous communities are characterized by an economy in which women are active and bear the primary responsibility of feeding members of their homesteads (Christidou, and Koulaidis, 2016). Also, a study by Bapna, McGray, Mock, and Withey

(2009) showed that rural women spend between 10 to 16 hours a day doing housework, fetching water and firewood, caring for their children, and providing food for their families. To corroborate the contribution of women a World Bank study (2010) found that women’s burden of work is significantly larger than men’s. For example, African women perform about 90% of the agricultural production work ranging from work of hoeing, weeding, processing food, and providing water and firewood. Eighty per cent of food storage and transport and 60% of harvesting and marketing are also performed by them. There is a need therefore for policies and programmes that address the welfare and wellbeing of rural women. Policies and programmes that empower women farmers will lead to a faster reduction in poverty and promote their wellbeing and availability for more sustained agricultural production activities.

Wellbeing can be referred to as good quality of life, (Narayan *et al.*, 2000). It encompasses dimensions such as material wellbeing, often expressed as having enough bodily wellbeing which includes being strong, being in the right frame of mind, and looking good; social wellbeing which includes caring for people and settling children, having self-respect, peace, and good relations in family and community; having security, which includes civil peace, safe and secure environment, personal and physical security and confidence in the future; having freedom of choice and action which includes being able to help others in the community.



This implies that there is more to wellbeing than income and/or asset dimensions, even though they are important wellbeing determinants, (Frey and Stutzer, 2002; Stevensons and Wolfers, 2008; Easterlin, 2003; Ijaiya *et al.*, 2009).

Wellbeing has also been construed as activities of human that portrays a state of life condition one has attained and experienced (Adeoti and Akinwande, 2013). It refers to an examination of a person's life situation or 'being', hence, a description of an individuals' life situation. It is a means to an end and an end as well as a basic right of every human being (Oladokun *et al.*, 2017). Wellbeing is also a key factor that contributes to the economic growth and productivity of every nation (Oladokun *et al.*, 2017). Poverty is an unacceptable human condition and an outstanding social problem in the twenty-first century. It is a global problem characterized by not having enough resources and abilities to meet human basic needs both as individuals and as social beings due to its dynamic and multidimensional nature. Poverty and wellbeing are interrelated because, with an increase in income, a great number of needs are satisfied, and a higher standard of wellbeing is achieved. It is a common inference therefore that a poor person is one whose wellbeing is low.

The Nigerian core welfare indices survey presents a list of indicators to achieve the purpose of a multidimensional assessment of wellbeing for this study (National Bureau of Statistics, 2006). Such indicators as health, housing, and education are basic indicators in use in many kinds of literature (Alkire, 2007). The recent functioning/capability wellbeing approach has been used to analyse multidimensional wellbeing, (Chiappero, 2000; Majumder, 2006, 2009). The functioning/capability approach which emerged as a means of finding an encompassing definition for wellbeing recognizes wellbeing as the 'ability to be'. Theoretically, functioning is defined as the 'being' or the 'achievement' of the individual/household being considered, (Chiappero, 2000; Clark, 2005a, 2005b). While it may be difficult to access dimensions and indicators of capabilities from the national data, it is useful to use the sets of functioning achieved by the rural households in the study, (Chiappero, 2000; Majumder, 2006, 2009).

As observed by Azeez and Abang (2015), remarkable progress has been made in some parts of the World to increase the wellbeing of rural families. The greatest progress has been made in East Asia and the Pacific, where the share of the poor fell from 30% in the 1990 to 9% in 2004. In contrast, the share of the poor in sub-Saharan Africa (Nigeria inclusive) has decreased by a little more than 5% and remains above 40% (Ravallion *et al.*, 2007). This scenario of low wellbeing among rural people is against the backdrop that rural people are not only isolated from economic opportunities but that they also tend to

have less access to social services such as health, sanitation, education, and economic services like electricity and good water supplies. As posited by Ajakaiye and Adeyeye (2001), a deep insight into the nature of wellbeing remains essential to appropriately design successful poverty alleviation programmes. An insight into the rural households' situation as it concerns their wellbeing is, therefore, a precondition for effective pro-poor development strategies. A clear understanding of how many are not living well or what groups are vulnerable to poverty is imperative for the meaningful articulation of remedial intervention. This study was, therefore, conducted to examine the multidimensional wellbeing of women farmers in agricultural zones of Akwa Ibom State. Specifically, the study;

- i. examined the socioeconomic characteristics of the respondents.
- ii. estimated the multidimensional wellbeing status of the women Farmers.
- iii. decomposed the multidimensional wellbeing by dimensions and indicators of wellbeing.

METHODOLOGY

Akwa Ibom State, with a total landmass of 8,412km² (AKS, 1989) is Nigeria's 21st State in the Niger Delta region with 31 Local Government Areas (LGAs). It is situated between latitudes 4° 32' and 5° 53' North and longitudes 7° 30' and 8° 25' East, and lies in between Cross River, Rivers, and the Abia States in south-eastern Nigeria (AKS, 1989). According to FRN (2004), Akwa Ibom State has a population of about 3.92 million people. The area is characterized by the undulated landscape and four main relief regions- the lowlands, the uplands, the highlands, and the high plateau and mountains (AKS, 1989). Ninety percent of its population live in rural areas (AK-BASES, 2005) and are engaged mainly in agriculture, trading, and gathering Non-Timber Forest Products (NTFP). The study area is in the rainforest zone and has two distinct seasons viz: The rainy and the dry season (Inyang, Unung, and Ekanem, 2013). For effective integrated agricultural development, Akwa Ibom has six Agricultural Zones, Abak, Etinan, Eket, Ikot Ekpene, Oron and Uyo (Ekong, 2015).

Abak zone covers activities in Abak, Ukanafun, Etim Ekpo, Oruk Anam, and Ika Local Government Areas; Etinan zone covers activities in Etinan, Nsit Ibom, Nsit Ubium, and Nsit Atai Local Government Areas; Eket zone covers activities in Eket, Esit Eket, Onna, Ikot Abasi, Mkpai Enin, Ibeno, and Eastern Obolo Local Government Areas; Ikot Ekpene zone covers agricultural extension activities in Ikot Ekpene, Ikono, Ini, Obot Akara, and Essien Udim Local Government Areas; Uyo zone covers extension activities in Uyo, Ibesikpo Asutan, Itu Ibiono Ibom, and Uruan Local Government Areas; Oron zone covers activities in

Oron, Mbo, Okobo, Uduong Uko and Uruefong Oruko Local Government Areas (Ekong, 2015). It should be noted that each of the local governments mentioned above represents a bloc, eight to ten villages make up a cell in each bloc. Each of these blocs is manned by Bloc Extension Supervisors and Extension Agents. The Extension Agents are also saddled with the Gender Specific activities of Women in Agriculture in the blocs under their supervision (Ekong, 2015).

The population of the study comprised registered women farmers in the six agricultural zones in Akwa Ibom State which sums up to 30,135 in number. The Taro Yamane (1967) formula was used to determine the sample size. Hence, 300 registered farmers were sampled across the State. A multistage sampling procedure was used in the selection of the respondents. A simple random sampling procedure was used to select three (3) out of the six (6) agricultural zones. Proportional random sampling was used to select 20% of the blocs from each of the three agricultural zones giving a total of six blocs. Purposive sampling procedure was adopted to sample five cells from each of the selected bloc based on the concentration of the registered women farmers from the list. This gave a total of 30 cells. Simple random sampling was then adopted in the selection of ten (10) women farmers from each of the selected cells. This summed up to 50 respondents (women farmers) from each of the selected bloc which represented each zone as units of observation.

The variables of this study included socio-economic characteristics of the respondents, and multi-dimensions as well as the indicators of the various dimensions of the wellbeing of the respondents. Socio-economic characteristics such as age, marital status, household size, level of education, primary and secondary occupation as well as monthly income were measured using a nominal scale. The multi-dimensions of wellbeing adopted for this study included education, housing and sanitation, autonomy, health and nutrition, employment, and access to information level of the respondents. Indicators were generated for each of the dimensions and were measured using a nominal scale of 1 and 0. For example, indicators of educational wellbeing of the respondents included 'Household members(s) withdrew from school to work for family's income', 'Household head had the ability to read and write in English', etc. These indicators were answered by either 'Yes' or 'No', being states of wellbeing or deprivation respectively represented by either 1 or 0.

The multi-dimensional wellbeing status analysed in objective ii was estimated as the degree of wellbeing composed by the placement of the individual on the 0 or 1 value or other values in between for the various dimensions of wellbeing.

Values closer to 1 for each dimension connote wellbeing while values closer to 0 connote deprivation. The values were grouped into ten (10) categories viz 0.0000-0.1000 to 0.9001 – 1.000. frequencies and percentages of respondents that fell into the various categories were analysed and presented first for the respondents as a whole as shown in table 2 and then for the respondents according to agricultural zones as shown in table 3.

Primary data were collected with the use of a well-designed questionnaire and analysed using descriptive statistics and fuzzy set theory. The descriptive statistics used include percentages, and the mean, while Fuzzy set Analysis was used to estimate the wellbeing status of the women farmers. The fuzzy set substitutes the characteristic function of a crisp set that assigns a value of 1 or 0. Large values denote a high degree of membership. The degree of wellbeing is shown by the placement of the individual on the 0 or 1 value or other values in-between.

The model is considered as follows: Assume a population A of n individuals, $A = (a_1, a_2, a_3 \dots a_n)$. A fuzzy subset B includes all individuals with $a_i \in B$. The degree of the wellbeing of the ith individual ($i=1, \dots, n$) with respect to a particular attribute j given that ($j = 1, \dots, m$) is defined. The variables that define indicators of welfare are either dichotomous or categorical.

$$\mu_B(x_j(a_i)) = x_{ij}, 0 \leq x_{ij} \leq 1$$

Where: $x_{ij} = 1$; condition of full possession of wellbeing attribute

$x_{ij} = 0$; condition of total lack of wellbeing attribute and

$0 \leq x_{ij} \leq 1$; conditions within the range of full possession and lack.

RESULTS AND DISCUSSION

Socioeconomic characteristics

Item 1 in Table 1 presents the age distribution of the respondents. It shows that the majority (40% and 58%) of the respondents from Uyo agricultural zone and Abak agricultural zone respectively were within 31 – 40 years of age, while the majority (60%) of the women farmers sampled from Eket agricultural zone were between 31 – 50 years of age. The combined mean age was found to be 46. Since most of the respondents fell within the middle age, it is an indication that they are within the active working age of the communities. This result implies the level of maturity and readiness of respondents to bear risks and cater for their households' wellbeing. The result is consistent with the findings of Etuk and Odebode, (2016) and Chinweze and Abiola-Oloke, (2009) who observed that farmers are in the active age range of 30-50 years.

**Table 1: Socioeconomic Characteristics of the Women Farmers**

S/n	Variables	Uyo Agricultural Zone		Abak Agricultural Zone		Eket Agricultural Zone	
		Frequency	%	Frequency	%	Frequency	%
1	Age						
	10-20	0	0.0	5	5.0	12	12.0
	21-30	36	36.0	14	14.0	22	22.0
	31-40	40	40.0	58	58.0	30	30.0
	41-50	20	20.0	21	21.0	30	30.0
	51-60	3	3.0	2	2.0	6	6.0
	60andabove	1	1.0	0	0.0	0	0.0
2	Marital Status						
	Single	20	20.0	40	40.0	51	51.0
	Married	50	50.0	42	42.0	30	30.0
	Widow/widower	5	5.0	10	10.0	9	9.0
	Separated/divorced	25	25.0	8	8.0	10	10.0
3	Household Size						
	1- 5	45	45.0	48	48.0	52	52.0
	6-10	50	50.0	39	39.0	40	40.0
	11-15	5	5.0	13	13.0	8	8.0
4	Highest Level of Educational						
	FSLC	43	43.0	40	40.0	30	30.0
	SSC	38	38.0	32	32.0	40	40.0
	OND	6	6.0	12	12.0	10	10.0
	HND	8	8.0	6	6.0	10	10.0
	BSc	5	5.0	10	10.0	10	10.0
	MSc	0	0.0	0	0.0	0	0.0
	PhD	0	0.0	0	0.0	0	0.0
5	Primary Occupation						
	Crop farming	34	34.0	40	40.0	28	28.0
	Livestock farming	38	38.0	30	30.0	32	32.0
	Fishing	5	5.0	5	5.0	15	15.0
	Fishing and Livestock farming	6	6.0	2	2.0	12	12.0
	Fishing and Crop farming	12	12.0	7	7.0	6	6.0
	Fishing, Crop farming and Livestock farming	5	5.0	16	16.0	7	7.0
6	Years in Primary Occupation						
	Less than 10years	35	35.0	45	45.0	38	38.0
	10 – 40 years	45	45.0	20	20.0	32	32.0
	41 – 60 years	15	15.0	10	10.0	20	20.0
	above 60 years	5	5.0	25	25.0	10	10.0
7	Secondary occupation						
	Farming	14	14.0	15	15.0	10	10.0
	Trading	62	62.0	72	72.0	56	56.0
	Artisan	11	11.0	10	10.0	20	20.0
	Civil Service	13	13.0	3	3.0	14	14.0
8	Average monthly income						
	Less than N20, 000	12	12.0	14	14.0	10	10.0
	N20, 000-N40, 000	26	26.0	20	20.0	22	22.0
	N41, 000-N60, 000	41	41.0	39	39.0	35	35.0
	N61, 000-N80, 000	11	11.0	20	20.0	23	23.0
	N81, 000 and above	10	10.0	7	7.0	20	20.0
	Mean	N54,000		N52,000		N51,000	
	Combined Mean	N52,000					

Source: Field Survey, 2019

Table 1 shows more married women farmers (50% and 42%) from Uyo agricultural zone and Abak agricultural zone respectively whereas the majority (51%) of the respondents from Eket agricultural zone were single farmers. However, a couple of them (30.0%) were married. The incidence of divorce (25%, 8% and 10%) as well as widowhood (5%, 10% and 9%) were very low across the agricultural zones. This indicates a high level of homogeneity in the distribution of marital status of households across the communities due to similarities in cultural practices. The fact that the majority of the respondents across the agricultural blocs in the three zones were married is an indication that they are responsible and mature adults who are ready to contribute to their household wellbeing. Also, it was recorded from the field interaction that most of the marriages were monogamous in the 3 zones.

Results on the distribution of the respondents based on household sizes show that the majority of the respondents (48% and 52%) from Abak agricultural zone and Eket agricultural zone had household sizes of 1 – 5 persons while the majority (50%) of the respondents from Uyo agricultural zone had families with 6 – 10 persons. The results showed no difference in the mean household size (6) of respondents in the three zones. While a large household size implies a sufficient supply of household labour for livelihood activities as supported by the findings of Ironkwe, Ekwe, Okoye and Chukwu (2009) who reported that most rural families in Nigeria have large household sizes between 6 to 10 persons, a large household size could also mean over-dependency on household resources resulting in a negative effect on the wellbeing of the household.

Results on educational qualification show no clear difference in the qualification of the respondents as most of the respondents across the state had one form of education or another. This result to some extent is similar to the findings of Bigombe and Whadiagala, (2012) asserting that the majority of the rural workforce had secondary education. Since a larger percentage of the respondents have one form of education or the other, this can expose them to information that will

improve their household wellbeing and development. This finding corroborates Babatude, *et al.*, (2008) who reported that the education of a household head had a positive influence on the wellbeing of most rural households in Nigeria.

Also, the average monthly income of the registered women farmers sampled across the zones was between N41,000-N60,000. The low-income level suggests that a greater percentage of the respondents may find it difficult to meet their daily household obligations. As such savings and investments become impossible leading to a cumulative effect of the un-sustainability of households and a low level of wellbeing. This result is consistent with (Etim, 2010) who reported that rural households' income was notoriously subject to seasonal variability, especially in Nigeria.

Multidimensional wellbeing of the women farmers

Table 2 shows the distribution of the sampled women farmers based on their Wellbeing Index (WI). The WI for the respondents ranges from 0.01 to 0.80 with a mean value of 0.41 and a standard deviation of 0.12. Most of the women had their WI between 0.00-0.80 while none had very high between 0.90-1.00. On average, the respondents have a low wellbeing index, this is in line with the findings of Alaye-Ogan, (2008) who used a uni-dimensional and multidimensional approach and found women to have low wellbeing. The decompositions across the agricultural zones as shown in Table 3 reveal that in Abak agricultural zone, the majority (56%) of the respondents fell within 0.2001 - 0.30, in Uyo agricultural zone, the majority (67%) of the women farmers fell within 0.3001-0.400 and in Eket agricultural zone, the majority (76%) fell within 0.40001-0.5000. While the registered women farmers in the three zones of Akwa Ibom State generally have their wellbeing index (WI) between 0.01-0.80, the least woman has a WI of 0.08, 0.01, and 0.02 in Uyo agricultural zone, Abak agricultural zone and Eket agricultural zone respectively. This agrees with the work of Alaye-Ogan, (2008) implying that there are opportunities to improve the wellbeing of women in the State.

**Table 2: Distribution of the Respondents by their wellbeing index**

Deprivation Index	Frequency	Percentage (%)
0.0000-0.1000	10	3.33
0.1001-0.2000	36	12.0
0.2001-0.3000	73	24.33
0.3001-0.4000	82	27.33
0.4001-0.5000	71	23.67
0.5001-0.6000	16	5.33
0.6001-0.7000	8	2.67
0.7001-0.8000	3	1.0
0.8001-0.9000	1	0.33
Total	300	100.0
Mean	0.41	
Standard deviation	0.12	

Source: Computed from field survey

Table 3: Decomposition of Deprivation Index (DI) across Agricultural Zones

Categories	Abak Agricultural Zone		Uyo Agricultural Zone		Eket Agricultural Zone	
	Frequency	%	Frequency	%	Frequency	%
0.0000-0.1000	5	5.0	3	3.0	2	2.0
0.1001-0.2000	16	16.0	12	12.0	8	8.0
0.2001-0.3000	43	43.0	18	18.0	12	12.0
0.3001-0.4000	14	14.0	53	53.0	15	15.0
0.4001-0.5000	12	12.0	8	8.0	51	51.0
0.5001-0.6000	5	5.0	5	5.0	6	6.0
0.6001-0.7000	4	4.0	1	1.0	3	3.0
0.7001-0.8000	1	1.0	0	0.0	2	2.0
0.8001-0.9000	0	0.0	0	0.0	1	1.0
0.9001 – 1.000	0	0.0	0	0.0	0	0.0
Total	100	100.0	100	100.0	100	100.0

Source: Computed from field survey

Multidimensional Wellbeing Decomposition across Dimensions and Indicators

The contribution of each welfare dimension and indicator to women's wellbeing is presented in Table 4. Among the six dimensions considered, health and nutrition had the highest absolute and relative contributions of 0.13 and 43.46% and thus contribute more to the women farmers' wellbeing. This is followed by housing and sanitation with 0.10 and 31.48%. This means that women are better off in these dimensions than others. A high relative contribution of housing is expected since most of them live in the same house with their spouses. These houses are provided by the joint effort of the household. It is also worthy of note that health and nutrition has a high relative contribution. The high relative contribution of health and nutrition underscores the point that power relations within the household are crucial and the ability to participate in decision making, particularly concerning health issues is important for women's wellbeing. The lowest absolute and relative contributions of 0.012 and 15.08% respectively are

recorded in employment and 0.067 and 20.16% in access to information. These dimensions contribute less to wellbeing. It implies that women's access to information and employment is poor presently and improving this dimension will improve their wellbeing. In ascending order of contribution, the six dimensions considered are arranged as follows: employment, education, information access, autonomy, housing and sanitation, and nutrition and health. Given the low wellbeing index of women in general, these dimensions need to be improved on, particularly employment, education, and information access whose contributions to wellbeing are very low. These findings corroborate Olowe, Okunmadewa, Yusuf and Oni, (2014) that the housing dimension recorded the highest score of wellbeing functioning index among rural households in South West Nigeria, while the lowest scores are in the dimensions of wealth, security, and political participation and contradict the findings of Oni and Adepoju, (2013) who found a low level of wellbeing achievement among rural dwellers in areas of nutrition, health, and security.

Table 4: Multidimensional Wellbeing Decomposition across Dimensions and Indicators

Dimensions	Indicators		Absolute Contribution	Relative Contribution
Education	Anyone dropped school and work	μ_{11}	0.0185	5.5237
	Funds for schooling	μ_{12}	0.0199	5.9588
	Grown children schooling	μ_{13}	0.0142	4.2383
	Literacy	μ_{14}	0.0148	4.4357
			0.0674	20.1565
Housing and sanitation	Type of house walls	μ_{21}	0.008	2.4072
	Type of roofing materials	μ_{22}	0.0181	5.4126
	Type of house	μ_{23}	0.0184	5.4959
	Ownership of the house	μ_{24}	0.0194	5.8198
	Floor of the house	μ_{25}	0.0186	5.5745
	Appearance of the house	μ_{26}	0.0149	4.4885
	Toilet facility	μ_{27}	0.0076	2.2828
			0.105	31.4813
Autonomy	Final decision on who goes to the market and what to buy	μ_{31}	0.0128	3.8285
	Final decision on who visit and who to visit	μ_{32}	0.0171	5.1103
	Final decision on what medical attention to get in the house	μ_{33}	0.0197	5.9023
	Final says on how he spends his money	μ_{34}	0.0150	4.4899
	Final decisions on livelihood and income generating activities in the house	μ_{35}	0.0038	1.1240
			0.0684	20.455
Health and nutrition	Frequency of adequate food	μ_{41}	0.0194	5.8076
	Affordability of food	μ_{42}	0.0172	5.1397
	Frequency of availability of food	μ_{43}	0.0181	5.4123
	Frequency of Balance diet	μ_{44}	0.0188	5.6403
	Frequency of Visit to the clinic	μ_{45}	0.0197	5.9072
	Child delivery at the hospital/clinic	μ_{46}	0.0122	5.2410
	Place of antenatal care	μ_{47}	0.0128	5.1110
	Body mass index	μ_{48}	0.0131	5.2100
			0.1313	43.4691
Employment	Gainfully employed	μ_{51}	0.0123	5.0348
	Place of employment	μ_{52}	0.0067	5.0270
	Remuneration	μ_{53}	0.0119	5.0265
			0.0138	15.0883
Information Access	Listening to radio	μ_{61}	0.0013	5.0881
	Listening to television	μ_{62}	0.0042	4.0217
	Reading from newspapers	μ_{63}	0.0095	2.0356
	Contacts with extension agents	μ_{64}	0.0057	4.6297
	Communication with GSM phone	μ_{65}	0.0129	5.2440
	Membership of co-operative societies	μ_{66}	0.0156	5.2700
			0.0492	26.2891

Source: Computed from field survey



Multidimensional wellbeing decomposition across dimensions

Health and nutrition

Health and nutrition were assessed by considering the frequency of adequate food, frequency of availability of food, frequency of Balanced diet, frequency of visit to the clinic, place of antenatal care, place of delivery, and body mass index of respondents. The result shows that women in the Eket agricultural zone had the highest wellbeing index 0.0541 (26.97%) while women from the Uyo agricultural zone were worse off at 0.0444 (13.83%) (See table 5).

Housing and Sanitation

With regards to housing and sanitation, the result agrees with Olowe, Okunmadewa, Yusuf and Oni, (2014) as women in the Eket agricultural zone are better off in this dimension by 0.1063 (34.88%) than women in other zones (See table 5).

Information Access

The absolute and relative contributions of this dimension to wellbeing revealed that the women in Eket agricultural zone have the highest contribution while those in the Uyo agricultural zone have the least (See table 5).

Autonomy

Women farmers in Uyo agricultural zone enjoyed the highest level of autonomy with absolute and relative contributions of 0.0572 and 17.85%. On the contrary, the results revealed that women farmers in Eket agricultural zone are worse off in this dimension 0.0496 (11.17%). These results indicate that conditions of the Eket agricultural zone women are worse off with regards to how to spend

money, the final say on large household purchases. The implication of this is that women farmers of Eket agricultural zone are likely to depend on their husbands' decisions or take decisions jointly with them or other relatives because they possess the lowest WI in relation to two of the indicators examined to determine their level of autonomy. This indicates that these women seek the approval of their husbands or other people on decisions about their health and before they embark on a visit to friends and family members.

Education

Uyo agricultural zone women farmers emerged with the highest index in this dimension 0.0449 (12.76%). The agricultural zones arranged in the descending order concerning educational attainment are Uyo agricultural zone, Abak agricultural zone, and Eket agricultural zone (See table 5).

Employment

The Uyo agricultural zone women had the highest level of wellbeing in this dimension. This result is not unexpected as people from this area are widely known for their business prowess. However, Eket agricultural zone women farmers were worse off in this dimension of well-being. In all, women farmers in Eket agricultural zone rank highest in three of the six dimensions considered. These dimensions are health and nutrition, housing and sanitation, and information access. The condition of Uyo agricultural zone women is best in two dimensions, autonomy and education. The women of Abak agricultural zone are worse off than their counterparts in other zones in all the dimensions.

Table 5: Multidimensional Wellbeing Decomposition across Dimensions and Agricultural Zones

Dimensions	Uyo Agricultural Zone	Abak Agricultural Zone	Eket Agricultural Zone	Combined
Health and Nutrition	0.0444 (13.83)	0.0531 (16.02)	0.0541 (26.97)	0.1313 (43.46)
Housing and Sanitation	0.0975 (30.43)	0.0125 (28.62)	0.1063 (34.88)	0.105 (31.48)
Information Access	0.0762 (20.78)	0.0681 (21.32)	0.0707 (25.19)	0.0492 (26.29)
Autonomy	0.0572 (17.85)	0.0543 (16.38)	0.0496 (11.17)	0.0684 (20.45)
Education	0.0449 (12.76)	0.0341 (9.57)	0.0141 (4.57)	0.0674 (20.16)
Employment	0.0203 (6.32)	0.0197 (5.92)	0.0168 (5.465)	0.0138 15.0883

Source: Computed from field survey.

Values in the parenthesis are the relative contributions while values outside the parenthesis are the absolute contributions.

CONCLUSION AND RECOMMENDATIONS

Women farmers in Eket agricultural zone were better off than their counterparts in other zones. Interventions in employment, education, and information access are needed for the women

farmers, especially women in Abak agricultural zone. Governments and Non-Governmental organizations should put in place interventions in these dimensions so that the Sustainable

Development Goals put in place by the United Nations can be achieved by 2030.

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PREFERENCE OF EXTENSION DELIVERY METHODS USED IN THE ADOPTED VILLAGES OF THE NATIONAL AGRICULTURAL EXTENSION AND RESEARCH LIAISON SERVICES IN KADUNA STATE, NIGERIA

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ABSTRACT

The study investigated the extension delivery methods practiced in the Adopted Villages of National Agricultural Extension and Research Liaison Services in Kaduna State, Nigeria. Multistage sampling procedures was employed in selecting 260 out of the 7,075 farmers registered in the Adopted villages for the study. Both primary and secondary data were used in the study. Primary data were collected through structured questionnaire while secondary data were obtained from records of NAERLS. Data collected were analysed using frequency counts, percentages and regression. Higher percentage of the respondents were male (57.2 %), married (80.6%) and aged between 31 – 40 years (42%). Farm and home visit was the most preferred extension delivery method by the respondents. Irregular visit by extension agents was the major constraint of extension delivery method. Majority of the respondents (80%) opined that they understood message best when it is face to face and that personal letter was not an appropriate extension method for them. Age, education, household size, farm size, farming experience and land acquisition method had positive coefficients and significant at 5% level of the relationship with preferred extension delivery method. The study recommended that adult education programmes should be promoted in the adopted villages because farmers' education could enhance agricultural productivity. Also, more extension agents should be employed and sent to the adopted villages to educate farmers on how to improve their productivity.

Keywords: Extension Methods, Adopted Villages, Rural Development, Smallholder Farmers

INTRODUCTION

According to the West African Agricultural Productivity Programme (WAAPP, 2015), the adopted village concept involves the process of technology transfer and adoption of the improved packages released by the National Agricultural Research Institutes (NARIs) to the farming communities around the NARIs. The approach brings together researchers and extension agents working on the farmers' field to provide solution to the identified field problems. This approach is beneficial to the farmers because they are involved in the planning, developing and dissemination of new technology, which lead to adoption of the technology. The approach also demonstrates the impact of group activities on productivity in farming community as a whole. Information on technologies are being disseminated to the beneficiaries in the adopted villages through the NARIs mainly on the following commodities: maize, rice, cassava, yam, sorghum, aquaculture and poultry (Atala and Hassan, 2012).

The National Agricultural Extension Research and Liaison Services (NAERLS) is one of the Agricultural Research Institutes in Nigeria and one of four Agricultural Research Institutes run under the university system. The Institute has been existing as an autonomous Agricultural Extension and Research Liaison Services since 1975. In 1989, the then Federal Ministry of Science and Technology gave it the national mandate to cover the extension services for the entire country. The NAERLS currently uses three approaches to extension dissemination methods which are

participatory, demand driven and Training of Trainers (TOT). Some of the extension methods used by NAERLS in technology dissemination include: Farm and home visits, Farmers call or office call, personal letter/telephone call, result demonstration, method demonstration, group meeting, field day or farmers day, broadcast media, TV, Print media Leaflet, bulletin, guides, newsletter, magazine, projected media, film, video exhibition, campaign, mass meeting and agricultural festival and National farmer's helpline.

For efficient extension service, it is important to identify the most effective extension delivery method so as to reduce inefficiency in extension service delivery. For extension educators and communicators, it is particularly important to identify and examine the usefulness of each delivery method. Knowledge about the usefulness of delivery methods will not only help to identify the information needs of farmers but also assist in developing educational resources to effectively communicate with farmers and other clientele.

The NAERLS has a mandate of delivering agricultural technologies to farmers in its area of jurisdiction. This, it does through its extension department. The department uses variety of methods in disseminating the technologies to farmers. These methods have different levels of appropriateness in their appeal to farmers. Naturally, extension delivery methods are first prepared by subject matter specialist and forwarded to Extension agents in order to transfer information to farmers on the field. In preparing the extension methods, they are selected generally based on the new technologies



being disseminated to the farmers. Technologies and technology delivery approaches designed by scientist at research institutes are not necessarily appropriate to or in tandem with expectations of farmers. There is therefore, the need to find out the farmers' point of view on what method best suits them.

The specific objectives are therefore to:

- i. describe the socio-economic characteristics of farmers in the study area;
- ii. identify the preferred extension delivery methods among farmers in the study area;
- iii. determine the relationships between the preferred extension delivery method and socio-economic characteristics of the farmers; and
- iv. identify the problems associated with extension delivery method to farmers.

METHODOLOGY

The study area is located in Kaduna State. The study was conducted in NAERLS adopted villages in Kaduna State. The adopted villages for NAERLS in Kaduna State are situated in Giwa, Sabon Gari and Zaria Local Government Areas. It has a projected population of 1,473,636 people

based on 2006 population census (NPC, 2006). The study area is characterized by a tropical climate with two main seasons; a rainy season (May to October) and a dry/harmattan season (November to April). The monthly mean temperature records show a range from 13.8 to 36.7°C and a mean annual rainfall of 1092.8 mm (Delia *et al.*, 2019). There is also the predominance of grasses and browse shrubs in the area. Major crops cultivated in the area include maize, sorghum, millet, cowpea, rice, ground- nut, soybeans, cotton and vegetables. Agriculture forms the principal means of livelihood for most of the working population in the area. Livestock keeping is a common activity among most households in the area, ranging from poultry, cattle, goats and sheep.

The population for the study is the entire farmers in all the adopted villages of NAERLS in Kaduna State (7,075) who are spread across three local government areas of the state namely Giwa, Sabon Gari and Zaria. Giwa local government has 43 Adopted Villages with 3,225 Farmers; Sabon Gari has 35 Adopted Villages with 2625 farmers and Zaria has 7 Adopted villages with 1225 respondents. Random sampling technique was employed for this study to select 260 respondents proportionately from the three local government areas.

Table 1: Table of Sampling Frame

Local Government Areas	Registered Farmers in each LGA	Proportion Selection $(\frac{260}{\text{Total population}} \times \text{farmers in LG} = \text{Sample})$
Giwa	3225	119
Sabon Gari	2625	96
Zaria	1225	45
Total population	7075	260

Field survey, 2018

The primary data were collected with the aid of questionnaires. Data were collected on the socio-economic characteristics of the farmers, as well as on the extension methods through which the respondents get information. Secondary data were obtained from NAERLS published materials, textbooks, book of proceedings of conferences and relevant websites on the population of the study, location, relevant literatures and sample size. The SPSS version 16 was used to analyse the data. Chi-square inferential statistics was used to test the relationship between socio-economic characteristics of the farmers and the preferred extension delivery method.

RESULTS AND DISCUSSION

Table 1 shows the distribution of the farmers in the adopted villages by their socioeconomic characteristics. The results reveal that more than half of the respondents (57.2%) were male. This suggests male predominance in farming activities in the adopted villages. This is expected

because the culture and religion of the area have placed male as head of households. Also, the female in the adopted villages were 42.8% showing an improvement in women participation in agriculture compared to previous studies by Salifu *et al.* (2016). This came as a result of the economic and security situation of the country which makes women to also take part in helping their families financially. The mean age of respondents was 41 years and the standard deviation is 44.6, meaning that the farmers in adopted villages are adults and responsible for the upkeep of their families. It is also in line with the findings of Okwu and Daudu (2011), who showed that the middle-aged group of 40 to 59 years has the highest frequency stating that the respondents were adults. The implication of this result show that respondents are adults and can make decisions on their own on the choice of extension method. Majority of the respondents (80.6%) were married, 11.6% were single and few (7.8%) were divorced. This showed that a large proportion of the farmers in the adopted villages were married and therefore,

implies that married people were mostly involved in agricultural production. High percentage (64.3%) of the respondents had one form of education or another, with 43.4% attaining secondary school level and above. The mean household size of respondents was 7 persons. This fairly large household size is expected as most farmers depend on family members for farm labour and less on hired labour. Most of the respondents (57.4%) had farm sizes of 1 – 2 hectares. The mean value of years of experience is 11 years which shows that the respondents were more experienced in farming. This

is in line with Oluwatayo, Sekumade, and Adesoji (2008) who noted that farmers with more experience are more efficient, have better knowledge of climatic conditions and market situation and are thus, expected to run a more efficient and profitable enterprise. Lastly, the result for the means of land acquisition revealed that about 41.5% of the respondents acquired land through inheritance, 29.1% got it through rent, 24.8% percent acquired it by purchase while only a few (4.7%) were gifted land for free.

Table 2. Socioeconomic characteristics

Socioeconomic characteristics	Frequency	Percent	Mean	SD
Gender				
Male	149	57.2		
Female	109	42.8		
Age of the respondents (years)				
Less than 20	13	5.0		
20-30	25	9.7		
31-40	110	42.6	41	44.6
41-50	89	34.5		
51 and above	21	8.1		
Marital Status				
Married	208	80.6		
Single	30	11.6		
Divorced	20	7.8		
Education				
No formal education	92	35.7		
Adult education	41	15.9		
Primary school	54	20.9		
Secondary Education	65	25.2		
Tertiary education	6	2.3		
Household size				
1-3	45	17.4		
4-6	78	30.2		
7-10	117	45.3	7	
>10	18	7.0		
Farm size				
1-2	148	57.4	2	
3-4	60	23.3		
5-6	38	14.7		
7 and above	12	4.7		
Years of farming experience				
1-10	97	37.6		
11-20	126	48.8		
21-30	23	8.9	11	
31-40	6	2.3		
41 and above	6	2.3		
Means of land acquisition				
Inheritance	107	41.5		
Rent	75	29.1		
Purchase	64	24.8		
Gift	12	4.7		

Source: Field Survey, 2018

Preference of extension delivery method

The extension delivery methods preferred by the farmers in the study area are presented in table

2. Farm and home visit was the most preferred (81.4%) extension delivery method by the farmers in the adopted village followed by results/method



demonstration (79.5%). The percentage of respondents who chose group meeting, agricultural festivals and farmer field day as the most preferred method of extension delivery are 77.5%, 73% and 72%, respectively. This is in addition to the respondents who preferred personal letters, public campaigns, radio/television and telephone calls accounting for 58%, 57%, 56% and 50% of the respondents, accordingly. The possible reason for the preference of farm and home visit is linked to the

situation whereby farmers in rural areas prefer one-on-one contact with extension workers as they adopt faster. The implication of least preference for telephone calls may be due to inadequate or lack of network coverage for telecommunications. This is supported by Oladele (2005), Okwu and Daudu (2011) who all revealed that farm and home visits are the most preferred extension methods in their studies.

Table 3 Preference of Extension Delivery Methods

Extension Delivery Method	Most preferred*	Not preferred*	Rank
Farm and home visit	81.4	1.9	1 st
Results/method demonstration	79.5	2.3	2 nd
Group meeting	77.5	2.3	3 rd
Agricultural Festival	73.6	2.3	4 th
Field day	72.9	2.3	5 th
Personal letter	58.1	7.8	6 th
Campaign	57.8	7.4	7 th
Leaflet bulletin	56.6	8.5	8 th
TV and Radio	56.2	8.9	9 th
Video exhibition	53.5	9.3	10 th
Farmers call or official call	49.2	10.9	11 th

Source: Field survey, 2018

*Multiple Responses existed

Relationship between the socio-economic characteristics and the preferred extension method

Table 3 reveals the results on chi-square analysis of the relationship of socioeconomic characteristics of the respondents and the most preferred extension delivery method. The result indicated that age, education, household, farm size, farming experience and land tenure system all had positive significant relationship with the preferred extension method. This implies that, an increase in

age, education, household size and farm size influence the choice of extension method. On the other hand, sex and marital status with the p values of 0.409 and 0.082 respectively were not significant at 5% level. This implies that sex and marital status did not influence preference of extension delivery method. The results also support the findings of Boz and Ozcatalbas (2010) which show that farmers' educational level and farm size have significant effect on their use of modern information sources.

Table 4. Relationship between socio-economic characteristics and preferred extension method

Socioeconomic Variables	Coefficient	p-value
Sex	1.78	0.409
Age	18.04	0.021*
Marital status	8.82	0.082
Education	77.79	0.000*
Household	23	0.001*
Farm size	24.63	0.000*
Farming experience	36.48	0.000*
Meanland	40.05	0.000*

Note: * Significant at 5% level.

Problem associated with extension delivery method to farmers

The problems associated with extension delivery methods in the study area are presented in Table 4. The problems were ranked in order of magnitude. The findings reveal that irregular visit by extension agents (89.5%) was the first in rank. Limited time given to agricultural programme was

ranked second (82.2%), as well as 76.7% of the respondents selected no opportunity for interactive session as third. This is in addition to the respondents who chose locality is outside network coverage, languages spoken not understood as well as message content not relevant ranking 9th (32.9%), 10th (26%) and 11th (20.9%) respectively. The possible reason for the high percentage of

respondents stating irregular visit by extension agents as a major constraint is linked to the situation of inadequate number of extension agents we have in the country. Also, the respondents' opinion on message content not relevant shows that the content of the messages delivered seems to be relevant. It also shows that languages used in communicating to the respondents were understood by the majority and that the localities are inside network coverage area.

The findings of the study is similar to that of Gaya *et al* (2016) who found that most of the respondents disclosed irregular visits by agricultural extension agents constitutes their major problem. The findings is therefore not in support of Gwary *et al* (2013) who stated that Untimely/lack of or inadequate supply of essential inputs were indicated by most of the respondents as a major factor that hinders the delivery of extension services to them.

Table 5. Constrains of Extension Delivery Methods

Constraints	Frequency	Percentage	Rank
Irregular visit by extension agents	231	89.5	1 st
Limited time given to agricultural programme	212	82.2	2 nd
No opportunity for interactive discussion	198	76.7	3 rd
Lack of adequately trained extension agents	176	68.2	4 th
Unable to read and write	165	64.0	5 th
Lateness of information flow	153	59.3	6 th
Unable to understand the languages	120	46.5	7 th
Unavailable in their localities	90	34.9	8 th
Locality is outside Network coverage	85	32.9	9 th
Languages spoken not understood	67	26.0	10 th
Message content not relevant	54	20.9	11 th

Source: Field Survey, 2018

* Multiple responses

CONCLUSION AND RECOMMENDATION

The study concluded that farmers in the adopted village still prefer the conventional extension methods which are all the methods that involve a face to face personal interaction. This is due to poor network coverage for mobile phones, low level of western education and cost of other extension methods which hinders acceptance in the adopted villages. Based on the findings of the study, Adequate time should be given to agricultural programmes in the Adopted villages as farmers need more time for interactive sessions as it creates more room for problem solving. Government should make available and extend network coverage to all localities in the Adopted Villages for effective dissemination of information through different extension methods.

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CONTRIBUTIONS OF LIVELIHOOD DIVERSIFICATION TO HOUSEHOLD FOOD SECURITY AMONG RURAL DWELLERS IN OSUN STATE, NIGERIA

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ABSTRACT

Rural dwellers' livelihoods are primarily based on subsistence agriculture which often predisposes them to poverty, especially in situation when there is harvest failure. Livelihood diversification is considered a strategy that could serve as palliative and enhance access to food in rural households. In this study, contribution of livelihood diversification to household food security among rural dwellers in Osun State was investigated. A four-stage sampling procedure was used to select 165 rural dwellers. Structured interview schedule was used to collect data on respondents' socioeconomic characteristics, livelihood activities diversified into, and household food security status. Data were analysed using descriptive statistics, Chi square, PPMC and linear regression at $p=0.05$. Respondents were aged 36.96 ± 12.79 years, with household size of 5.38 ± 3.51 persons. Farming experience and monthly income were 9.10 ± 11.42 years and $\text{₦}30,833.30\pm19,016.45$, respectively. Most (62.9%) of the respondents diversified into non-farm activities and more than half (63.6%) of the respondents were food secure. They were however constrained to diversify by inadequate capital (1.82 ± 0.52), poor market access (1.47 ± 0.68) and lack of access to credit facilities (1.17 ± 0.76). Respondents' educational level ($\chi^2=11.772$) and years of farming experience ($r=0.229$) were significantly related to household food security. Food processing ($\beta=0.199$), crop farming ($\beta=0.036$) and driving ($\beta=0.169$) among diversified livelihood activities were found to contribute to household food security. Level of diversification was high among rural households and they were mostly food secure. Both state and non-state actors are enjoined to strengthen rural households in areas of processing and crop farming to further enhance their livelihood diversification.

Keywords: Livelihood diversification, Food security, Rural households

Introduction

According to Aduse-Poku, Nyantakyi, Atiase, Awuah, Mensah, Nyantakyi, Owusu and Agyenim-Boateng (2003), the concept of livelihood has remained a subject of utmost importance due to its inevitable role in human existence. The term livelihood attempts to capture not just what people do in order to make a living, but the resources that provide them with capability to build a satisfactory living, the factor they must consider in managing their resources, the institutional and policy context that either help or hinder their pursuit of an improved living (FAO, 2016). In the opinion of Oyesola and Ademola (2011), livelihood implies people's means of living including the activities they carry out to sustain themselves. Diversification on the other hand, can be referred to as action undertaken by an individual or a household to find new ways of survival to raise income and endure shocks such as disasters and disease outbreaks (Khatun and Roy, 2012; Anderzén *et al.*, 2020). Diversification can as well be viewed as a set of changes to existing livelihood patterns in order to increase household income, or to reduce income variability. It is aimed at securing better living standards by reducing risk, vulnerability and poverty, increasing income, enhancing security and increasing wealth (Svanidze *et al.*, 2019; Kiros *et al.*, 2021; Mengistu, Degaga and Tsehay (2021). Svanidze, Götz, Djuric and Glauben (2019) see food insecurity as a situation where people do not have physical and economic access to sufficient, safe, nutritious and culturally acceptable food to meet their dietary needs to live a healthy and active life.

Pinstrup-Andersen (2009) opines that a household is considered food secure if it has the ability to acquire the food needed by its members to be food secure.

Rural livelihood diversification from farming is one of the rural households' strategies for survival in developing countries like Nigeria (Anderzén *et al.*, 2020; Kiros *et al.*, 2021). The rural people diversify into non-farm activities to explore opportunities through which they increase and stabilize their incomes or to supplement farming in order to access food and improve the welfare or living standard of their households. In Osun state as well, rural dwellers diversify or engage in other income generating activities as a way of avoiding risk from agricultural disasters or failure. Anecdotal evidences reveal that livelihood activities in which rural households diversify into are transportation, tailoring, plumbing, trading, knitting, plaiting of hair/barbing, while others engage in civil service jobs in order to have access to adequate food for their households. Since it has been established that rural dwellers diversify to escape impoverishment as a result of several shocks resulting from their primary engagement and those that may be foisted by natural occurrences, it is pertinent to establish how this has helped the food security situation among rural dwellers in the study area. It is against this backdrop that this study sought to assess the contribution of livelihood diversification to household food security among rural dwellers in Osun State, Nigeria. The specific objectives were to:

- i. identify the socioeconomic characteristics of rural dwellers in the study area,



- ii. examine the livelihood diversification activities by the rural dwellers;
- iii. ascertain the reasons for livelihood diversification among rural dwellers;
- iv. identify the constraints to livelihood diversification among rural dwellers; and
- v. determine the food security status of rural dwellers.

The study hypothesized that:

H₀₁: There is no significant relationship between selected socioeconomic characteristics and their household food security.

H₀₂: There is no significant contribution of livelihood diversification to household food security.

METHODOLOGY

The study was carried out in Osun State, Nigeria. Osun State is an agrarian state with over 70% of the population directly or indirectly engaged in agriculture. It has an area of 9,251 kilometre square and falls in the latitude 7°10' to the north and 4°30' to the east. The major occupations are cash crop farming in the south, while majority of the people in the northern part of the state engage in arable farming. Other livelihood activities of the rural households are weaving, processing, blacksmith, leather working, food vending, livestock rearing and gathering of Non-Timber Forest Products (NTFPs). The study population comprised all rural dwellers in Osun State, Nigeria. Multistage sampling procedure was used to select the sample for the study. In the first stage, 19 rural Local Government Areas (LGAs) were purposively sampled. Twenty percent of the rural LGAs were randomly selected to give three LGAs in the second stage. In the third stage, two percent of the villages in each rural LGAs were randomly selected, while at the last stage, ten percent of rural households were randomly selected to give 165 respondents. Primary data were collected for this study through the use of a well-structured interview schedule. The dependent variable for this study was household food security of rural dwellers. The food security status of the respondents was measured using FANTA scale with a list of nine questions based on beneficiaries' anxiety over food, fluctuations in the quality of food for adults and children according to FANTA's Household Food Insecurity Access Scale (HFAIS) of the United States Agency for International Development (2012). Four response options of "never", "rarely", "sometimes" and "always" were used and scores of 4,3,2,1 were assigned, respectively. The maximum and minimum scores obtainable were 36 and 9, respectively. An index of food security was calculated by adding all the responses and the mean obtained was 26.1. Those above mean were categorized as food insecure and those below the mean were deemed food secure. Data were analysed using descriptive (mean,

frequency distribution, coefficient of variation and percentages distribution) and inferential (such as Chi-square, Pearson Product Moment Correlation (PPMC) and Linear regression) statistical tools.

RESULTS AND DISCUSSION

Socioeconomic characteristics

The age distribution of respondents as shown in Table 1 was found to be between the age range of 15 – 80 years. The result shows that 73.9% of the respondents were between ages 15 – 44 years. The mean age was 37.0±12.8 years which indicate that most of them are still in their youthful and productive age. This makes them to easily engage in variety of livelihood activities both agricultural and non-farm economic activities that will contribute towards improving their household food security. Age is an important factor when considering livelihood activities. This is because education, skills and access to capital assets vary across age groups.

Entries in Table 1 further reveal that 62.4% of the sampled households had a household size of 1 – 5 people, while 4.8% had a household size of 11 and above members with mean household size of 5.4±3.5 persons. The result indicates that household size is fairly large. This implies that a fairly large member of household in the study area is likely to have more diversified income sources if all the members are working and contributing to household welfare (Mathew and Adesope, 2007).

Table 1 also shows that 57.6% of the respondents had varying years of farming experience, while 42.4% had no experience in farming perhaps due to their involvement in other activities. Mean years of farming experience was 9.1±11.4 years. Adebayo (2006) noted that the longer a person stays on a particular job, the better his job performance.

Data on monthly income of the respondents reveals that 40.0% of the respondents had monthly income less than ₦20,000, while 28.5%, 19.4% and 10.9% earned between ₦20,000 - ₦39,999, ₦40,000 – ₦59,999 and ₦60,000-₦79,999, respectively (Table 1). The mean income was ₦30,833.3±19016.45, while a few respondents (1.2%) earned income greater than ₦79,999. This is an indication that the monthly income of the respondents in the study area is low. The result is however consistent with that of Oyesola and Ademola (2011), who reported a low mean income level of ₦35,000 among rural households in Osun State. This result indicates that the respondents are likely be more inspired to diversify their livelihoods in order to generate more income to alleviate poverty and reduce food insecurity which is one of the aims of rural livelihood diversification. It is also envisaged that this low level of income may likely reduce respondents' access to livelihood assets.

Table 1: Distribution of respondents by socio-economic characteristics (n= 165)

Variables	Frequency	Percentage	Mean	SD
Age (years)				
15-29	48	29.1		
30-44	74	44.8		
45-59	26	15.8	37.0	12.8
60-74	16	9.7		
>74	1	0.6		
Household size				
1-5	103	62.4		
6-10	54	32.7	5.4	3.5
11-15	2	1.2		
>15	6	3.6		
Years of farming experience				
0	70	42.4		
1-10	48	29.1		
11-20	24	15.5	9.1	11.4
21-30	15	9.2		
>40	3	1.8		
Monthly income				
< ₦20000	66	40.0		
₦20000- ₦39999	47	28.5		
₦40000- ₦59999	32	19.4	30833.3	19016.45
₦60000- ₦79999	18	10.9		
> ₦79999	2	1.2		

Source: Field Survey, 2019

Respondents' livelihood diversification activities

Analysis of results in Table 2 shows that 62.9% of the respondents were involved in multiple farm activities by owning crop, livestock and fish farms. This implies that rural people may not leave farming even when the income from it is not much, as long as they can get food to feed their family members and are likely to be food secure. This agrees with the classifications of livelihood activities to farm and non-farm as identified by Fabusoro, Omotayo, Apantaku and Okuneye (2010) with nonfarm livelihoods contributing 63 % of household income.

The result also reveals that 45.4% were engaged in non-farm activities like carpentry, tailoring, hair dressing, plumbing, welding, vulcanizing and transportation, while 28.7% were involved in local trading. More than one-third (37.5%) of the respondents were also involved in off-farm activities like oil-palm processing, cassava processing, hunting and night guard. It could be further implied that the rural dwellers always find a means of meeting the needs of the family adequately which leads to continuous engagement in various livelihood activities.

Table 2: Distribution of respondents based on livelihood diversification activities

Livelihood category	Livelihood activities	Frequency	Percentage
Own farm	Livestock farming	39	23.6
	Crop farming	41	24.8
	Fish farming	24	14.5
Non-farm	Artisan	68	41.2
	Driving	7	4.2
Local trade	Trading	47	28.7
Off-farm	Food processing	43	26.0
	Hunting	13	7.9
	Night guard	6	3.6

Source: Field survey, 2019

Reasons for livelihood diversification

Results in Table 3 show the reasons for livelihood diversification. The major reasons for diversification were to improve welfare (1.90±0.32), food security (1.87±0.38) and to generate sufficient

and constant flow of income (1.81±0.48). This implies that the respondents diversified in order to have money at hand always, so as to meet basic needs in the house and also to have access to food at the right time. Past researchers in rural livelihoods



have indicated that rural economy no longer depends solely on agriculture, but rather on the concept of livelihood diversification as a strategy in meeting their basic needs in developing countries (Kiros *et al.*, 2021).

The finding therefore implies that the reasons for diversification vary across individuals.

The findings of this study on the respondent's reasons for engaging in livelihood diversification are in agreement with the findings of similar studies carried out in other areas. The reasons include among others increase in income, ensure food security, risk associated with farming and meet family necessities (Sabo, 2017).

Table 3: Distribution of respondents based on reasons for livelihood diversification (n= 165)

Reasons	Not a reason	Mild reason	Strong reason	Mean	SD
Seasonal nature of agricultural produce	51.5	15.8	32.7	0.81	0.90
To cope with insufficiency	7.3	18.2	74.5	1.67*	0.61
Because of large family	72.7	10.9	16.4	0.44	0.76
To minimize risk	59.4	30.3	10.3	0.51	0.68
To compensate for failure of credit facilities	47.3	42.4	10.3	0.63	0.67
Because of limited agricultural income	54.5	25.5	22.0	0.66	0.79
For asset improvement	30.3	40.0	29.7	0.99	0.78
To acquire more skills	49.7	28.5	21.8	0.72	0.80
To secure food	1.2	10.9	87.9	1.87*	0.38
To generate sufficient and constant flow of income	3.6	11.5	84.8	1.81*	0.48
Availability of government grants	81.8	12.7	5.5	0.24	0.54
Unstable weather condition	44.8	32.7	22.4	0.78	0.79
To improve existing livelihood	13.3	20.6	66.1	1.53*	0.72
To cater for children	15.2	41.2	43.6	1.29*	0.71
To improve welfare	6.1	9.1	84.8	1.90*	0.32
Limited access to agricultural lands	60.6	35.8	3.6	0.43	0.57
Poor market and price fluctuation	21.2	46.7	32.1	1.11*	0.72
Destruction of farm produce by herdsman	59.4	12.7	27.9	0.69	0.88

Source: Field survey, 2019

* Major Reasons

Constraints to livelihood diversification

Table 4 highlights some of the constraints to livelihood diversification in the study area. The severe constraints identified by the respondents were inadequate capital (1.82 ± 0.52), poor market access (1.47 ± 0.68), lack of access to credit facilities (1.17 ± 0.76) and poor transportation system

(1.03 ± 0.72). The implication of this is that lack of capital to add additional portfolio to an existing livelihood is a serious challenge to rural dwellers and they do not also have access to credit facilities in which they can borrow money in order to start up a new livelihood activity.

Table 4: Distribution of respondents based on constraint to livelihood diversification (n= 165)

Constraints	Not a constraint	Mild Constraint	Strong constraint	Mean	SD
Inadequate land	73.4	13.3	13.3	0.40	0.71
High cost of labour	43.6	32.7	23.6	1.67*	0.79
Lack of access to credit facilities	21.8	39.4	38.8	1.17	0.76
Lack of input	41.8	32.7	25.5	0.84	0.79
Lack of information	67.9	21.8	10.3	0.42	0.62
Inadequately water supply	56.4	24.8	18.8	0.64	0.77
Inadequate skills	69.7	20.0	10.3	0.41	0.61
Poor transportation system	24.2	48.5	27.3	1.03	0.71
Poor storage facilities	53.9	27.3	18.8	0.65	0.78
Pest and diseases	48.5	18.2	33.3	0.85	0.89
Lack of basic infrastructures	26.1	49.7	24.2	0.98	0.71
High cost of fertilizer	54.5	26.1	19.4	0.65	0.76
Inadequate capital	6.1	5.5	88.5	1.82*	0.52
Poor market access	10.3	32.1	57.6	1.47*	0.68
Unstable weather condition	33.9	44.8	21.2	0.87	0.74

Source: Field survey, 2019

Household food security

Table 5 shows that 63.6% of respondents were food secure. This is an indication that respondents' resolve to diversify was justified and shows that rural households embrace livelihood diversification as a means for food security. In the

corollary, the food security situation could have been worse, if they had not embraced one form of livelihood diversification or the other. This strengthened the position of this study that earlier indicated that respondents diversified into various form of activities to sustain themselves.

Table 5: Distribution of respondents based on their household food security status

Food security status	Frequency	%	Mean
Food secure	105	63.6	25.5
Food insecure	60	36.4	

Source: Field Survey, 2019

Relationship between respondents' socio-economic characteristics and household food security

Table 6 shows that there were significant relationships between respondents' sex ($\chi^2=7.021$, $p=0.008$), educational level ($\chi^2=11.772$, $p=0.019$) and household food security. This means that sex is a factor when considering issues relating to household food security. This suggests that the livelihood activities in which the rural household heads engage based on their sex can determine the food security of the household. Education is also an important factor as it helps to bring about change in knowledge, attitude and skills. This suggests that the higher the level of education, the likelihood of households to be food secured. Level of literacy can encourage rural households to see diversification of

livelihood as a means through which they can be food secure and also expose rural households to better opportunities with high income. This is in agreement with the study's *apriori* expectation since the level of education could positively affect the income earning capacity. Fabusoro *et al.* (2010) implicated education among other factors as significant predictors of diversification. The result coincides with those of Adebayo (2012) and Adepoju and Adejere (2013). Table 6 further shows that there was a significant association between respondents' years of farming experience ($r=0.229$, $p=0.001$) and household food security. This implies that years of farming experience have an effect on household food security and by extension suggests that the longer the farming experience of the respondents, the more food secure their households.

Table 6: Relationship between selected respondents' socio-economic characteristics and household food security

Variables	χ^2	Df	r-value	p-value	Decision
Sex	7.021	1		0.008	S
Educational level	11.772	4		0.019	S
Years of farming experience			0.251	0.001	S

S= Significant NS= Not Significant

Contributions of livelihood diversification to household food security

Table 7 shows that food processing ($\beta = 0.199$, $p=0.017$), crop farming ($\beta = 0.179$, $p=0.025$) and driving ($\beta = 0.169$, $p=0.036$) positively contributed to household food security. This implies that households that diversified into livelihood activities like crop farming, driving and food processing are more likely to escape food

insecurity and have access to food. The result further implies that increase in the number of means of livelihood also increases their income level with a consequent tendency towards food security. This suggests that an increase in livelihood activities will increase the chances of food security. It therefore shows that households that diversify are more income stable and food secure than those that do not diversify.

Table 7: Contributions of livelihood diversification to household food security

Variables	B	T	p-value	Decision
Livestock farming	0.036	0.431	0.667	NS
Crop farming	0.179	2.220	0.025	S
Driving	0.169	2.112	0.036	S
Artisan	-0.020	-0.214	0.830	NS
Food processing	0.199	2.408	0.017	S
Hunting	0.035	0.400	0.690	NS
Trading	0.019	0.209	0.835	NS
Fish farming	-0.034	0.386	0.700	NS
Night guard	0.037	0.443	0.658	NS



Source: Field Survey, 2019

$R^2=0.092$

Adjusted $R^2=0.039$

F-ratio= 1.736

F-proportion=0.085

CONCLUSIONS AND RECOMMENDATIONS

The study concludes that most rural dwellers in the study area are still in their youthful and productive age, with fairly large family size. They mostly diversified into non-farm activities and a reasonable proportion are food secure. However, inadequate capital, poor market access and lack of access to credit facilities seriously constrained their livelihood diversification bid. Food processing, crop farming and driving contributed to household food security. It is recommended that both state and non-state actors should synergise to strengthen rural households in areas of processing and crop farming to further enhance their livelihood diversification.

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PERCEPTION ABOUT EFFECTS OF SECURITY CHALLENGES FACING MAIZE FARMERS IN OKE - OGUN AREA, OYO STATE, NIGERIA

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ABSTRACT

The study investigated maize farmers' perception about effects of security challenges in Oke - Ogun area of Oyo State, Nigeria. Data for the study were obtained through an interview schedule from 135 farmers sampled through a two-stage sampling procedure. Data were collected on socioeconomic characteristics; security challenges encountered, perception of the respondents about effects of security challenges and coping strategies employed by the respondents. Descriptive statistical tools such as frequency counts, means, and standard deviations were used to describe and summarize the data. While Chi - square and Pearson product moment correlation analyses were used to draw inferences on the hypothesis. Findings from the study revealed that more than three quarters (83.0%) were males, and the mean years of maize production was 15.8 years. Loss of community peace (80.7%), destruction of maize farm by herders (79.3%) and kidnapping of maize farmers (72.6%) were the most identified security challenges encountered. While community policing (90.4%) was their most employed coping strategy. Majority (91.1%) had unfavorable perception about security challenges encountered. Sex and religion had significant association with perception about security challenges. Age ($r=0.628$), years of maize production ($r=0.524$) and number of times travelled out of community ($r=0.287$) had significant relationships with maize farmers' perception about effects of security challenges encountered. The study concluded that the respondents had unfavourable perception towards security challenges, and they saw it as threat to maize production. Hence, the study recommends that the policy makers should adopt the coping strategies employed by the respondents such as establishment of many security checkpoints and posts to improve the security challenges. Also, public enlightenment campaign should be carried out to orientate both farmers and herders on how to tolerate one another, respect people's values, culture and traditions for peaceful co – existence to stop this impediment to agricultural production.

Keywords: Coping strategy, Community policing, Security challenges and Maize farmers.

INTRODUCTION

As of today, all zones in the country are experiencing incessant attacks that often resulted into killings, kidnapping and destruction of lives and properties especially in the rural areas, where farmers reside to produce food crops. These areas have become centre of focus for seasoned bandits which have hindered food production. One of the major food crops that is adversely affected is maize that stands to be an important staple food crop in the country. Nigeria is tagged the largest maize producer accounting for 16 per cent of the continent's harvest (IITA, 2020)¹. Similarly, IITA (2020)² and USAID (2019), reported that Nigeria is the largest African producer of maize with over 33 million tons, followed by South Africa, Egypt, and Ethiopia. In 2019, maize production in Nigeria was 11,000M tonnes. Despite the statistical evidence that Nigeria is famous in maize production amidst other African countries, Nigeria could not meet maize demand for it teeming population, livestock and poultry feed industries (Egwuma, Dutse, Oladimeji, Ojeleye, Ugbade and Ahmed/, 2019). Available statistics revealed that Nigeria imported about 215,000tonnes of maize as at 2016 (FAOSTAT, 2018). Knoema, (2020) also reported that maize worth of 54,685(thousand US dollars) was imported into Nigeria in 2020. Insecurity challenges among other factors could be said to have contributed to deficit in supply and demand of maize in the country. The height of security challenges in the

country is becoming worrisome than before, especially in Southwest zone where the intensity was not much initially like that of the Northern parts where it emanated. Oke – Ogun in Oyo state is a major maize producing area in the southwestern zone of the country and the area is deeply heated by these insecurity challenges.

Maize (*Zea mays*) is an important cereal crop that has great potential to improve the nation's food security situation (IFPRI, 2021). IFPRI position signifies that maize cannot be underestimated in Nigeria food system as it serves as food for mankind, feed for livestock, raw material for agro – allied industries and source of income for smallholder farmers. In spite of all its contribution to human existence, maize production is highly threatened by insecurity menace that is ravaging the country most especially the rural areas. Security challenges has become a serious problem in the country that we cannot talk of food security when life of farmers are at risk. Insecurity which is now at alarming rate than before should no longer be treated with a wave of hand, as it exposes the people in the affected areas to danger which hinders their farming activities.

Rural areas where security facilities are not always on ground has become centre of focus for the hoodlums. Oke – Ogun, an area that used to be socially, economically and environmentally friendly for farming activities has now become a battlefield where farmers are being killed indiscriminately.



Oyo State government once confirmed such incidence that some farmers lost their livelihoods to criminal trespass and damage by pastoralists (Vanguard, 2021). Similarly, Agboola (2021), reported tales of insecurity in and across Oyo State where residents no longer sleep with their two eyes closed because of unpredictable and fragile security situation from Ibarapa land to Oke - Ogun.

The actions of these herders no doubt, has resulted into farmers leaving their farming communities and their homes to save their lives and that of their family members. This observation is in line with the findings of Ilo, Jonathan-Chaver and Adamolekun (2019) that reported crop farmers to be internally displaced by destructions of the farmer's ancestral homes. The reason why herders were referred to as deadly since 2014, according to Agaptus, Olanrewaju and Ake (2019) is probably because they have access to sophisticated ammunitions which they always carry with them. The dispute is believed to have political under tone which also stirs ethnic and religion tensions. Serious security intervention need be put in place.

Provision of adequate security intervention as proactive measures should be in place to address the lingering security challenges confronting the dwellers especially maize farmers in Oke Ogun so as not to hinder maize production. In the meantime, farmers that are directly hit hard by the security challenges have their roles to play in leading the stakeholders to the path to toll while finding solutions to the problem.

It is in the light of this background that the study investigated perception of security challenges by maize farmers in Oke Ogun area Oyo State. The specific objectives of the study were to:

- i. describe the socioeconomic characteristics of maize farmers in Oke – Ogun,
- ii. ascertain the security challenges encountered in the study area;
- iii. examine the perception of the respondents about effects of security challenges encounter
- iv. identify the coping strategies employed by maize farmers on security challenges

The study hypothesized that there is no significant relationship between the socioeconomic characteristics of the respondents and their perception about effects of security challenges towards maize production.

METHODOLOGY

The study was carried out in Oke – Ogun area of Oyo State which is located within the guinea savannah zone. The ecology of Oke ogun area of Oyo state favours commercial production of agricultural food commodities of which maize is major. Oke – Ogun has ten local government areas which include Kajola, Iseyin, Itesiwaju, Iwajowa, Saki East, Saki West, Atisbo, Orelupe, Irepo and

Olorunsogo. The notable towns in Oke – Ogun includes Saki, Iseyin, Ilero Otu, Ago- Are Tede, Ago – Amodu, Sepeteri, Igboho, Ago are and Okaka, okeho, among others

A two-stage sampling procedure was used to select the respondents. At first, communities with incidence of security challenges in Oke - Ogun were purposively selected using a purposive sampling technique. These include Saki, Okeho, Igboho, Iseyin, Ilero, Ago - Are and Ago Amodu (Adewoyin, 2019). Lists of registered maize farmers from each community were collected from Oyo state Agricultural Development Programme Office Headquarters. From the list, twenty maize farmers were selected randomly with the use of simple random sampling technique to make a total of 140 farmers. However, 135 interview scheduled were recovered from the respondents for analysis. Maize farmers' perception about the effects of security challenges was measured by asking the respondents to respond to a list of 15 perception statements on a 5- point Likert scale from Strongly Agree (5), Agree (4), Undecided (3), Disagree (2) and Strongly Disagree (1). An addition of the points recorded (as awarded above) for each of the statement as aggregate or total score for a respondent. The maximum score was 75 while the minimum score was 15. Mean was obtained for each of the statement and use to rank the perception statement. The grand perception mean score (2.26) was calculated. Using equal interval classification method, the highest and lowest obtainable scores were used to group the scores into favourable and unfavourable perception. Data collected were analysed using descriptive statistics such as frequency counts, percentages, means and standard deviation were used while chi-square and PPMC were used to draw inferences on hypothesis tested.

RESULTS AND DISCUSSION

Socioeconomic characteristics

The data in Table 1 show that the mean age and years of formal education of maize farmers were 42.9 and 6.5 years respectively. This implies that majority of the respondents are in their active age and so possess enough strength to cope with the strenuous farming activities and to make moves to combat security challenges facing them. This is similar to the findings of Alabi *et al.* (2018) that reported 42.13 years as the mean age of maize farmers in their study. However, the mean years of formal education implies that respondents were not adequately educated and so they might likely show lukewarm disposition to security issue because the findings of Undiyaundeye and Basake (2017) submitted that educated people are more likely to understand and respond to issues (security challenges) than illiterates. The study further reveals that majority (90.4%) were married, while more than half (56.3%) were Christian and 43.7% were

Muslim, indicating that belonging to a religion affiliation, would influence their belief system that God has supernatural power to resolve every security challenge they might be facing. More than three quarters (83.0%) of the respondents were male,

which implies that male still dominate maize farming in the study area. This agrees with the findings of Adeyemo *et al.* (2017) and Adesoji *et al.*, (2020) who reported that majority of the farmers in their studies were males.

Table 1: Distribution of respondents by personal and socio-economic characteristics (N=135)

Variables	Categories	Frequency	Percentage	Central Tendency
Age	<=30	15	11.1	42.93±10.483
	31 – 45	67	49.6	
	46 – 60	48	35.8	
	60+	5	3.7	
Sex	Male	112	83.0	83.0 ±17.0
	Female	23	17.0	
Religion	Christianity	76	56.3	
	Islam	59	43.7	
Marital Status	Single	4	3.0	
	Married	122	90.4	
	Divorced	3	2.2	
	Separated	3	2.2	
	Widow	3	2.2	
Ethnicity	Yoruba	91	67.4	
	Hausa	12	8.9	
	Ibo	10	7.4	
	Others (Igbira and, Fulani)	22	16.3	
Years of formal education	<=6	74	54.8	6.47±4.237
	7 – 12	54	42.2	
	13+	4	3.0	
Household Size	<=5	31	23.0	5.46±3.941
	6 – 15	101	74.8	
	16+	3	2.2	
Years in maize production	<= 10	33	24.4	15.76±7.974
	11 – 20	57	42.2	
	21+	45	33.4	
Mode of production	Part time	15	11.1	
	Full time	120	88.9	
Annual income	<=250,000	38	28.1	566,188.5±84,972.7
	250,001 – 750,000	85	63.0	
	750,001 – 1,250,000	6	4.4	
	1,250,001+	6	4.4	
Membership of social organizations	Yes	93	68.9	
	No	42	31.1	
Position held	Ordinary member	76	56.3	
	Committee member	7	5.2	
	Executive member	10	7.4	
External orientation in the last six months	Yes	119	88.1	
	No	16	11.9	

Source: field survey, 2021

Also, majority (67.4%) were Yoruba, 8.9% were Hausa (8.9%) and few (7.4%) were Ibo, this implies that maize farmers in Oke- Ogun were predominantly yorubas. The mean household size of the respondents was 5.46± 3.941person. This is an indication that the respondents do not have a large household size to support them in their farm work. The implication is that they have to depend on farm

labour when they need helping hand. More than half (88.9%) of the respondents practice maize farming on full-time, while the mean years of experience in maize production was 15.76 years. This indicates that respondents had enough experience and could handle maize production skillfully. The mean annual income of the maize farmers was N566188.5, which translated to N 47,182.18 monthly. This suggests



that maize production is a lucrative and sustainable livelihood activity in the study area, therefore efforts of relevant stakeholders should be geared towards ensuring peaceful co-existence of various ethnic groups in the study area. Most of the respondents (68.9%) belonged to social organization while 31.1% did not. This corroborates the findings of Adesoji *et al.*, (2020) that majority of farmers belonged to social organizations to tap from the benefits associated with participation in social organizations.

Security challenges encountered in the study area

Table 2 reveals that majority (80.7%) of the maize farmers sampled indicates that loss of

community peace, destruction of maize farm by herders (79.3%), kidnapping of maize farmers on the farm (72.6%), maize theft (64.4%), and molestation of women farmers or wives by cattle herders (48.9%) were the major security challenges encountered by the respondents in the study area. Implicitly, the community where such problems occurred are always in chaos with great economic loss due to destruction of maize farms and kidnapping of farmers as reported by Alao *et al.*, (2020); Obaniyi *et al.*, (2020); Alabi and Famakinwa (2017). Serious security intervention should be put in place to curb future occurrence of these challenges.

Table 2: Percentage distribution of respondents by security challenges in the area(n=135)

Security challenges	Frequency	Percentage
Maize theft	87	64.4
Destruction of maize farms by herders	107	79.3
Kidnapping of maize farmers on the farm	98	72.6
Loss of properties / houses by farmers	60	44.4
Killing of maize farmers by herders	31	23.0
Molestation of women farmers or wives	66	48.9
Loss of community peace	109	80.7

Source: Field Survey, 2021

Perception about effects of security challenges by maize farmers

The results in Table 3 indicate that 62.2 percent of the respondents strongly agreed that Maize production is no longer rewarding due to insecurity while 7.6 percent strongly disagreed with

this statement. About 56.3 percent of the respondents strongly agreed that security challenges have resulted into loss of community peace while 9.6 percent disagreed that security challenge resulted to loss of community peace.

Table 3: Perception about effects of security challenges by maize farmers

Perception statements	SA (%)	A (%)	U (%)	D (%)	DA (%)
Maize production is no longer rewarding due to insecurity	62.2	8.4	3.0	17.0	7.4
Overcoming security challenges is beyond farmers' capability	43.7	45.9	5.2	5.2	0.0
Government policy on ESC to farmers is not favourable	23.7	54.1	10.4	8.1	7.0
All the emergent security challenges will soon fade away	19.7	17.0	20.7	45.2	5.2
Quitting maize farming is the only way out for farmers	13.3	11.8	7.2	45.7	5.2
Maize importation is not the answer to shortage of maize production	35.5	43.0	21.5	0.0	0.0
No matter the level of insecurity, I will continue to plant maize	27.4	25.9	2.2	40.0	4.4
Cost of production is too high to break even due to security challenges	25.2	51.9	8.1	14.1	7.0
Farmers are on their toes to resist security challenges	16.3	33.3	20.7	20.0	9.6
We will not allow security challenges to render us jobless	36.3	45.2	3.0	10.4	5.2
Maize production is capable of securing food for man	47.4	39.3	5.2	5.9	2.2
Livestock and poultry feed sustainability is dependent on maize	51.9	25.2	8.1	14.1	7.0
Loss of community peace	56.3	23.7	10.4	9.6	0.0
Tightening security by farmers the only solution to present challenges	40.0	28.1	22.2	9.6	0.0
Community policing is a way out of this security challenges	43.7	20.0	19.3	3.0	14.1

Source: Field survey, 2021

Also, 51.9 percent strongly agreed that livestock and poultry feed sustainability is dependent on maize whereas 7.6 percent strongly

disagreed. 43.7 percent strongly agreed that community policing is a way out of this security challenges while 14.1 percent strongly disagreed

that community policing is a way out of this security challenges. Besides, 43.7 percent strongly agreed that overcoming security challenges is beyond farmers' capability while 8.1 percent disagreed with this statement.

Categorization of perception

The data in Table 4 shows level of perception of maize farmers on effects of security challenges in the study area. The results reveal that majority (91.1%) of the respondents had

unfavourable disposition while only 8.9% had favourable disposition towards effects of security challenges. The result indicates that most of the farmers perceived security challenges as a hindrance to maize production in their area. Therefore, efforts need be put in place to improve security situation so that respondents can have rest of mind to go about their livelihood activities without any molestation or intimidation which will eventually enhance their production activities and ensure food security.

Table 4: Categorization of perception of effects security challenges by maize farmers'

Level	Perception Score	Frequency	Percentage
Unfavorable	<=70.00	123	91.1
Favorable	71.00 +	12	8.9
Total		135	100.0

Source: Field survey, 2021

Coping strategies employed by maize farmers on security challenges

Table 5 reveals that the coping strategies that were mostly employed by the respondents are practicing community policing (90.4%), establishment of security post in strategic places around community (88.9%), praying for security challenges to end

((88.1%), observing vigilance around maize farm (83.0%) and working closely with government security agencies (72.6%). The implication of this analysis is that if the respondents are backed up with the coping strategies, they employed by other stakeholders' security challenges in their domains will be checked.

Table 5: Distribution of respondents by the coping strategies employed on security challenges

Coping Strategies	Frequency	Percentage
Using media services as source of information	72	53.3
Working closely with government security agencies	98	72.6
Observing vigilance around maize farm	112	83.0
Seek permission to carry arm for self-defence	73	54.1
Practicing community policing	122	90.4
Praying for security challenges to end	119	88.1
Establishment of security post around community	120	88.9
Seeking litigation against the intruders	88	65.2

Source: Field survey, 2021

Relationship between selected farmers' socio-economic characteristics and perception about effects of security challenges

Table 6 shows that respondents' sex and religion ($\chi^2=10.412$ and $\chi^2= 4.168$) were

significantly associated with their perception about effects of security challenges. The implication of this result is that respondents' sex and religion influenced their opinion about the effects of security challenges,

Table 6: Chi-square test between personal characteristics and perception about effects of security challenges by maize farmers

Variables	χ^2	DF	P-value
Sex	10.412*	1	0.001
Religion	4.168*	1	0.031
Marital Status	9.087	4	0.059

*Significant at $p<0.05$

Correlation test between selected farmers' socio-economic characteristics and perception about effects of security challenges

The results on the relationship of selected farmers' socio-economic characteristics' variables and their perception about effects of security challenges in Table 7 shows that age ($r=0.268$),

years in maize production ($r=0.524$) and number of times the respondents travelled out of their community ($r=0.287$) had positive and significant relationship with perception challenges by maize farmers at $p<0.01$ level of significance. This implies that the more the age of the respondents the more they can perceive any security problem around them. The same trend goes with years in maize



production and number of times travelled out of the community.

Table 7: Correlation analysis showing relationship between selected socio-economic characteristics of respondents and perception about effects of security challenges (n=135)

Socioeconomic correlation	Characteristics coefficient (r)	p-value
Age	0.268**	0.002
Annual income	0.102	0.241
Years of formal education	0.254	0.090
Years in maize production	0.524**	0.000
Number of times travelled	0.287**	0.001

**Significant at $p < 0.01$

CONCLUSION AND RECOMMENDATION

Findings from the study reveals that the respondents were predominantly Yoruba, male, married and middle-aged farmers. Major security challenges encountered by maize farmers are loss of community peace, destruction of maize farm and kidnapping. While coping strategies employed are practicing community policing, establishment of security post in strategic places around, praying for security challenges to end, observing vigilance around maize farm and working closely with government security agencies. Also, maize farmers had unfavourable perception towards effects of security challenges encountered. The study recommends that the policy makers and other relevant stakeholders should adopt the coping strategies employed by the respondents and such as creation of more checkpoints and security posts and also public enlightenment campaign should be carried out to orientate both farmers and herders on how to tolerate one another, respect people's values, culture and traditions so as to live peacefully with each other in order to curb security challenges in Oke-Ogun to stop this impediment to agricultural production.

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SIBLING RIVALRY AND LABOUR MIGRATION IN RURAL TIV COMMUNITIES OF BENUE STATE-NIGERIA

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ABSTRACT

This study was conducted to investigate the relationship between sibling rivalry and the decision to migrate in Tivland. The study adopted an exploratory design in which Focus Group Discussions and In-depth interviews were used to collect data. Data analysis involved summary of discussions of participants in FGDs while responses of interviewees were transcribed from a purposively selected sample. The study found that factors influencing sibling rivalry included struggle for resources such as land, inheritance, perceived favouritism in the distribution of inheritance by parents, imborivungu (witchcraft idol) and suspicion of witchcraft among siblings. The nature of this rivalry is fierce and is manifest in violent confrontation and strife, animosity, accusation and threats of death. The destinations of siblings who migrated because of sibling rivalry are mostly rural areas within and outside the state. The study therefore recommends for intensified rural development, more research for in-depth understanding of migration patterns in the study area, and investigation into phenomenon of rural-rural migration in Tivland and the motivations for it.

Keywords: Sibling rivalry, Migration, rural communities, rural-urban migration, Tiv

INTRODUCTION

Migration is a social process that has occurred almost at every period of human existence. It is also a common phenomenon in both developed and developing countries, in rural and urban communities (Ekpenyong and Egerson, 2015). Natural history of migration must start with the process that causes migrants to move, and then continue to the expected ends or outcome (Light, 2004). Migration is one of the demographic processes that are very important in determining population dynamics as well as welfare of families and individuals especially in developing countries (Bratti, Fiore and Mendola, 2015). The decision to migrate may be motivated by the need to improve one's chances of a better life. It could also be due to other socio-cultural and demographic factors that are beyond the desire to improve one's economic circumstances. One of the most significant characteristics of migration is that it mainly involves young adults who are more likely to have a positive net expected return on migration due to their longer remaining life expectancy (Sjaastad 1962). These youth also appear to be either unemployed or have thin chances of becoming successful in their place of current residence. In developing countries such as Nigeria, the proportion of youth who migrate internally is much higher than in developed ones (UN 2013). Within the developing countries, one common migration pattern appears to indicate young adults moving from rural areas to other rural areas or to urban centers.

Although the determinants of migration have already been studied extensively, most research studies focus on push-pull explanations to the exclusion of other factors like sibling rivalry. This rivalry could represent jealousy, competition and fighting between brothers and sisters over resources or parental affection, and manifested as a verbal or physical attack, frustration, persistent

demands for attention, or as regressive phenomena (Mace, 2013; Barrow, Heyman, Scott, and Krebs, 2014; Hashim and Ahmad, 2017). The decision to migrate is either rational or spontaneous (Jensen and Miller, 2011). Rationally, it could be a family strategy to diversify income sources, improve earning potentials and increase household security through remittances among others (Clemens and Tiongson 2012, Yang 2008, Antman 2012). Spontaneously, it could be motivated by sibling rivalry or competition which appears to be a subtle but significant determinant of migration (Oyeniyi, 2013). It is a fact that at times people consciously migrate to areas that are even worse than their place of origin (Ekpenyong and Egerson, 2015) and their reasons for the movement are not solely dependent on economic reasons but based on some hidden circumstances which may not be easily revealed or openly expressed by migrants. Thus, far less is known about the role of the sibling competitions on migration decisions especially in rural communities in Nigeria. Siblings in rural areas may be driven more by spontaneous reaction to circumstances beyond their control rather than conscious economic explanation. This is a surprising gap given the popular view that migrants come often from rural areas and they move to urban centers for better life opportunities.

Most of the empirical studies that have been conducted on sibling rivalry and migration have focused on economic determinism as a main factor for migration. For instance, an investigation by Bratti, Fiore and Mendolam (2015) look at demographic conditions of migrant's household such as sibship size, birth order and sibling composition and probability to migrate in Mexico. It also sees economic reasons as factors for the migration. The authors also focused on migration from Mexico to the United States, giving economic explanation as the main driver of migration while

ignoring rivalry among siblings. Stohr (2015) study on siblings' interaction in migration decisions studied migration from an economic angle by exploring how sibling decision to migrate affects elderly people in Moldova. These studies ignored the possibility that sibling competition could have immense relationship to migration in developing countries such as Nigeria.

Among the Tiv, migration is a historical phenomenon that predates their existence in Nigeria and appeared to be connected to economic explanation and agriculture (Wegh, 2018; Bohannan 1953). It is believed that the Tiv migrated from Central Africa to *Swem*, a location somewhere around Nigeria-Cameroon mountains axis (Wegh, 2018). Agriculture, which is the hub of rural economy, has been reported to have precipitated the migration of the Tiv to the Benue valley. The Tiv people being predominantly farmers found the vegetation in the present Lower Benue River suitable for agriculture and migrated to the place for farming reasons. In addition, rapid population growth affected their practice of the shifting cultivation type of agriculture and since they lived in sparse settlements, it motivated their migration to less populated destinations for agricultural practices (Bohannan 1953; Sambe, 2014, Wegh 2018). Among the Tiv, migrations during the pre-colonial times were largely carried out in groups and batches, since land was largely not scarce. In such cases, the various clans, or families in front spearheaded migration into virgin lands where resistance was weak (Dzeremo 2002, Wegh, 2018).

Despite the fact that migration among the Tiv as a group was driven mainly by agriculture in the past, it should be observed that there are some aspects of Tiv culture that are not economically rooted but are connected to migration. Polygamy and extended family practices are highly favoured by a traditional Tiv person (Bohannan 1953). Polygamy has the tendency to create rivalry between wives and their children while the extended family system also could create unhealthy competition between a man and his extended family members who own land and other resources on communal basis. This represents a precondition for sibling rivalry which could affect migration among the Tiv. Thus, some aspects of Tiv culture that relate to agriculture such as polygamous practices and extended family system which are common among the Tiv may create sibling rivalry which could be related to migration among the Tiv. However, whether sibling rivalry is related to migration among the rural people is largely ignored by studies as most of the studies on migration focus on the pull-push factors. This study is therefore intended fill this vacuum by exploring the relationship between sibling rivalry and migration in rural communities in Tivland.

The major objective of this study is therefore to investigate the relationship between sibling rivalry and the decision to migrate in Tivland. The specific objectives were to:

1. Examine the nature and determinants of sibling rivalry in Tivland;
2. Investigate the effects of sibling rivalry on decision to migrate among the Tiv;
3. Ascertain the receiving destinations of siblings who migrate due to sibling rivalry among the Tiv

Theoretical framework (Push-pull theory)

The push-pull factor theory, also called Lee's theory, was pioneered by Everett Spurgeon Lee (1966). The theory attempts to explain the factors that determine the volume of migration between areas of origin and destination. The factors are assumed to be principally economic in nature (Lee 1966).

Lee (1966) assumed that factors associated with the decision to migrate, and the process of migration fall into the following four categories: (1) Factors associated with the sending areas; (2) Factors associated with the receiving areas; (3) Intervening obstacles; and (4) Personal factors. He pointed out that, in each of the four categories, there are factors that drive people away from an area or attract them to it. In this respect, there are significant differences between the factors associated with the sending areas and those associated with the receiving areas. Migration may take place after both these are properly weighed. Usually, however, a person has a better and more realistic knowledge about the sending area, while his knowledge about the receiving area is rather shallow and inaccurate. Intervening obstacles also must be overcome before migration finally takes place. These include distance and transportation.

Push factors exist at the point of origin and act to motivate out migration (a lack of economic opportunities, education, and so on). On the other hand, pull factors are present at the receiving area, which attract migrants (work opportunities and availability of jobs, conducive educational facilities). Push and pull factors are paired, that is, migration can occur if the reason of emigrating (the push) has a solution in the pull by receiving area. In the context of labour migration, the push factors are often characterized by the lack of job opportunities in sending areas or countries; and the pull factors are the economic opportunities available in the receiving areas. Pull factors are exactly the opposite of push factors—they attract people to a certain location. Typical examples of pull factors of a place are more job opportunities and better living conditions; easy availability of land for settling and agriculture, political and/or religious freedom, superior education and welfare systems, better transportation and communication facilities, better



healthcare system and stress-free environment attractiveness, and security.

The emphasis of the theory on economic factors as the main drivers of labour migration seems to be the weakness of the theory. This is because it does not consider other factors that motivate people to migrate. These factors are subtle and may not be easily revealed by the migrants. It is based on this weakness that this study has been built. This study therefore proposes to explore hidden factors that precipitate migration which the push-pull theory has not addressed.

METHODOLOGY

Tivs are a group of people and are named after their ancestral father, Tiv. They inhabit the planes of Benue valley in North Central Nigeria and are found mostly in Benue State. However, considerable numbers are indigenes of Taraba and Nassarawa States. The Tiv people are divided into five lineages, Kwande, Jemgbagh, Jechira, Sankera and Minda. Within Benue State, the Tiv inhabit 14 local government areas of out the 23 Local Government Areas in Benue State. They include Kwande, Ushongo, Vandeikya, Konshisha, Ukum, Logo, Katsina-Ala, Gboko, Tarka, Buruku, Makurdi, Gwer-West, Gwer-East and Guma. The Tiv area in Benue State is bordered by Nasarawa State in the North, Taraba State in the North-East, and Cross River State in the south. The Tivs are bordered by Agatu, Apa, Otukpo, Obi and Oju Local Government Areas to the South. They are predominantly farmers who also have firm belief in witchcraft and powers associated with it.

The Tiv people are believed to have migrated from *Swem*, a location somewhere around Nigeria-Cameroon Mountain axis. Around 1456, they started to move towards the Benue valley and have now spread across the North Central region of Nigeria as stated in Makar (1975). Several reasons have been advanced for the migration of the Tiv to this area. One of the reasons has been that the Tiv people being predominantly farmers found the vegetation in the present Lower Benue River suitable for agriculture and migrated to it. The second reason put forward was that the populations of the Tiv grew very rapidly, and since they lived in sparse settlements and practiced the shifting cultivation type of agriculture, they found the area irresistible (Bohannon 1953). In addition, the increase in population might have increased their military capability to give them effective advantage over their neighbors. This view is particularly strong because all the small ethnic groups around Tiv that were reluctant to move remained within the Tiv territory up to date or were defeated and pushed further.

The last view being branded is that the migration into the Lower Benue River coincided with the military decline of the Kwararafa

Confederacy in the nineteenth century. Thus, the Tiv did not find much resistance to their settlement in their present position (Dzeremo 2002). Migrations during the pre-colonial times were largely carried out in groups and batches, since land was largely not scarce. In such a case, the various clans, or families in front spearheaded migration into virgin lands where resistance was weak.

The paper adopted an exploratory study design. This is because the study appears to be a preliminary study on the problem under investigation. Therefore, the design will also help to gain insight on the problem of sibling rivalry and migration in rural communities in Tiv land for subsequent investigation.

The population of the study includes heads of households in rural communities in Tivland of Benue state. This is because the household heads will be more disposed to providing such information about the members of their families or kin.

Purposive sampling technique was used to select 26 informants. First stage involved a purposeful selection of Gboko Local Government Area (LGA), out of 14 local government areas in Tivland. In stage two, two villages were purposefully selected. These included Mbazembe village in Mbakper council ward and Akpehe village in Mbatser ward. In stage three, 10 participants who are household heads and 8 key informants who are heads of extended families were purposively selected for FGD and KII respectively in each of the villages.

The selection process involved rapport with members of the communities. Through this procedure, the researchers identified extended family heads and heads of the households. The households selected were independent in terms of not relating to each other through kinship. This was to avoid replication of information. They explained the purpose of the study to them and solicited for their cooperation to be part of the study. Afterwards, the researchers selected household heads for the FGD.

After the selection of samples, data collection began immediately. Data were collected through Focus Group Discussions and In-depth Interview. For Focus Group Discussion, two discussion sessions were held, one in each of the villages. It lasted for about 30 minutes to 1 hour. The venues for the discussion were in a market square. The discussions were recorded through use of phones and notebooks and pen. For In-depth Interview, the informants were contacted in their homes, farm, or market square for the interview. The interviews lasted from 20 to 30 minutes. Data gathering involved use of phones and writing materials.

For data analysis involving Focus Group Discussion (FGD), participants' discussions were reviewed and summarized to determine whether

there is agreement or consensus while the level of intensity of the arguments of the discussants was described. Data gathered through in-depth interviews were analyzed through transcription of responses of the key informants based on areas of consensus and disagreement regarding each question.

RESULTS AND DISCUSSION

Nature and determinants of siblings' rivalry among the Tiv

Focus Group Discussion held in both Akpehe and Mbazembe villages pointed out clearly that struggle for land is a major factor responsible for sibling rivalry among the Tiv. The groups strongly argued that in most instances, struggle for land is caused by desires of older siblings to acquire more land than the others who actively demand for equal share of the land. This causes strife, confrontation, violent quarrels, or blood revenge. The group members from Mbazembe village also agreed that inheritance is another serious factor that causes sibling rivalry. This happens after the death of father or parents. The desire of elder siblings to take the larger proportion and the demand for equal share of the inheritance by other siblings could result to this rivalry. Furthermore, the allocation of a larger part of the possession of parents to a most favourite child after their death leads to jealousy, conspiracy, and rivalry against the most favoured child. This manifests in strife, violence, and violent quarrels.

One of the group members in Mbazembe argued:

"...What causes contention between siblings originates out of self-centeredness and jealousy...these manifests in struggle for land and other inheritance left by their departed parents...This rivalry is often deadly and visible through violence and strife..."

Focus group members from Akpehe village also argued that siblings' rivalry is caused by the struggle to be in control of a mystical idol called *imborivungu*, which is an object made from human tibia or a carved image and it is owned by held by witches. This witchcraft idol could be owned by a family or an individual and is required to be serviced or repaired periodically by human blood and competition for the control of the idol is one the basis for of witchcraft among the Tiv. It could also be made from bones of a departed family head. Siblings struggle for the control of this force after the death of parent(s). This is because it is presumed to serve as an assurance against failure or poverty. This rivalry is fierce and could manifest in violent confrontation and strife and can even lead to mysterious death among the siblings. This could

lead to perceived fear of death, or potential harm among siblings. Furthermore, suspicion of witchcraft is another issue that causes siblings rivalry as revealed by the group members from Akpehe village. A sibling who is jealous of a prospering sibling may be suspected of witchcraft. This is because the Tiv believe that witchcraft originates out of jealousy. Many of the village's siblings in rivalry migrated because of fear of witchcraft as the siblings were afraid of being harmed by siblings who were perceived to be witches. The group members in Akpehe village agreed that suspicion of witchcraft could lead to animosity, strife accusation and even violence and threats of death.

Another group member in Akpehe also said:

"...fear of witchcraft is a major factor in siblings' rivalry in Tivland...issue of imborivungu is often connected to witchcraft which is one of the causes of sibling rivalry in rural Tivland..."

In-depth Interview with 56-year-old male key informant revealed the following:

"...in Tivland generally, struggle for land is a major cause of contention between brothers and even communities...After death of parents, some of the brothers will sell all their pieces of land and will try to usurp the pieces that belong to their brothers. This result to strife and violence...also when an older brother tries to confiscate land for himself, ignoring his half brothers, rivalry could result...This manifest into violent fights, quarrels, and strife..."

Another informant, who is an 83-year-old male, aptly said:

"...in this case, the siblings will hide this but people with experience can discern this reason...fight for control of imborivungu left by deceased parent(s) by siblings is the most dangerous form of rivalry because it is seen as a symbol of power and protection against poverty and failure...brothers and sisters do fight for it even when parents clearly identify the sibling who will control it...the struggle manifests in blood violence, threat of death, death and mysterious illness among siblings and their families..."

Another informant who is a 90-year-old male also said:

"...witchcraft is connected to many siblings' rivalry among the Tiv... This rivalry was expressed in an open verbal attacks, strife, and threats of death..."



Sibling rivalry pattern in rural Tiv communities

Sibling rivalry pattern	Most common	Less Common	Rare cases
Violent quarrels	X		
Verbal assault	X		
Threats with witchcraft	X		

The above findings are consistent with Fox *et al* (2016) which found that among Krummhörn and Quebec populations in Canada, competition for familial resources is a major source of sibling rivalry. Barrow *et al* (2014) also found that sibling rivalry is characterized by evidence of jealousy. Rivalry may be manifested as a verbal or physical attack, frustration, persistent demands for attention, or as regressive phenomena (Milevsky and Levitt; 2005).

Relationship between sibling rivalry and migration

Focus Group members from both Mbazembe and Akpehe village pointed out clearly that sibling rivalry is one of the major factors for migration among the Tiv. The group members from Akpehe village argued that fierce struggle for *imborivungu* could lead to fear of death or harm among some of the siblings, who may decide to migrate to their maternal home or other locations for coverage and protection. The group discussion from Mbazembe village pointed that struggle for inheritance often leaves other sibling especially the younger ones or half sibling empty handed. This results to the decision to migrate in order to survive. Furthermore, fear of death and harm resulting from rivalry over inheritance is another factor responsible for sibling migration. The struggle for land among sibling results to migration in two ways: One of the ways is other sibling who could not access land are forced to migrate to other areas to find land, farm and survive. The other way is the decision to migrate due to fear of harm by other siblings. Group members from Akpehe village also pointed that sibling rivalry is a factor for suspicion of witchcraft. Group members from both Akpehe and Mbazembe village reiterated that this rivalry also leads to animosity, strife accusation and even violence and threats of death. Thus, a sibling who suspects another of witchcraft due to rivalry is likely to migrate to escape witchcraft attack.

One of the group members in Akpehe reiterated:

“...fear of witchcraft is a major factor in siblings’ rivalry and migration in Tivland...fears of being injured and killed by a sibling who is perceived to be jealous, vile witch drive other siblings to migrate for safety and protection of their lives and business...issue of imborivungu is often connected to witchcraft which is one of the causes of siblings’ rivalry and migration in rural Tivland...”

Another group member in Mbazembe reported:

“...struggle for land and familial resources between siblings is one of the main reasons why siblings migrate...siblings who are left empty handed migrate to other areas to survive...”

An interview, with a 63-year-old informant supported the above finding. He said:

“...the imborivungu is a dangerous thing. It occasionally requires the blood of a relative to sustain it...struggle for control of it by siblings often result to other sibling seeing themselves as target and fleeing permanently to other areas to escape it...”

Another informant who is a 57-years-old male also said:

“...in this village and everywhere else I know in Tivland, struggle for inheritance such as land, money, and assets are a major source of trouble among siblings, and they are also reasons why people choose to leave their place to other places...”

According to an informant who is 48 years old:

“...land is the most important asset in village...and a means of survival...siblings who are denied access to land are forced to locate to other villages where they can have access to land for farming...”

Another male informant who is 81 years old said:

“...the fear of being exposed to harm by the power of witchcraft is one of the major causes of migration among the Tiv...”

The above findings agree with Bratti *et al* (2015) who found that sibling competition increases chances of migration, especially for the firstborns. The study also established a relationship between number of sisters and the likelihood to migrate, especially among girls. The findings by Bratti *et al* (2015) also appear to reveal that siblings that are of mixed sexes appeared to have less competition or rivalry. Such siblings are less likely to migrate since the type of rivalry occurring between siblings of the same sex is less visible. Another study by Morduch (2000) also indicates that in Africa, siblings who become rivals are more likely to migrate compared to siblings with no rivalry. Garg and Morduch (1998) also found a situation in Ghana in which children compete for household resources, with the aftermath leading to migration.

Receiving destinations of migrants of sibling rivalry among the Tiv

The group members from Mbazembe agreed that destinations of siblings who migrate because of sibling rivalry are based on the level of education and occupation of the migrant. The discussants from Akpehe pointed that most of the Siblings who are farmers and uneducated tend to migrate to other rural areas in Tivland where fertile land is available for farming. Others move to other states like Taraba where other indigenous Tiv people of Taraba live to acquire land for farming while others migrate to the western part of the country to work on cocoa farms for money. Furthermore, some migrate to other towns within Tivland to become commercial motorcycle riders.

According to a focus group member in Mbazembe:

“...many of the migrants who move as a result of contention with their siblings do migrate to other rural areas to acquire land for farming...others who migrate do so with their entire nuclear family to remote rural areas with an intention never to return...”

A 62-year-old informant also reiterated

“...Most people who migrate as a result of sibling rivalry do go far from their home...these days, most of them go to Yoruba land to work on cocoa plantations...other run to interior parts of Tivland to hide there and also to farm...places like Taraba, Ukum, rural areas in Kwande, Gboko are primary destinations for the migrants...”

The above findings seem to indicate that migration destinations of siblings who are in rivalry are primarily rural. This is because the demographic characteristics of the migrants such as educational qualification and occupation had profound influence on the destination of the migrants. The low educational level of the migrants and their occupation as farmers influences them to migrate to destination where they can easily adapt to life such as other rural areas. This finding does not agree with that of Bratti *et al* (2015) position that most of the siblings who migrated as a result of sibling rivalry in Mexico headed towards cities in the United States. The study seems to indicate that most of the migrants in rural and urban Mexico had the tendency to move to the United States.

Migration pattern in rural Tiv communities

Migration pattern	Most common	Less Common	Rare cases
Rural-rural	X		
Rural-Urban		X	
Rural-city			X

CONCLUSION AND RECOMMENDATIONS

The study concludes that factors influencing sibling rivalry included struggle for resources such as land, inheritance and perceived favouritism in the distribution of inheritance by parents. Other factors are the struggle for control of a mystical force called *imborivungu* and suspicion of witchcraft among siblings. The rivalry is fierce and manifest in violent confrontation and strife, animosity, accusation and even violence and threats of death. The study also found that sibling rivalry is one of the major factors for migration in the study area and is predominantly rural-rural in nature. The destinations of the migrants are determined by their level of educational level and occupation as most of them are uneducated and farmers.

Hence, it is recommended that for a more elaborate understanding of migration in the study area, more research is needed around the relationship between sibling rivalry and migration among rural dwellers in Tivland. Researchers also need to investigate the phenomenon of rural-rural migration in Tivland and the motivations for it and there is the need for intensified rural development in Tivland since most migration most migrants move from rural to rural areas.

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IMPACT OF LAND USE CHANGES ON WELLBEING OF RESIDENTS AROUND ONIGAMBARI FOREST RESERVE IN OYO STATE, NIGERIA

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ABSTRACT

Land can be put to many productive uses based on man's needs. However, these uses often result in changes in the ecosystem with attendant effects on human wellbeing. Therefore, the impact of land use changes on wellbeing of residents around Onigambari forest reserve in Oyo State, Nigeria was investigated. Multi-stage sampling procedure was used to select 137 respondents for the study. Interview schedule was used to elicit information on socioeconomic characteristics, causes of land use changes, livelihood activities and wellbeing status before and after land use changes. Percentages, means, were used for data analyses. Average age of respondents was 50.5 ± 14.47 years, majority (89.2%) were married, had high literacy level (76.7%), male (68.3%) and had farming as the main source of income (65.0%). Climate change ($\bar{x}=1.97$), loss of fertility and low productivity of lands ($\bar{x}=1.73$) and land fragmentation by inheritance ($\bar{x}=1.73$) were the main perceived causes of land use changes by the respondents in the study area. Overall well-being of the respondents was relatively better before ($\bar{x}=13.9$) than after ($\bar{x}=9.6$) the land use change. It is therefore concluded that land use changes had negative impact on the wellbeing of the respondents in the study area, leaving them worse off. There is need to regulate land use around the forest reserve in order to sustain the wellbeing of residents around it.

Keywords: Climate change, Land use, Well-being status, Onigambari forest

INTRODUCTION

Land and forest have direct impact on human livelihood and well-being; in terms of provision of resources to satisfy human needs, economic development and enhancement of means of making a living. Forest is a renewable natural resource that covers about 31% of the earth (FAO and UNEP, 2020). Forest is important to the existence and survival of man on earth. It provides habitats for vast diversity of plants and animals ranging from microscopic to macroscopic underneath, land and arboreal organisms. Forests play an important role in mitigating climate change by absorbing the carbon dioxide emitted into the atmosphere from human activities, chiefly the burning of fossil fuels for energy and other purposes, into the terrestrial carbon sink. Forests provide food, medicine and livelihoods for people around the world. Forests also play important roles in producing and regulating the world's temperatures and freshwater flows, they provide a cooling effect through transpiration and shade.

Forests contribute to atmospheric moisture and rainfall patterns over land through evapo-transpiration. They act as a hub for biodiversity. In addition, forests provide ecological and aesthetic benefits to natural systems and people. They also help in hydrological cycle regulation and protect soil cover (Bracki, 2019; Bennett, 2017; Ali, Riaz and Iqbal 2014; Percy, Jandl, Hall and Lavigne 2003). Although forest is a renewable resource, it is also finite and limited due to rigidity or inelastic nature of land. Likewise, land can be put to multiple uses, and in most cases land covers with forest are totally changed for non-forest purposes. Land use changes

had put forest to irreplaceable risk because forest is losing its intrinsic values and ecological importance.

However, land is a fixed asset that supports human livelihoods in different facets of lives. It serves as backbone for agricultural production and an indispensable factor of production of all human needs that promotes economic growth. The basic need of man is the means of survival, which actually is the means of making a living. Human needs are numerous and will want to satisfy all at the same time. But means of satisfaction of these needs are often counterproductive or create conflicts. That is, in a bid to satisfy a need, the satisfaction of another relevant need is been hindered. Land use change is driven by urbanization which is due to increase in human population. But the process of urbanization has continued to impact on the land-use pattern of urban areas, thereby changing the existing land-use which affects agricultural areas, putting food security and people's livelihood in jeopardy. Therefore, land-use change has become an issue of much scientific interest (Saleh, Badr, El-Banna and Shahata, 2014); since it has direct impacts on human livelihood and wellbeing. If this is not put under control; it may hinder the moves to securing sustainable livelihoods as an aim of Sustainable Development Goal 15 (Life on land). Human activities around Onigambari Forest Reserve in Oyo State have caused a number of changes on its ecosystem, resulting in land use and livelihood changes. This trend could have impacted the wellbeing of its residents. The need to empirically substantiate or debunk this thought informed this study. So, this study set to examine the impact of land use changes on wellbeing of residents around

Onigambari Forest Reserve in Oyo State, Nigeria. The objectives of the study are to:

- determine the socioeconomic characteristics of the respondents,
- examine the trend in land use changes around the forest reserve areas,
- investigate the causes of land use changes in the study area and
- assess the wellbeing status of residents before and after the land use changes.

METHODOLOGY

This study was carried out at Onigabambari forest reserve area located in Oluyole Local Government, Oyo State. It is located between latitude 7°26'1"N and longitude 3°51'E. There are 19 neighbourhood villages around Onigabambri Forest Reserve where six villages were selected based on their proximity to the Forest Reserve as shown in Figure 1.

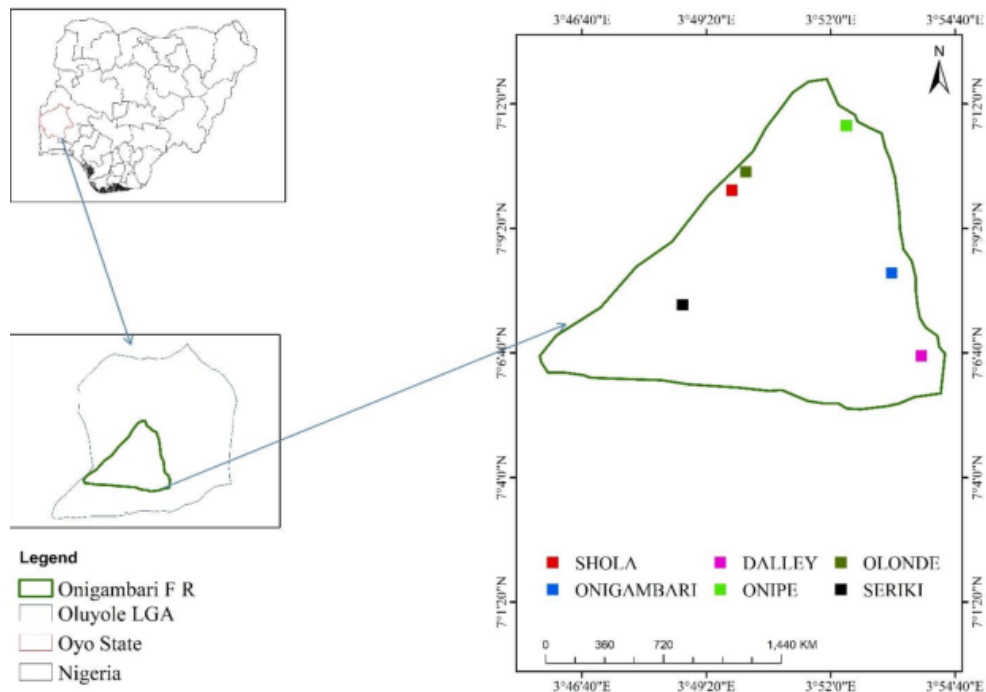


Figure 1: Map of study area showing the sampled villages in Oluyole LGA

Data for this study were obtained from primary and secondary sources. Primary data were collected from residents living around the forest reserve area using a well-designed interview schedule. Secondary data was collected from Geographic Information System (GIS) to show satellite imageries of the forest reserve area. The population of this study comprised of all residents living in villages around Onigambari forest reserve area.

Multi-stage sampling procedure was used to select respondents for the study. Onigambari forest reserve was purposely selected based on availability of data in the Forest Department in Oyo State Secretariat. Then, purposive sampling technique was used to select three villages in both sides of forest reserve area, making six selected forest villages. The selections of these villages were based on their proximity to forest reserve area. Also, proportionate technique was used to select 10% of the households of each village to give 137 households out of 1351 households based on population size of each forest village area and

number of households. Then, head of households were randomly selected for the study. Out of 137 copies of questionnaire administered, only 120 (87.6%) were retrieved. The dependent variable of this study is well-being status of residents living around forest reserve area. The well-being of respondents in response to land use change was obtained through psychology scale which includes emotional well-being, economic well-being, social well-being and material well-being components before and after the land use changes. The well-being status was generated by using Z score to get indices of wellbeing before and after which were later categorized as worse off and better off using mean as bench mark. The data collected were analyzed using both descriptive and inferential statistics. The descriptive statistics involved the use of frequency and percentages.

RESULTS AND DISCUSSION

Table 1 presents the socio-economic characteristics of the respondents. The mean age of the respondents was 50.5 ± 14.47 years. This shows

that young adults dominated the population. This slightly departs from the findings of Philips and Ceesay (2020) that majority of the people living around Ijaiye Forest Reserve, Oyo State, Nigeria were between the ages of 31 and 45 years and their average age was 47.5 ± 13.9 . Most (68.3%) of the respondents were male. This shows the role that males play as the head of families and in agricultural activities in the study area. This corroborates the report of Philips and Ceesay (2020) that family headship among people living around Ijaiye Forest Reserve, Oyo State, Nigeria was male dominated.

Majority of the respondents in the study area were literate; as only 23.3% had no formal

education. This shows high level of literacy in the study area. This corroborates the report of Faleyimu and Akinyemi (2014) that there is high level of literacy among resident of urban forest in Okitipupa, Ondo State, Nigeria. Majority (89.2%) of the respondents were married. Farming was the source of income of most (65.0%) of the respondents. This shows that farming was the major source of income of the respondents living around the forest reserve which corroborates the report of Ullah, Noor, Abid, Mendako, Waqas, Shah, and Tian, (2021) that the source of income of majority of people in Basho Forest, Baltistan, Pakistan was farming.

Table 1: Distribution of respondents based on socioeconomic characteristics

Socio economic characteristics	Percentage	Mean	Standard deviation (n = 120)
Age (years)			
< 31	10.8	50.5	14.47
31 – 40	11.7		
41 – 50	35.8		
51 – 60	16.7		
> 60	25		
Sex			
Male	68.3		
Female	31.7		
Education			
No formal education	23.3		
Formal education	76.7		
Marital Status			
Single	3.3		
Married	89.2		
Widowed	7.5		
Occupation			
Farming	65		
Trading	18.3		
Lumbering	9.2		

Trend in land use changes around the forest reserve areas

Table 2 shows that there was gradual loss of forest cover from 95.61% in 1990 to 69.38% in year 2020. The estimated loss of forest cover during this period (1990 – 2020) was about 26.23% at the rate of 0.87% per annum. Farmland was the major

land use that had changed significantly between Year 1990 and 2020 in Onigambari forest reserve. In year 1990, farmlands covered 1.98Km² (1.4%) of the land use in Onigambari forest reserve. But in year 2020, the use of land for farmlands had spread throughout all parts of the reserve; it covered about 28.51Km² (25%) of the land (Figure 2 and 3).

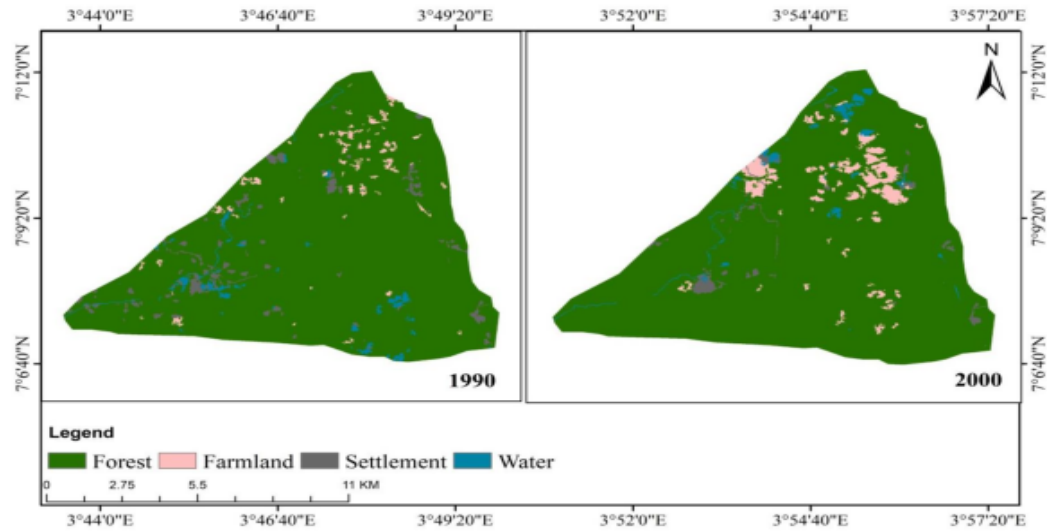


Figure 2: Classified imagery of Onigambari forest reserve, Oyo State (1990 and 2000)

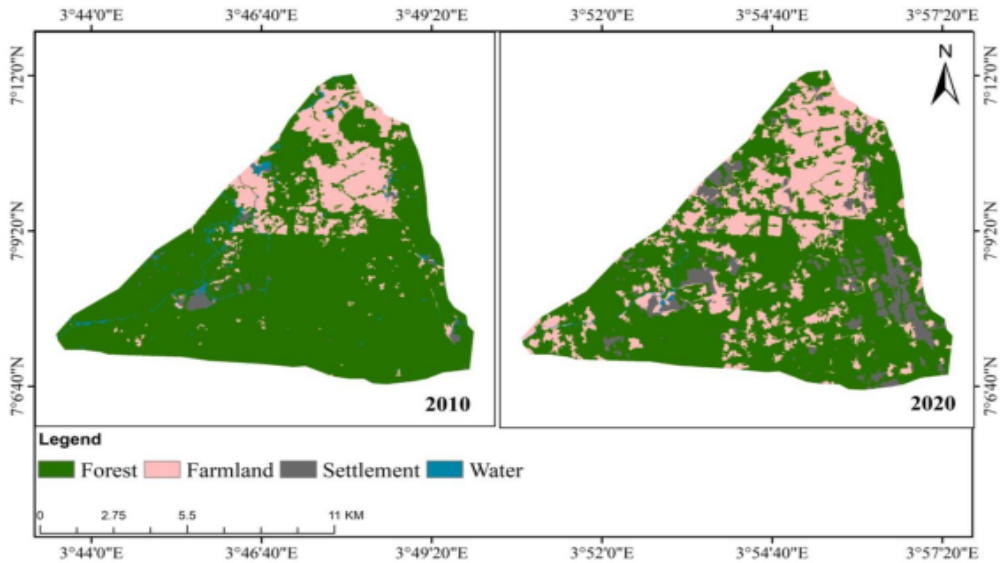


Figure 3: Classified imagery of Onigambari forest reserve, Oyo State (2010 and 2020)

Table 2: Statistics of classified images

LULC classes	1990 area Km ²	%	2000 area Km ²	%	2010 area Km ²	%	2020 area Km ²	%
Forest	106.85	95.61	105.46	92.49	93.41	81.92	74.77	69.38
Farmland	1.978	1.44	5.05	4.53	17.17	15.06	28.51	25.00
Settlement	3.42	1.40	1.77	1.46	1.66	1.46	10.41	4.03
Water	1.77	1.55	1.74	1.52	1.78	1.56	0.34	1.59
Total	114.02	100	114.02	100	114.02	100	114.02	100
Overall accuracy	73%		68%		76%		81%	

Key: LULC – Land use land change

Perceived causes of land use changes around Onigambari Forest Reserve

Table 3 shows the perceived causes of land use changes. Various causes of land use change were ranked in order of severity. Climate change ($\bar{x}=1.97$) was ranked as the major cause of land use change in the study area. This could be true due to its impacts on flooding, and land degradation (Ebele and Emodi, 2016). Land fragmentation by inheritance ($\bar{x}=1.73$) and loss of fertility and low productivity of lands ($\bar{x}=1.73$) were ranked second in order of causes of land use change in the study area. Land fragmentation by inheritance will cause land to be divided among families and relatives, therefore individual new landowners can decide solitarily

what purpose the land can be used for. Then the land can be easily sold which increase potential for land use change. Loss of fertility and low productivity of lands could necessitate shifting cultivation in search of fertile land for agricultural production, in which new or virgin land will be opened up for agricultural activities. This is line with the report of Acheampong, Macgregor, Sloan and Sayer (2019) that farmers surveyed and encroached on the adjoining forest for fertile land to cultivate their food crops for consumption. Appiah, Blay, Damnyag, Dwomoh, Pappinen, and Luukkanen, (2009) noted that this process of forest clearing for agriculture is the major cause of deforestation in the Ashanti region and Ghana.

Table 3: Distribution of respondents based on perceived causes of land use changes (n=120)

Causes of land use change	Not at all	To a little extent	To a large extent	(\bar{x})	Rank
Increase in population	0.0	32.5	67.5	1.68	4 th
Urbanization	4.2	35.8	60.0	1.56	5 th
Sales of land for residential building	8.3	44.2	47.5	1.39	6 th
Land fragmentation by inheritance	10.8	5.0	84.2	1.73	2 nd
Development of infrastructural facilities in rural areas	6.7	51.7	41.7	1.35	7 th
Lack of government regulation on land use	74.2	3.3	22.5	0.48	8 th
Loss of fertility and low productivity of lands	8.3	10	81.7	1.73	2 nd
Climate change	1.7	0.0	98.3	1.97	1 st

Key: (\bar{x}) = Mean

Wellbeing of residents before and after land use change

Table 4 shows that mean emotional wellbeing of the respondents before and after land use change were ($\bar{x}=4.09$) and ($\bar{x}=1.78$) respectively. While economic wellbeing before and after were ($\bar{x}=5.11$) and ($\bar{x}=3.22$), social wellbeing before and after were ($\bar{x}=3.11$) and ($\bar{x}=2.64$) however, material wellbeing before and after land use change were ($\bar{x}=1.67$) and ($\bar{x}=1.96$) individually. First off, the implication of these results is that respondents' wellbeing components before land use change were better than after land use change except for material wellbeing which was

better off after land use change. This could be because people are able to acquire of material things now due to overall development, technologies and infrastructure in the country.

Furthermore, Table 4 revealed that mean of respondents' overall wellbeing before ($\bar{x}=13.9$) was relatively better than their overall wellbeing after ($\bar{x}=9.6$) the land use change with mean difference of ($\bar{x}=-4.38$). This implies that land use changes impacted negatively on wellbeing of the respondents.

Table 4: Respondents' wellbeing before and after land use change

Variables	Before land use change	After land use change
Emotional wellbeing	4.09	1.78
Economic wellbeing	5.11	3.22
Social wellbeing	3.11	2.64
Material wellbeing	1.67	1.96
Overall wellbeing before	13.99	9.60
Wellbeing mean difference	-4.38	

Well-being status of the respondents before and after land use change

Table 5 showed that generally majority (57.5%) of the respondents' wellbeing were better off before land use change, worse off (54.2%) after land use change while, 55.8% were worse off overall (difference in wellbeing). This means that generally, respondents' wellbeing was worse off after the land use changed. It can also be deduced that land use change has negative impact on the respondents' wellbeing. This may be due to environmental factor, impact of climate change, loss of soil fertility and low productivity of land as discussed earlier being

the major cause of land use change in the study area. This agrees with the report of Deng, Li, Huang, Shi, and Li (2013) that due to the impacts of climate variation and land use change on agro ecosystem services, the outputs humans obtained in agricultural production will decrease, with increase in investment and input production factors such as fertilizers and pesticides. Likewise, Wang, Chai and Li, (2016) reported that although per capita income of residents may be increased, but due to reduction of cultivated land, food security will be threatened, and their purchasing power will be reduced. This will eventually threaten people's wellbeing.

Table 5: Wellbeing status of the respondents before and after land use change

Wellbeing status	Before land use change	After land use change	Difference in wellbeing
Worse off	42.5	54.2	55.8
Better off	57.5	45.8	44.2

CONCLUSION

Based on the findings of this study, there was land use change as there was gradual loss of forest cover in the study area. Climate change, land fragmentation by inheritance, loss of fertility and low productivity of lands were the major cause of the land use change. There was a negative impact in their wellbeing after the land use changes. It is therefore concluded that land use changes had negative impact on the wellbeing of the respondents in the study area, leaving them worse off. The sustainability of the wellbeing of the people in the study area is a function of the land use changes. Therefore, there is need to regulate land use changes around the reserve in order to sustain the wellbeing of residents around it.

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GENDER MAINSTREAMING AND YOUTH CONSIDERATION IN RURAL SECURITY: PANACEA FOR ACHIEVING THE OBJECTIVES OF COMMUNITY POLICING IN NIGERIA

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ABSTRACT

The paper discussed issues on gender gap and the challenges faced by youth in securing the rural areas. It highlights the efforts of women leaders in global peace building and security initiatives. Sequel to the appointments of women in ministerial capacities and elective positions in Nigeria, they have contributed immensely to community peace and security. It asserted that equal representation leads to more participatory and representative political decisions. This in turn results in a more harmonious society and provides a strong foundation for the development of peace and security. The paper posited that even though women are increasingly taking leadership positions in business and politics, progress has been slow for their inclusion in decision making in security related issues. Little or no attention has been paid to issues regarding women and young people in the area of active or effective participation in national and rural security agenda. The paper concluded that for a successful gender inclusion in rural security initiative, government should collaborate with organized security institutions to provide professional training for potential recruits. This could also entail tackling and eliminating gender stereotypes that often underpin the culture of violence and inequality. It is recommended among others that States should endeavor to establish a community security expert agency to create a clear cut mode of operation, areas of jurisdiction and specific responsibilities for rural community security personnel; involve more women and youths in peace and security efforts.

Keywords: Women, Youth, Community peace and Security

INTRODUCTION

Gender responsive security initiative has been recognized by the international community, among others, through the adoption of United Nations Security Council Resolution (2000) on women, peace and security. This resolution urged member states to amplify the voice of women on issues of peace and security by increasing their representation at all levels of decision-making. The platform for action adopted at fourth- world conference on women in Beijing emphasizes that the active participation of women in decision-making positions, coupled with the corporation of women's perspectives at the policy formulation level-, are indispensable components to achieving equality, development, peace and security. The latest United Nations Security Council Resolution (2013) on women peace and security seeks to address the issues of mainstreaming the importance of women's engagement in facilitating sustainable peace. Such sustainable peace requires an approach "based on the coherence between political, security, development, human rights, including gender equality, rule of law and justice activities as well as the enhancement of women's engagement in conflict prevention and peace building" (United Nations Institute for Training and Research UNITAR 2014). Inclusion of women in and security agenda must be accompanied by access to gender expertise and gender analysis and must be used to identify the impact on women's right of all peace related decisions. Elements of this practice include holding early and regular consultations with women leaders and women's right groups; securing a gender advisor for the mediation team and ensuring that

crimes against women are addressed in peace negotiations (Ban, 2013).

In Nigeria, while women have been increasingly taking leadership positions in business and in some cases political appointments, progress has been slow for their inclusion in decision making in security related issues. Little or no attention has been paid to issues regarding women and young people in the area of active or effective participation in national and rural security initiatives. Under-representation of women in Nigeria is further reinforced by poverty, patriarchy, illiteracy, religious and cultural norms (Olufade, 2013). Other challenges include gender roles and stereotypes as well as structures of the political environment that is against their full participation in political and public life. Women are struggling to gain access and have a voice in the political arena of their countries. Though currently, youths have been involved to some extent in community policing effort such as the Civilian Joint Task Force (JTF) and local vigilante, they have been under strict guidance and supervision of the adults. It is widely believed that the under-representation and marginalization of women and youth in decision making process has been responsible for the exclusion of the interest of women in governance and developmental paradigms (Omoye, 2012). Some measures have been put in place to encourage women and youths' participation in such areas as politics and decision-making positions, however, measures alone cannot ensure positive outcomes. The key to success still lies in the incorporation and implementation of these measures for actualization of gender equality.

Women play important roles and have particular skills that they have developed over the years as mothers, wives, and caregivers for the family members and community. The creativity, patience and the capacity to love and build a consensus are qualities that make the female gender a valuable constituency for peace and security (Lardera, 2012). According to Clark (2012), commitment to the culture of peace is a core ingredient for the success of the three areas of the work of the United Nations namely, sustainable development, peace, and security and human rights. Hence gender equality and women involvement in decision-making is a key component for development and sustainable peace building.

Gender as a concept

The idea of gender was brought into main focus in the 1970s by international conference on women. The underlying reason was to use the notion of gender to establish the fact that the position of women in the society varies considerably. Thus, different definitions followed suit with every definition coined to suit different purposes (Akinyode, 2010). According to Hannan (2001), gender is the social attributes and opportunities associated with being male and female and the relationship between women and men; girls and boys as well as the relations between women and women; and those between men and men.

Gender refers to the social construction of female and male identity. It refers to the socially constructed roles of and relationship between men and women and differs from “sex” which refers to biological characteristic that defines human as female and male (Alaga, 2011). In day-to-day parlance, gender is often interchangeably used with sex. However, in social science it refers specifically to socially constructed and institutionalized difference whether real or perceived, have been valued used and relied upon to classify women and to assign roles and expectation to them. Contrary to popular misconception, gender is not synonymous with “women’s issues”. Rather, gender describes the social roles and relations between men and women, in society; it affects all aspects of life – economic, political and social (Ebo, 2011). Ghana National Association of Teachers (GNAT) (2014) views gender as the socially constructed roles and responsibilities assigned to women and men in a given culture or location. Osaat (2011) refers to gender as a societal construct that separates the role expectation of male and females.

Gender equality

Gender equality refers to an equal sharing of power, between women and men in their access to education, health, administration and managerial-positions, equal seats in parliament, among others (GNAT, 2014). It implies the same status rights and responsibilities for women and men. Alaga (2011) remarks that gender equality do not actually imply

that women and men are the same. However, their interest, needs and priorities should be valued in order to overcome the barriers of stereotypes and prejudices so that both sexes are able to equally contribute to and benefit from economic, social, cultural and political development.

Gender mainstreaming and analysis

Gender mainstreaming as a concept was introduced in 1985 at the world conference on women in Nairobi. It is a strategy which takes into cognizance the role of women and men in policy making programmes and projects at all levels. It is a strategy that integrates gender equality policy through the Beijing Platform for Action adopted at the United Nations Fourth World Conference on Women held in 1995 at Beijing (China). According to International Labour Organization (ILO) (n.d), gender mainstreaming is a “strategy for making concerns and experiences of women as well as men an integral part of any plan of action be it legislation, policies or programmes in any area and at all levels”. Mainstreaming is not only a strategy for increasing the participation of women but also integrating the knowledge, experiences and interest of women and men in developmental scheme of things.

Gender analysis on the other hand, is a systematic process of considering the impact that a development policy, programme or project may have on females and males on the economic and social relationship between them. It provides a basis for robust analysis of the difference between women’s lives (their roles, status, positions, and privileges) and this removes the possibility of analysis being based on incorrect assumptions and stereotypes (Alaga 2011).

The purpose of gender analysis according to GNAT (2014) is to ensure that development of project and programmes fully incorporate the roles, needs and participation of women and men. It requires separating data and information by sex and understanding how labour, roles, needs and participation are divided and valued according to sex (whether one is a woman or man).

Gender analysis therefore seeks to examine the differences in women’s and men’s lives including those which lead to social and economic inequality for women and applies this understanding to policy development and service delivery. Alaga (2011) opined that it aims to achieve positive change for members of a disadvantaged gender group.

Youth as a concept

Youth is best understood as a period of transition from dependence of childhood to adulthood and independence (Nwachukwu and Ekanem, 2016). Youth are known for their energetic, exuberant and dynamic nature. They are risk takers considering their limited level of responsibility and are mostly those who are materially dependent. In some extent, they need adult supervision.



The United Nations for statistical purposes define youth as males and females between the ages of 15 and 24 years. This definition of specific age range, vary depending on culture and race. An individual's actual maturity may not correspond to his/her chronological age, as immature individuals exist at all ages.

Security Conceptualization and Community Policing

Adebayo (2011) defines security as a measure that ensures peaceful co-existence and development at large. According to Alaga (2011), security is a public good that is necessary for ensuring individual and collective safety, stability and development. It is the primary function and responsibility of the state to deliver this public good, "security" to its people and communities in an appropriate and accountable manner as to prevent conflict and foster development. Whenever this public good is deficient, the opposite appears, that is the rule by force, which in turn tends to contribute to the eruption of violent conflict (Jaye and Alaga, 2010).

The 1994 Human Development Report defined human security as people's safety from chronic threats and protection from sudden hurtful disruptions in the pattern of daily lives. It can be defined as freedom from pervasive threats to people's rights to safety and lives

The above assertion among others may have ushered in the concept of community policing which was introduced in the United States in the 1970's. Enshrined in this concept is a philosophical context of integrating individuals and members of the public into the police agenda typically, not as police but as co-collaborators in national security effort for effective operation (Wong, 2009). Community policing is a strategy aimed at achieving more effective crime control, reducing fears of crime, improving quality of life and police service as well as its legitimacy. These goals according to Gbenemene and Adishi (2017) can be achieved through proactive reliance on community resources seeking to reduce crime causing conditions such as building relationships with the rural communities and creating partnership and strategies for curbing crime and disorder. This calls for a complementary role of members of the public in security related matters rather than leaving the bulk of the job with the Police.

According to the United Nations (2020), community-oriented police is an approach that not only strengthens the bond between the police and the community but also enhances the public confidence and community cooperation towards the police.

Gender dimension in security effort

Although, women have made consisted and notable efforts in peace and security at communities, national, regional and global levels, they are still underrepresented in the official process for peace

and in decision making in post crisis settings. Such peace process, that marginalizes, ignores, or excludes women are unlikely to lead to sustainable peace (Ebo, 2011, Clark, 2012). However, within the context of this paper, women leaders have played significant roles in peace and security efforts. Inspiring examples of women leaders who have contributed towards restoring peace and security include that of Leymah Gbowee and Comfort Freeman in 2003. They were presidents of two different Lutheran churches and leaders of Women in Peace- building Networks (WIPNET). These two women in collaboration with other women, pushed for the disarmament of the fighting factions in Liberia before signing a peace accord, thereby making a relevant contribution towards the peaceful resolution of years of conflict. According to UN-Women, (2012), two women, Ana Guadalupe Martinez and Maria Marta Valladares, signed the Chapultepec Agreement that put an end to the conflict in El Salvador in the early 1990s - a sign of the comparatively high level of representation of women in the leadership of the Farabundo Marti National Liberation Front (FLMN). Two other women, SemaWali and Amena Afzali, also signed the Bonn Agreement in 2001. The women were invited as part of the delegation of the former monarch, Mohammad Zahir Shah, in contrast with all-male delegations representing the Tajiks, Uzbeks and Hazaras of the Northern Alliance, on one hand and the Pashtuns on the other.

In Nigeria, efforts have been made by the Nigerian section of the Women's International League for Peace and Freedom (WILPF), to advance women's rights, prevent insecurity and promote equality. These attempts were to enhance women's participation in peace-making as recommended in UN Security Council Resolution (Peace women, 2011). Despite these efforts, Nigerian women are still under-represented and unless there is a full participation of women in security effort and decision making positions, a fully stable, peaceful and violence free society may remain elusive (Arokoyu and Enebeli, 2015).

Youth and rural security initiative

Rural youth make up a large segment of the total rural population however they are often neglected and overlooked by government policy makers and international agency for development strategists (FAO, 1995). This can be attributed to large part of the overwhelming concern to immediate solutions to problems of national development, with an accompanying inaccurate perception that youth are violence prone, non-productive and non-contributing members of the society. Young people for the most part, have limited opportunities for participation in community development programmes and most often are unable to speak out on their own behalf. For many countries, it is assumed that formal education is all

that is needed in response to the needs of the youth, therefore other options and opportunities such as non-formal educational programmes are often poorly supported or not even considered.

In the traditional Nigerian society, the youth are involved in discussing social and political issues, they execute public works and related community development activities. They participate actively in promoting the well-being of the entire community.

Today, Nigerian youths are hardly contributing meaningfully to community development due to poor participation in community and national issues. Okunola (2002) identified certain factors responsible for this poor participation of youth in community and matters as: the socio-economic scourge of illiteracy, poverty, diseases, hunger, cultural contamination, unemployment and political uncertainty.

Inclusion of youths in rural development such as security related issues, peace-making and peace building activities implies approaching young people not as mere toolkit for development but as co-actors and citizens in socio-political endeavours both at rural and national levels, granting them the opportunities to engage in meaningful activities. Mainstreaming young people in security initiatives became imperative at the formation of Civilian Joint Task Force (CJTF) in 2013 in the North Eastern States of Yobe, Borno and Adamawa following the frustrations orchestrated by *Boko Haram* insurgence who systematically integrated gender and youth dimension into their act of terrorism. Currently, over 25,000 young men and women have been recruited into the CJTF, contributing enormously to “the success recorded in Nigerian counter-insurgency operation” (Reliefweb, 2017).

Barriers to effective gender and youth inclusion in rural security

Cultural barrier and gender stereotyping

Nigeria like most African countries is patriarchal in nature and this is reinforced by societal norms, attitudes and practices which depend upon an understanding that males are superior, more powerful and that they represent the ‘norms’ whereas women are regarded as inferior, lacking in power and autonomy. This culture is embedded in the traditional institutions and within the political frameworks, where male supremacy prevails over the female in leadership structure in the family, community, and the larger society. According to Jakobsh (2012), the power, prestige and privileges of those in position of power, generally males, depend on the subordinate position of women.

Stereotyping is a serious obstacle facing women in security related activities. This discriminatory attitude is often veiled in inaccurate ‘facts’ about women capacity for leadership in conflict resolution. Women are presented as not aggressive enough, lacking the self-confidence

required for the position and not being serious enough about their careers to climb to top managerial ladder. Despite the overwhelming evidence that these stereotypes are wrong, they still persist, and this may not be unconnected to the cultural norms and values specific to the Nigerian society.

Inadequate support for capacity building

Despite the huge financial resources in Nigeria, the quality of human, institutional and infrastructural capacity has been adjudged to be grossly inadequate (Ejumudo, 2013). This lack of adequate capacity building has affected the way public resources, projects, activities and programmes are managed in Nigeria, resulting to inequitable access to education, health care and other opportunities that affect women and young people more. Women and youths in Nigeria are given limited access to credit and finance, which may be part of the limiting factors for their inadequate capacity building.

Strategies for breaking the barriers and achieving peace and security

Transformative and inclusion approach

One of the important strategies towards the creation of gender equality in security and peace building efforts is the strengthening of women’s participation in leadership and in decision making positions. However, to empower women and promote women’s leadership, transformative change is needed. This should involve the coordinated efforts of men and women in changing the existing practices, ideas, and distribution of power and resources that exclude women. According to Cordaid and WO=MEN (2010), transformative change is both about changing specific decisions affecting people’s lives and changing the way decision making happens into more inclusion and democratic process. As transformative change challenges existing power relations at all levels of society, it is crucial that change is sought through an inclusive approach that minimizes the risks for women who take up leadership positions and for men who become change agents in their families, communities, and societies.

Strong recognition of human security

Human security is a concept that is built on the value of human dignity, instead of economic and political interests of states. It can be regarded as global common good that intends to benefit the larger collection of peoples. It is fundamental to achieving gender equality in peace and security process because it has the potency of promoting the right of both men, women and young people in all issues regarding to human dignity and protection.

Adoption of gender responsive peace process

United Nations Security Council Resolution (2000) on women, peace and security, called for special measures to protect women and



girls from gender related violence and for consideration to be given to the special needs of women and girls during post-conflict reconstruction. The resolution also demanded that for peace and security to be sustained, women must be empowered, their voices must be heard, and they must be included as active participants in conflict prevention, management and resolution. Cordaid and WO=MEN (2010) state that when women are actively involved, peace agreements are more credible and cover a broader range of issues.

Creating a community security expert agency

In order not to arm people who will end up terrorizing those they were meant to protect, States should endeavor to establish a community security expert agency to develop a clear-cut mode of operation, areas of jurisdiction and specific responsibilities for rural community security personnel. This in addition should include organizational chain of command and regulations to ensure accountability and adherence to protocol stipulations.

CONCLUSION AND RECOMMENDATION

Gender mainstreaming and youth consideration in securing rural areas is crucial to Nigerian national security agenda. However, stereotyping in gender which encourage male domination and see the female gender as inferior is a major factor limiting gender equality in peace and security matters. This culture has been embedded in the leadership structure of Nigeria where the most critical positions are taken by men while the women take the back seats and play the traditional supportive role. Even when women are engaged in peace negotiating efforts, their inputs are often not taken seriously enough. Be that as it may, there is no gainsaying that women make up half of human race and their role and contributions are very essential for cultivating more peaceful societies.

If Nigeria is to cultivate a sustainable route out of violence, crisis and poverty, women and youths should be core participants and contributors to Nigeria's political and security architecture. At the rural level, government is encouraged to collaborate with organized security institutions to provide professional trainings for potential recruits.

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PERSPECTIVES OF GOVERNMENT'S POLICIES ON RURAL SECURITY IN NIGERIA: IMPLICATIONS FOR RURAL LIVELIHOOD

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ABSTRACT

This study examined policy measures adopted to address rural insecurity in Nigeria, given the high incidences of farmers-herders conflict, banditry, kidnapping, that have led to the loss of lives, and livelihoods, with millions of families displaced. Rural insecurity threatens the achievement of the Sustainable Development Goals that are targeted at addressing hunger and food security and ensuring peace, justice, and strong institutions in Nigeria. Policy measures of the government have not been very successful given the increasing spate of insecurity that has continued to undermine the socio-economic development of rural areas. Hence, this study examined the state of rural insecurity, its drivers and effects on livelihoods, adopted policy measures, the gaps in the measures, and alternatives that could be leveraged toward sustaining lives and livelihoods in rural areas in Nigeria. This study used documentary analysis, with data sourced from publications, journals, the internet, and personal observation. It revealed that porous borders and ungoverned forests contribute to rural insecurity and concluded that adopted policy measures have not been effective, given the dynamics of rural crime. It recommended that the community policing model should be adopted as a better prospect for securing rural lives and livelihoods in Nigeria.

Keywords: Rural insecurity, Government policies, Farmers-herders conflict, Rural banditry, Community policing

INTRODUCTION

Criminal activities in rural communities in Nigeria have been on the increase, with over a million people displaced and those killed running into thousands (United Nations High Commissioner for Refugees, UNHCR, and the World Bank, 2016; Amnesty International (2018). While the northern part of the country is bedeviled by the attacks of *Boko Haram*, bandits, and herders, increasing spates of farmers' and herders' conflicts are prevalent in the south. Kidnappings for ransom have become commonplace, posing a social concern that puts the lives and livelihood of rural dwellers at the risk of being killed or kidnapped in their quest for a means of livelihood.

In line with the drive toward global peace, justice, food security, and elimination of hunger, the government has over the years adopted several policy measures to address rural insecurity. While some of the measures have contributed positively to the fight against insecurity, the draconian dimension that rural insecurity is taking in recent, calls for a review of these measures, with a focus on approaches that ensure the lives and livelihood of rural dwellers are preserved and sustained.

Although several studies on insecurity have been carried out in Nigeria, most of them have focused on the socio-economic implications of insecurity (Abubakar, Salihu, and Alheri, 2017; Basiru and Osunkoya, 2009; Nwozor, Olarewaju, and Ake, 2019). Studies on government policies on rural insecurity in Nigeria remain a major research gap. Rural insecurity, which was previously occasioned by pockets of conflicts between farmers and herders has escalated to more lives and livelihood-threatening dimensions. With the

narrative of religious extremists like the *Boko Haram*, banditry, and kidnappings for ransom that pervades the highways and most rural communities, the need to examine the policy options that have been implemented by the government becomes imperative.

Hence the main objective of the study is to examine the policies that have been adopted by the government to address rural insecurity and suggest alternative policy options that could be leveraged for the sustenance of lives and livelihoods in rural communities for national development. Specifically, the study analyzed rural insecurity, its drivers, and effects on rural livelihoods in Nigeria, policy measures adopted by the government in addressing the insecurity problems, the gaps in such policies, and alternative policy options for national development.

METHODOLOGY

The study used documentary analysis, with data sourced from government publications, the internet, articles, and media sources that addressed the themes of the study. Also, personal observations of trends in rural insecurity and policy options of the government are used for the study.

State of Insecurity in Rural Areas of Nigeria

The constant threat to national security by religious, political, cultural, and social contradictions has resulted in various forms of criminal activities that have seriously affected the livelihood of rural dwellers in Nigeria. The serenity of rural areas enjoyed in the past has changed due to *Boko Haram* attacks, banditry, farmers' and herders' clashes, and communal clashes. These clashes are usually marred with religious and ethnic undertones,

with high incidences of abductions, a situation that has metamorphosed into kidnapping for ransom. A report by Assessment Capacity Project (ACAPS, 2015) revealed that over 1.8 million people have been displaced in Nigerian rural areas due to insecurity. Amnesty International (2020) reported that rural communities in Nigeria are threatened by rampaging gunmen who have killed over 1,000 people between January and August 2020, with most of the victims in the northern part of the country. The spate of killing has remained unabated, spreading to the southern part of the country.

Studies on rural insecurity in Nigeria have focused on perpetrators of the crime such as the *Boko Haram* (Abubakar, *et al*, 2017), Vigilante groups and policing in Nigeria (Basiru and Osunkoya, 2009), terrorism impact on agriculture (Jelilov, Ayinde, Tetik, Celik, *et al*, 2018), and a nexus between insecurity and food challenges (Nwozor, *et al*, 2019), and many similar studies.

Drivers of Rural Insecurity

Rural insecurity in Nigeria has been attributed to several factors, some of which are highlighted below.

- 1 **Resource Competition:** This is exemplified in the competition for land and water resources between farmers and herders. In their quest for pastures and water for their cattle, conflict ensues between farmers and herders, with the herders accused of destruction of crops and contamination of drinking water sources (Blench, 2004; Ofem and Inyang, 2014). The insecurity in the north has also led to a mass exodus of farmers and herders to the south, further increasing the burden on the already scarce resources and contributing to pockets of insecurity in several communities in the south.
- 2 **Terrorism:** The *Boko Haram* insurgent group constitutes a threat to the socio-economic survival of many communities in Northern Nigeria. Norwegian Refugee Committee in the year 2015 reported that over 2.6million people have been displaced by the *Boko Haram* insurgency majority of whom were rural residents (UNHCR, and World Bank, 2016). The porosity of the national borders in most northern states with little or no presence of security personnel enhances the migration of criminals from neighbouring countries into border communities in Nigeria (Ojewale, 2021).
- 3 **Banditry:** Activities of the bandits fuel insecurity in several states in the north. Apart from attacks on communities, a new dimension to banditry involves the kidnapping of individuals and groups, sometimes as large as hundreds of people from communities. Since the kidnap of about 230 girls in Chibok, Borno State in 2014 (BBC, 2014), the kidnapping of students by bandits has been on the rise. In

2020, 344 students were kidnapped in a school in Katsina state, and another 80 students from an Islamic school about the same period (Wahab, 2021). In a similar report, about 140 students were kidnapped from a school in Kaduna state in 2021 (BBC, 2021), and about 136 students were kidnapped from an Islamic school in Niger state in 2021. Between January and August 2021, approximately 111 kidnappings for ransom were recorded in Nigeria (Ojiego, 2021). Most of the cases occurred in Niger, Sokoto, Katsina, and Zamfara state where the activities of the bandits are prevalent (Ojiego, 2021).

Religious centres have also been targeted by these nefarious activities (Bello, 2021; Sabiu, 2021). In Kaduna State, about 100 people were abducted from a worship centre in 2021 (Okhaine, 2021).

- 4 **Ethnic, Religious, and Inter-communal Restiveness:** The agitations over land and political relevance have been a long-standing issue that is contributing to insecurity in several rural communities in the country. For example, the struggles for land, political supremacy, and socioeconomic status in *Aguleri-Umuleri* and *UmobaAnam* communities in Anambra State, which started in 1964, and re-occurred in 1999 led to the loss of lives and destruction of properties (Ibeogu, Abah, and Chukwu, 2019). Similarly, insecurity in states like Plateau, Kaduna, Benue, etc., is triggered by ethnic and inter-communal or religious differences.
- 5 **Rural Unemployment:** The high rate of rural unemployment strongly correlates with the growing concerns that insecurity constitutes in the rural areas in Nigeria. The increase in rural unemployment from 4.2% in 2010 to 28% in 2020 (National Bureau of Statistics, NBS, 2018;2020), is a major contributor to insecurity in rural areas in Nigeria (Balogun, 2021). Frustration due to the lack of employment opportunities was recognized as a major contributor to the political, and ideological unrest that permeates most parts of the country since such youth readily take up arms in exchange for small amounts of money (Federal Republic of Nigeria, 2019).

Effects of Insecurity on Rural Livelihood

The effects of insecurity on rural livelihood are highlighted. Firstly, insecurity has resulted in the loss of thousands of lives; with a multiplier effect on the livelihoods of rural households. Amnesty International (2018) reported 312 incidents of attacks and reprisal attacks in several states in Nigeria between January 2016 and October 2018, and as a result of these attacks at least 3,641 people may have been killed, 406 injured, 5,000 houses burnt down and 182,530 people displaced.



Secondly, the protracted conflicts between farmers and herdsmen have resulted in the damaging of crops and livestock which could have otherwise improved agricultural productivity in the country (Ofuoku and Isife, 2010; Babagana Ismail, Mohammed, Dilala, *et al.*, 2018). These conflicts affect rural and urban food security and increase inflation (Abubakar *et al.*, 2017).

Thirdly, a large number of farmers have been displaced from their communities, and the frequent clashes discourage many farmers from going to the farm because of the fear of being killed (International Crisis Group, 2017).

Fourthly, women and girls are exposed to exploitation, trafficking, sexual abuse, and forced labour in the process of fleeing their region for protection (WHO, 2017).

Finally, the educational development of children in rural areas is seriously affected by insecurity, with implications for the attainment of the SDG that is targeted at bridging the inequality gap in the country. The United Nations Children's Fund (UNICEF, 2015) reported that between 2012 and 2014, over 300 schools were destroyed, 194 teachers killed, and 314 school children killed in rural communities in Nigeria due to terrorist attacks. The recent spate of kidnappings of children in their schools will further affect the enrolment rate in schools, thereby reinforcing poor human development in the country.

Government's policy responses to rural insecurity in Nigeria

Growing concerns for the preservation and sustainability of rural lives and livelihood in Nigeria led to the adoption of several policy measures by the government. While some of these measures are implemented at the national level, others are regional or state-specific, depending on the nature and spread of the insecurity concern.

National policy measures

1. The Use of Police and Other Security Agencies

While the police are primarily saddled with the responsibility of ensuring peace and security in communities, the role of the Nigerian police in ensuring rural security is however limited. Firstly, a police force of a little above 300,000 is grossly insufficient to police a population of over 200 million people. This implies one police officer to 677 people, which is lower than the international standard of one police officer to 450 people (Ighobor, 2021). Secondly, most of the police officers in Nigeria are concentrated in urban areas, leaving the rural areas open to insecurity challenges (Balogun, 2021).

2. Establishment of other Special Forces

Special forces of the police and military have also been established to check insecurity by different government regimes in several states (International Crisis Group, 2017). These

institutional security structures over the years have made little progress in the rural areas, which are generally bereft of adequate security personnel.

3. Establishment of Grazing Reserves

One of the foremost steps that were taken to curb the farmers' and herdsmen's conflicts over land and water resources in Nigeria is the establishment of 415 grazing reserves in 1965, to create corridors for the passage of migrating herdsmen in search of fodders. However, urbanization and population growth have led to situations where the grazing routes are used for residential or farming purposes. An attempt to reaffirm the National Grazing Reserves through the 2016 National Grazing Reserve Bill was not successful. It was contended by the southern governors as a plot by the government to usurp their authority of land ownership since the Land Use Act (1978) was already in place (Mustapha, 2019).

4. Proposed National Livestock Transformation Framework and Cattle Colony

The National Livestock Transformation Framework was proposed in 2018 to establish cattle colonies across the country, with the colony planned to cover about 5,000 hectares of land (International Crisis Group, 2017; Mustapha, 2019). The proposal also did not get widespread support due to the dichotomous nature that rural insecurity, vis-à-vis national insecurity has taken, as it is seriously polarized along political, ethnic, and religious lines.

Regional/State Policy Measures

1. The Civilian Joint Task Force (CJTF) in the Northeast

The CJTF is a model of community policing that was established to assist the formal security formations to diffuse communal tension, early detection of crime spots, and rapid response to prevent crime and tackle cases of violence in communities (Abdulyakeen, n.d). The CJTF was established in the Northeastern states like Borno, and Adamawa, where their efforts have been commended. For instance, in Adamawa state, the collective efforts of the CJTF led to the killing of about 75 *Boko Haram* members in the state, a success that was possible because of the robust intelligence and early warning system that helped in tracking and monitoring the communities (Abdulyakeen, n.d).

2. Amotekun Security in the Southwest

The growing concerns for kidnapping along rural routes on the southwestern highways and the activities of herdsmen who invade rural communities committing mayhem, and the failure of the formal security agencies to curb the growing trends, led to the formation of the regional security outfit in the southwest. *Amotekun* Corps, which is a Yoruba word for "one that looks like the leopard", was established in 2020, as a joint security outfit by the Southwestern governors to check insecurity in

their states. Adeyemo (2020) reported that as of December 2020, *Amotekun* has arrested and prosecuted over 500 criminals in the last 12 months, with over 250 serving jail terms in Ondo State.

3. *Ebube Agu Security in the Southeast*

The growing concerns over herdsmen attacks and kidnappings in rural communities in the Southeastern states led to the establishment of *Ebube Agu* in 2020. The governors in the region have also made efforts to ensure that the states' assemblies enact state security laws to give backing to the regional security efforts in the region (Okutu, 2020).

4. *Banning of Open Grazing in the Southern States*

On July 5, 2021, the seventeen southern states moved to establish legislation against open grazing of cattle before September 1, 2021 (Vanguard, 2021). They proposed the need for the federal government to develop alternative and modern approaches to livestock management as a way of finding a lasting solution to the longstanding conflict between herders and host communities in various parts of the country and the south in particular. The policy option was however criticized by the northern counterparts, who see it as discriminating against the herders, who are from the northern extraction. States like Bayelsa, Rivers, Oyo, Ekiti, Abia, Lagos, and Ondo have passed laws that prohibit open grazing of cattle in the states, while some are at various stages of enacting the laws (Vanguard, 2021).

5. *Closure of Markets in Some Northern States*

The closure of markets in some northern states was adopted to curtail the access of armed bandits to food and other necessities, with the understanding that when they are deprived of these essentials of life, it will expose them to vulnerabilities and ease of being subdued by the government security forces. The measure was used by states like Kaduna, Katsina, Niger, Zangarewa, etc. Unfortunately, bandits took advantage of the measure to raid homes and loot foodstuff to stockpile, due to the absence of communication mechanisms for distress calls (Premium Times, 2021a).

6. *Shutting Down of Telecommunication Networks*

One of the very recent efforts of the government towards addressing the rural insecurity in some northern states is the shutting down of the communication networks to check the activities of bandits. For example, in September 2021, the Nigerian Communication Commission (NCC) shut down the telecommunication networks in states like Zamfara, Katsina, and Sokoto (Premium Times 2021a; 2021b).

Gaps in Policy Response

The policy options of the government over the years notwithstanding, rural insecurity has remained a major challenge in Nigeria. A look into the policy options of the government reveals a faulty design or implementation of the measures. Some of the gaps observed in some policy options on rural insecurity are listed.

1. The propensity to use excessive force on citizens by the police (Ighobor, 2021) has led to mistrust of the police and created barriers to cooperation in ensuring rural security.
2. The failure to demarcate the grazing routes hinders the access and usage of these reserves by herders (International Crisis Group, 2017; Mustapha, 2019) and exacerbates rural insecurity.
3. The call for cattle colonies in the states failed on ethnic grounds because the government failed to operationalize the policy in line with the Land Use Act (1978).
4. The unsuccessful passage of the National Grazing Reserve (Establishment) Bill 2016 was resisted as a duplication of the Land Use Act of 1978.
5. The porous borders remain major points of entry for international armed groups into the country and the failure to address the porous borders and ungoverned forests in rural areas would continue to undermine efforts aimed at addressing rural security.
6. While the anti-open grazing laws may be laudable, the failure to implement such laws at the national level undermines states' efforts due to the underlying religious and ethnic interpretations that mar their passage in the states where they are presently being implemented.
7. The community policing models that the government initiated in the past, had limited local participation, a top-bottom framework, which is not likely to succeed and, in some cases, such models are ridden with religious, ethnic, and political intentions.
8. The policy measure of closing telecommunication networks in states that are seriously affected by bandits lacks legal justification as it denies citizens access to communication with the outside world, threatens their means of livelihood, and denies them access to distress mechanisms.

Alternatives to addressing Rural Insecurity in Nigeria

1. *People-Driven Community Policing Model*: The community policing model that has been adopted by the government operates a top-bottom approach. A



workable model of community policing should be a bottom-up design approach, with the involvement of the community members from the design to the implementation. This should be seen as a national security concern, rather than the regional or state efforts as are presently practiced.

2. Social Marketing is an essential tool for behavioral change that can be adopted by the government to address the problem of public distrust of security personnel and the various ethnic and religious dissenting views that are contributing to the insecurity in rural areas in the country. Given the new technologies that are driving social engagements globally, the government could leverage their benefits to sensitize the public on issues of national unity, and ethnic and religious tolerance, as there are points of cohesion that amplify the strengths of the nation, compared to the disagreements that divide.
3. Government can also establish peace commissions in various rural communities, with a localized framework that will reduce farmers-herders conflict in rural areas. A one-size-fits-all measure is limited, hence, community customary courts should be revived and empowered to address local problems, as was the case in the past.
4. Government should implement programmes under the Green Wall Initiative, which is aimed at restoring the degraded landscape along the Sahara in Africa. This will help mitigate the negative effect of climate change which has been the push factor for farmers'/herders' migration in search, and competition for scarce resources. The United Nations Convention to Combat Desertification (UNCCD) (n.d) noted that the successful implementation of the National Strategic Plan of the National Great Green Wall in Nigeria's Great Green wall corridor, will effectively address issues of farmers and herders clashes and reduce the extreme poverty in the areas.
5. Policies to address social deprivations in rural areas such as rural infrastructural development should be considered, and pro-rural employment policies should be implemented.

CONCLUSION

In Nigeria, rural insecurity is on the rise, evident in the activities of *Boko Haram*, bandits, farmers/herders' conflict, kidnappings, and ethnic, communal, and religious clashes. The policy measures adopted by the government have not been successful in sustaining peace and security in rural

areas. Policy measures that are people-centered and the implementation of policies that address the social deprivations that predispose the rural areas to the vagaries of insecurity are key to addressing rural insecurity in Nigeria. The study, therefore, recommends the following:

1. Community members/associations should form the backbone of how their communities should be guided and included in structures to drive community policing efforts
2. There is a need for social re-orientation of rural dwellers, vis-à-vis the entire population on the need for behavioral change on national unity, irrespective of ethnic background and religious inclination.
3. The government should focus on addressing the social deprivations in the rural areas that contribute to insecurity, especially infrastructural development and the creation of employment opportunities for the rural youth.

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COMMUNICATION STRATEGIES FOR MANAGING FARMERS/HERDERS' CONFLICT IN OYO STATE

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ABSTRACT

Conflicts are neither constructive nor disruptive, but the ways they are handled make them either positive or negative. The farmers/herders' conflict between crop farmers and cattle breeders has reached unprecedented levels, with the enormity of destruction to lives and properties. Considering that effective communication techniques are viable in preventing and scaling down conflict, this study seeks to examine the decentralized nature of the media as a support mechanism to physical advocacy in conflict resolution. It seeks to analyse the use of social media by the government in dousing farmers/herders' conflict, and its implication for good governance. The expansion of the media as an agent of communication through which government engages its citizens from its traditional forms to digitalized media has become personalized today with the proliferation of social media. This has created diverse and multiple platforms for government to disseminate and, on the other hand, receive immediate feedbacks that facilitates instant response and action. Adopting a qualitative method, data is obtained through secondary sources, and content analysed. Through discourse analysis of government responses of the executive leadership of Oyo state on Twitter, the study revealed that the government values the importance of social media as a dispute resolution technique, especially on volatile issues such as the farmers/herders' conflict, which in most instances takes on ethnic and religious undertone. Though some farmers and herders may not engage in tweeting, since most of them are usually illiterate and may not bother to take on sophisticated sections on their gadgets. However, considering the unlimited reach of social media and that conflicts of this nature are usually escalated by other groups on social media, the importance of social media as a support strategy for resolving conflict is apt. On the way forward, it recommends that upward communication through social media with appropriate channels of response will facilitate feedback information that will douse the conflict and help promote good governance.

Keywords: Conflict Resolution, Communication Strategies, social media, Twitter

INTRODUCTION

The global landscape of information is changing rapidly. Dissemination and control of information is no longer linear, as it has diffused to different segments and individuals in the society. Conflict is an inevitable part of every human society, and the way conflict issues are communicated and reacted to goes a long way to determining the impact of such conflicts. Zeitzoff (2017) argues that compared to conventional weaponry, modern communication technologies have a more indirect impact on conflict. Information dissemination is influenced by new technologies in particular, which is important for leaders and parties to the conflict. Gilboa (2009) stresses that people may obtain news from various sources, up-to-date information on events and processes, and various points of view thanks to the internet and social media. Additionally, it enables previously unheard-of levels of interaction, from straightforward talk-back to blogs and the posting of text, images, and videos on Twitter, YouTube, Facebook etc. Modern cell phones and social media have sparked the creation of "citizen journalists," who are able to instantly report on occurrences in their homes and on their streets to the entire world.

In today's digital age, the flow and exchange of information are crucial to maintaining a holistic public order, especially in a plural and diverse society like Nigeria. Awosusi and Ogbuleke (2019) assert that the peace or lack thereof in a

society is dependent on the control and management of information. Zeitzoff (2017) avers that social media is increasingly playing an important role in conflict and contentious politics, used by politicians, leaders, insurgents, and protestors as a tool for communication. He defines social media as sites for networking and electronic communication that enable users to follow and exchange ideas with others in an online community and share information (text, photographs, videos, etc.) Facebook, Twitter, Snap Chat, Instagram, WhatsApp, and LinkedIn are popular social networking platforms. There are currently more over 300 million active Twitter users and over 1.8 billion active Facebook users, respectively. This number is anticipated to rise as more than 50% of the world's population has access to the Internet (mostly through mobile devices) and as the developing countries and Africa experience rapid economic growth (Zeitzoff, 2017).

Zeitzoff (2018) posits that information technology advances have altered the path of conflict in history by changing the way leaders communicate to their armed forces, interested audiences, and even the monitoring of events. Social media and other new media platforms have been used to hold governments accountable, bring individuals together to protest, coordinate relief operations, empower citizens, give the knowledge to calm tensions and establish understanding bridges across borders in some circumstances (Rohwerder,

2015). The ubiquity of these tools and their accessibility, particularly amongst urban and people in the rural areas, has increased its potential as a tool in conflict situations to capture in real-time the occurrence of the conflict, which is usually lacking in traditional media, and to get a clear picture and design appropriate conflict de-escalating measures.

Uzuegbunam and Omenugha (2018) affirms that communication experts have continued to argue that communication and the power of the media are viable solutions for resolving conflicts in situations such as Nigeria. In the same vein, Schoemaker and Stremmlau (2014) assert that because a networked population has more access to information, more opportunities to engage in public speech, and a better ability to take collective action, social media leads to social change. However, given that our mainstream media's blight is epitomized by ethical concerns of ownership and governmental control, the extent to which these traditional media can continue to contribute to engendering peace and violence-free Nigeria effectively has remained dubious. Asides from the institutional factors that constrict traditional Nigerian media from effectively checking and reporting on farmer/herder conflict, its lack of immediate, interactive, and open communication flow limits its effectiveness in managing conflicts.

The case of Oyo state

The crisis that besets the southwest and Oyo state, caused by the migratory push of herders into various communities in the region in search for viable lands to feed their livestock has increased the potentialities for conflict of ethnic and economic cadences. This relatively new phenomenon in the southwest thus poses a challenge to the government of the various states, specifically in the management of the conflict through dialogue. Dialogue as a tool of conflict mediation requires collaborative, responsive and open communication platforms, which the new media outlets offer. (Hagen *et al.*, 2020) affirm that the surge in the use of social media by political actors has been visible over recent years as their strategic value in politics and electioneering has been well documented. However, it has been widely suggested that public agencies underutilize social media by focusing on limited, one-way communications to push information out to citizens rather than engaging the public in collaborative, multidirectional communication. This underutilization might result in missed chances to transmit important information to vulnerable publics and mediate effectively in conflict situations

The primary social media tool, which this study focuses on, is the Twitter platform. Twitter is a microblogging service that allows users to share their thoughts and happenings with anybody who follows them. Individual accounts, communication, relationships, and time are all available on Twitter, making it ideal for reenacting historical events.

Followers of Twitter reenactments get real-time updates when historical figures in the reenactment "communicate" by sending tweets, or Twitter messages, about what is going on. The 140-character messages are sent as close to the time and day of the actual event as feasible, and they are written in the present tense to give the impression that they are occurring in real-time (Jensen, Caswell, Ball, and Duffin n.d).

In the face of the persistent clash between farmers and herders over land in Oyo state, and the volatility of ethnic resentment that fuels this crisis, it becomes imperative to adopt a fluid and responsive communication channel to manage and resolve these conflicts. This is particularly so, because most of the conflicts that emanate between herders and farmers are escalated through social media, thereby leading to reprisal attacks and extension of the conflicts even in locations without direct contact to the initial conflict (Kabir, 2021). Nigeria's multiethnic and religious dimension further exacerbates these conflicts (Baderinwa, 2019), as most herders are from the Fulani extraction and farmers from the indigenous settlement. The vast technological and digital platforms that exist in today's world at the disposal of government and its relevant agencies makes it imperative for enhanced communication processes. New media differs vastly in scope and utility compared with the traditional forms of media communication used by the government in the past. The interactivity, digital, virtual, and other characteristics of new media make it a suitable option for effectively managing conflicts. Communication strategies have expanded beyond the tentacles of traditional media. Opeyemi (2020) posits that the past decades have positioned social media as the central channel of communication enhanced by flexibility and easy connectivity. The proliferation of social media channels offers a myriad of opportunities for government to manage and effectively control its population, especially in times of crisis and security glitches that require quick and responsive solutions.

The position of this paper is to highlight the importance of adopting a "flexible, interactive, and multidirectional" channel of communication in de-escalating and managing the conflicts between farmers and herders in Oyo state Nigeria. While the importance of one-on-one advocacy, mediation and negotiation cannot be de-emphasized as conflict resolution tool, the paper argues that the social media which is a major channel for blowing conflicts of this nature out of proportion is a convenient platform for managing the conflict and reducing its effect. Thus, relevant examples of where it fits and how this channel of communication has proven effective in dosing and resolving conflicts in the region are explored in this paper.



METHODOLOGY

The spatial scope of this paper is Oyo state Nigeria. Though herders/farmers clashes are rife in almost all states of the Nigerian federation, the choice of Oyo state is however premised on the incessant crisis between herders and farmers that informed the non-state intervention of Chief Sunday Igboho. The study adopts a qualitative method by observing the content of social media post of selected individuals. Data for this study would be mainly gathered from primary and secondary sources and would be largely qualitative. Primary data for this study will be derived from content overview of social media posts on the Twitter Platform of the governor of Oyo state, analysed by semantic of conflict and resolution reflecting responses to farmer/herders' conflict and time series analysis to highlight the frequency of interval responses to farmers herders/conflict in his state. Secondary sources would include journal articles, texts and newspapers. The chief executive officer of the state who is the governor and the frequency of tweets addressing the issues of farmer/herders' conflict within his jurisdiction determined the sampling procedure adopted for the study. The sample size is Oyo state, and this is necessitated by the proactiveness of the governor who has the sole duty of ensuring security of lives and property and safety of his citizens. His persistent use of social media for quick and effective communication in times of conflict justifies the use of Oyo state.

Theoretical framework- *Techno Optimism*

Techno optimism hinges on the assertion that technology plays a key role in good prevailing over bad. Techno-optimism comes in both stronger and lesser varieties. The strongest forms of techno-optimism assert that technology is both necessary and sufficient to ensure that the good outweighs the bad by a wide margin; the weakest forms assert that technology is both necessary and sufficient to ensure that we cross the preponderance threshold by a narrow margin. These two extremes are separated by moderate positions (Danaher, 2022)

Kidd and McIntosh (2016) see techno-optimism as an approach that emphasizes social media technologies' potential to solve social problems. They emphasize that the magnitude of such concerns varies significantly, covering both global challenges such as climate change and proportionately more minor problems, such as encouraging participation in the democratic process, or the case of this study, resolving clashes between herders and farmers in Oyo state. McLennan (n.d) posits that this optimism is based on the notion that internet networking and social media offer a dis-intermediated and participatory environment for a wide range of actors to interact and collaborate. Leveraging on social media for communication in farmer/herder crisis by the government creates opportunities to succinctly address firsthand and in-

person without misinterpretation, the appropriate course of action and thus mediating between the parties to the conflict to help prevent the degeneration of the conflict into a full-blown crisis.

RESULTS AND DISCUSSIONS

Like so many governors, who have taken to social media to communicate with their audience, Seyi Makinde has been one of the political figures on the Twitter platform who disseminate and engage the audience on issues of governance in Oyo state. With Retweets and mentions as the most common way to for tweeter users to respond and communicate with one another (Conover *et al.*, 2011), the results and analysis of this study will be done using the retweets and mentions on governor Makinde's Tweets.

Retweets are a type of endorsement that allows users to rebroadcast content created by other users, thereby increasing the content's visibility. Mentions have a different purpose since they allow people to directly address a specific user via the public feed or refer to someone in the third person. These two modes of communication serve different and complementary roles on Twitter, and together they serve as the primary tools for direct, public, user-to-user contact.

The content of the tweets by Governor Seyi Makinde included; acknowledgement of the occurrence of a clash, deployment of security agencies to the sight of the clash, assurance of citizens of appropriate government response to prevent retaliatory clashes in other areas, collaboration with northern governors to resolve the triggers of the clash, and dissemination of proactive measures to prevent future clashes. Due to the widespread use and dependence on mobile devices, social media has emerged as an essential medium for quick real-time communication during a crisis. In the case of Oyo state, the leadership of Governor Seyi Makinde, and his social media activities particularly in response to the crisis in his state reveals that his usage of social media channels through his handle was instrumental in the minimization of altercations in the state. Using the Sasa ethnic clash as an example, the governor was able to provide an immediate response via his social media handles, as particularly observed on his Twitter page, to notify the citizens of the conflict in the area and, more importantly, calm the tensions of the parties involved, with state agencies deployed immediately to resolve the situation.

With the frequency of farmers/herders' clashes in Oyo state, it became expedient for him as the executive leader and chief security officer of the state to engage citizens within the conflict arena and those outside on measures being taken to intercede and resolve the conflict. This approach proved quite effective especially in deepening citizen confidence and trust in the management process of the

farmers/herders' conflict in the state helping to prevent a full-blown crisis.





Fig 1: Few extracts of tweets relating to violent clashes in Oyo state.

Table 1: Governor Seyi Makinde's use of Twitter social media in response to farmers/ herders' conflict in Oyo state and citizens interactions

S/N	Date of Tweet	Likes parties to conflict	Comments by parties to conflict.
1	January 8, 2021	1.5k	119
2	January 20, 2021	1.2k	225
3	January 25, 2021	2.6k	450
4	January 27, 2021	3.3k	338
5	January 27, 2021	2.3k	311
6	January 31, 2021	1k	68
7	February 1, 2021	468	37
8	February 1, 2021	993	57
9	February 1, 2021	1.1k	125
10	February 2, 2021	384	43
11	February 14, 2021	875	166
12	February 15, 2021	828	78
13	February 15, 2021	1.2k	156
14	February 16, 2021	1k	78
15	February 23, 2021	904	217
16	March 8, 2021	1.2	198
17	June 6, 2021	222	17

On this Twitter handle from February 14 to 16th, all his tweets were in response to the clash, which acknowledged the situation, followed by an assessment of the damages, a state broadcast to reassure the citizens of safety and also images of visiting northern governors to the state to ensure a collaborative response to the crisis. His proactive response enabled using social media was praised by some civil society groups who claimed that his honesty, proactiveness, and integrity was vital to the resolution of the situation (The Guardian, 2021)

In another highlighted circumstance from the table above, using social media as a veritable means of communication to manage conflicts, in the aftermath of the Fulani invasion and killing of residents in the Ibarapa region of Oyo state, the governor, in his usual fashion, took to his social media pages on January 20 to immediately broadcast the state's response to the conflict. This was

followed by daily communication through his media handles with a total of 14 tweets from January 20 to January 27, 2021, addressing the residents of the area to leave the course of action to the state's security agencies while embracing peace that justice would be served accordingly. These two cases in Oyo state show that the social media channel of communication, through and by the governor himself, was instrumental in preventing an escalation that could result in crisis in the state. Citizen reaction to his prompt communications was also essential in the entrenchment of peace and stability in the affected communities, due to the calmness of knowing that the head of the state had committed resources to resolving conflicts in the affected areas.

Putting himself out through constant communication rather than reports by press operators was important in ensuring that the

aggrieved party had complete trust in the government through his open communication strategy facilitated using social media.

It therefore shows that leveraging on social media channels particularly twitter allows the elected representative of the state to communicate in person without the influence of second- or third-party channels, which could dilute the government's credibility in resolving the issues. Also, on the part of the citizens, the influence of social media on disputes may be both good and detrimental. Social media aids in the dissemination of conflict-related information, and the intention behind the dissemination on the part of citizens could be for being positive or harmful purposes. However, in instances as demonstrated above, where the leadership of the state has promptly addressed the issues it takes away the possibility of miscommunication, which is a major trigger to large-scale conflicts in human societies. In a positive light, social media also helps regular citizens contact directly with police enforcement whenever there are security concerns arising from the farmer-herder crisis, as feedback is instantaneous. (Ann, 2020)

Evidently, as more citizens spend much time on social media channels, the government can adopt this medium to disseminate information to the public, especially to parties of various conflicts, not necessarily parties by association, but parties by geographical proximity to the sight of conflict, results of which transmutes to dousing grievances in the contested locations. Which guarantees an instantaneous response to aggrieved issues for peaceful coexistence?

The synthesis of the preceding discussion can thus be aptly summed as

- The audience of the government is now on social media because of the widespread dependence on mobile devices, which makes it (social media) an essential medium for communication by the government during a crisis.
- Governors Makinde has regularly in situations of conflict utilized this medium to mitigate disaster.

In the cases of the Sasa ethnic conflict, Fulani invasion of Ibarapa, and other farmer/herders clash in Oyo state, social media has helped to

- Acknowledge the crisis and instantly respond to the clashes
- Disseminate and properly frame first-hand information to reduce public confusion and lessen the influence of conflagratory persons.
- Display statesmanship and collaboration, showing that the government was in control and building trust by attaching a face/personality to actions being taken to resolve the issues.

All of these is done with the speed of a button, as against traditional media processing.

CONCLUSION

As aforementioned, conflict themselves are not constructive or destructive, but the way they are handled determines how it turns out. This is particularly true in the case of Oyo state under the leadership of the governor, who found a viable and veritable means through social media communication to respond to conflicts promptly and assertively within the state. This was particularly effective, evident in the relative peace that obtained in the affected regions, in the aftermath of clashes. Until date, there has been little or no recorded cases of farmer/herders' clash in any part of Oyo state, and this can be partially attributed to the provocativeness of the governor through effective communication, and the devotion of required resources to mitigate tension. Conflict in today's digital age is largely regulated by the scale and kind of information around it. Proactive measures to contain and direct information flow, especially one that establishes confidence through response from the appropriate quarters of the state goes a long way in determining the outcome of any conflict. Social media platforms particularly offer governments of various states, the benefit of speaking to the public on conflict issues, in a manner that transcends empathy, concern and willingness to resolve and manage these volatile issues before it magnifies into intractable conflicts with severe consequences. While parties to the conflict may not directly be connected to social media, but the propensity for the conflict to escalate through social media misrepresentation becomes limited through effective communication strategies by the government. As reflected in Oyo state, the governor communicated through his twitter handle on the occurrence of farmer/herders' clashes in the state, which had the consequence of guaranteeing citizen trust and the trust of the parties to the conflict that the government was in absolute control and managing appropriately, the conflict at hand.

Thus, this paper therefore recommends that governments of various states and agencies involved in conflict resolution and dispute management have social media channels of communication to support traditional conflict resolution systems, facilitate quick response to sites of conflict and thus provide appropriate means of resolving it. The geographical proximity of technology savvy individuals around the sites of the conflict will also facilitate the reign of peace, through confidence in the communication system and the rapid responses to and from the relevant institutions. This would help provide real time response, which is important in preventing the degeneration of conflict into crisis especially retaliatory attacks.



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THE USE OF INFORMATION COMMUNICATION TECHNOLOGY AMONG LIVESTOCK FARMERS IN KWARA STATE

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ABSTRACT

This study was carried out to assess the use of information and communication technology (ICT) among livestock farmers in Kwara State. Primary data were collected with the aid of structured interview schedule using questionnaire. Multi-stage sampling procedure was employed to select One hundred (100) livestock farmers for this study. Data collected were analyzed using frequency count, percentage and mean score. The results show that the livestock farmers were male (100%) with mean age and farming experience of 42 and 12 years respectively. Most used ICTs were radio (\bar{x} =1.44) and mobile phones (\bar{x} =1.27). The most pressing constraint of the usage of ICTs were high cost of power supply (98.0%) and unstable power supply (98.0%). The study therefore concluded that livestock farmers make use of ICTs, specifically mobile phones and radio were highly used. Therefore, extension services on improved livestock practices targeted to reach larger population of livestock farmers can be best disseminated through radio and mobile phone applications.

Keywords: Radio, Television, DVD, Mobile Phone, Livestock farming.

INTRODUCTION

Agricultural extension describes the services that provide farmers with the access to knowledge and information they need to increase productivity and sustainability of their production systems and improve their quality of production and livelihood. These include dissemination of information, the transfer of knowledge generated by agricultural research and encouragement of farmers to try out new discovery. It has helped countries moved towards meeting food needs, conserving natural resources and developing human and social capital (Network Readiness Index [NRI], 2018). Agricultural extension service delivery all over the world has been concerned with communicating research findings and improved agricultural practices to farmers. In Nigeria, agricultural information comes mainly from research institutions which generate new technologies to address challenges encountered by farmers (NRI, 2018). Thus, it follows that the agricultural research information service centre is the custodian of several information resources including agricultural information providers such as international organizations, non-governmental organizations, and community-based organizations, farmers' magazine, newspapers, posters, leaflets, handbooks, radio, television, videos and the mobile telecommunication systems (Nnadi, Chikaire, Atoma, Egwuonwu and Echetama, 2012). Information and Communication Technology (ICT) has been defined in many ways by various authorities. Adebayo and Adesope (2007) define ICT as the tools and processes used to access, retrieve, store, organize, manipulate, produce and exchange information by electronic and other automated means. All over the world, Information and Communication Technologies (ICTs) have changed the lives of individuals, organizations, and

indeed entire nations. In essence, the role of ICTs in poverty eradication can no longer be ignored.

All over the world, Information and Communication Technologies (ICTs) have changed the lives of individuals, organizations, and indeed entire nations. In essence, the role of ICTs in poverty eradication can no longer be ignored. In Nigeria for example, the role of ICTs is recognized in Sustainable Development Goals (SDGs), which emphasized the benefits of new technologies, especially Information and Communication Technologies (ICTs) to fight against poverty. Despite the adoption and input of ICTs to development in the urban areas, rural communities are neglected and deprived of substantial access to ICTs (Kwanghe, Vakuru, Ndahi, Abubakar, Iwar and Eze, 2016). The necessity for increased uptake of improved livestock production methods by farmers has been long recognized as a panacea for a virile livestock subsector in Nigeria (Food and Agriculture Organization, 2017). Inability of farmers to access vital information or poor dissemination with no adequate feedback have been great challenge in the development of agriculture in Nigerians. Odunsi, Wollman, Ambrosone, Hutson, McCann, Tammela, and Qian (2005) defined meat as the edible flesh of those animals which are acceptable for consumption by man. Livestock products like beef, chevron and mutton are major sources of protein in an average Nigerian family. This is necessitated due to its wide acceptability devoid of religious and socio-cultural constraints. The need for protein in the diet of human beings cannot be underestimated as different categories of individuals need protein for growth, development and sustenance, regeneration of ageing and building of worn-out tissues as well as for maintenance. For instance, more than 80% of national production of cattle, sheep, and goat is contributed by subsistence farmers who still rely on traditional production



techniques (Federal ministry of Agriculture and Rural Development, 2010). It is obvious that in order to meet the keen challenge of supplying animal products in the right quantity and quality for an ever-increasing human population, the country's livestock production sub-sector must witness adequate adoption of modern and efficient livestock production techniques.

The Nigeria livestock farmers are faced by a lot of problems such as inadequate grazing area, poor quality of feed and difficulty in integrating new technologies. They are also being left behind in terms of use of information and communication technology in developing and sustaining their agricultural production. Small scale livestock farmers which dominate the land scape of developing countries need to improve farming through acquiring adequate knowledge and accurate information. Also, the vision of the public agricultural extension system in Nigeria is that there should be a media sub unit within agricultural sub programs equipped with modern communication facilities for effective communication both within the organization and to link research institute. It is obvious that extension has a crucial role to play in this regard with the aid of new and improved ICTs (Bolarinwa, 2014). Hence the need to ensuring access to adequate and accurate agricultural information through relevant ICT to livestock farmers. Studies in Kwara State have indicated the level of farmers' ICTs utilization in different areas of agricultural enterprises like crop farming (Farayola, Gbadamosi, Alalade and Baba-Yusuf, 2020), fish farming (Omotesho, Akinrinde, Adenike, and Awoyemi, 2019) but few on livestock farming. However, the existing literature have indicated that farmers in Kwara state were highly aware of the use of ICTs through the extension agents but there is under-utilization of the essential tools for agricultural purpose (Omotesho *et al.*, 2019). The findings from this study expected to contribute to the body of knowledge and help

intervention program that is aiming at improving ICT usage among livestock farmers in Kwara State. The main objective this study was to examine the use of information communication technology [ICT] among livestock farmers in Kwara State. The specific objectives of the study were to;

1. Describe the socioeconomic characteristics of livestock farmers,
2. examine of use of ICT among livestock farmers; and
3. examine the constraints hindering the use of ICT among livestock farmers in the study area.

METHODOLOGY

This study was carried out in Kwara State Nigeria. Kwara is located within the North Central geopolitical zone. Agriculture is the main source of the economy. The average temperature ranges between 27°C and 35°C with a mean annual rainfall of 1,000-1,500mm. It has two main seasons- wet and dry. The wet season is between early April and late October while the dry season is between November and late March. The natural vegetation cover consists of rainforest in the South and Guinea Savannah to the North. The climatic condition, soil type, topography and vegetation cover in the state support the cultivation of several crops of economic importance like maize, cassava, vegetables, millet, rice, yam cowpea and sorghum. The State is also suitable for raising livestock; it is positioned in the forested savanna and enjoys reasonable dry and wet seasons, with heavier rain falling in August and September (Kwara State Agricultural Development Project, 2010). The State is an inland water state naturally blessed with large volumes of water where fishermen provide food for an estimated population of about 168.8 million (World Bank 2012). Based on ecological characteristics, cultural practices and project administrative convenience, the state is categorized into four zones by Kwara state Agricultural Development Project (KWADP, 2010).



Figure 1: Map of Kwara state showing the study area

The sampling procedure employed was multi-stage random sampling technique. The First stage involved purposive selection of two (2) local government areas out of the 16 local governments in Kwara state based on the registered livestock farmers list with the state ADP. The second stage involved random selection four (2) communities from the selected local government areas, due to the high concentration of pastoral farmers. The final stage involved random selection of twenty-five (25) livestock farmers from each community, to arrive to a sample size of 100 for the study. Data used in this study were obtained from primary sources. Information was collected with the aid of structured interview schedule. Data were analysed using descriptive and inferential statistics. Use of ICT was measured on 3 point Likert-type scale as 3= highly useful, 2= moderately useful, 1= not useful. Descriptive statistics such as frequency, percentages, mean was be used to present and discuss the socio economic characteristics livestock farmers, and constraints faced by livestock farmers using ICT, and the level of ICT usage in the study area.

RESULTS AND DISCUSSIONS

Socioeconomic characteristics

The result in Table 1 indicated that majority (100.0%) of the livestock farmers were male. This implies that gender sensitivity of livestock productions inclined towards men such that more men were involved in livestock production. The result indicated that the livestock farmers had an average age of 42years. This shows that most of the livestock farmers are still within their active age. The result in Table 1 shows that 38.0 % of the respondents have no formal education while 23% have Arabic education. The observation is in line with that of Onoja and Achike, (2012) that individuals with educational attainments are usually being faster adopters of innovations. The results also indicated that 25.0% of the livestock farmers have 7-9 household size, the average household mean was 7 persons which implies that livestock farmers have large household in case the need for labour utilization within the livestock enterprise. The result in Table 1 showed that 35.0% have spent between 11-15 years in livestock farming, with an average farming experience of 12 years which implies that the livestock farmers in the study area have vast experience in enterprise. The result also shows that 70.0% of the livestock farmers were members of a cooperative society, which implies that most of the livestock belong to cooperative societies in the study area.

**Table 1: Socioeconomic characteristics of livestock farmers**

Variables	Frequency	Percentages	Mean
Gender			
Male	100	100.0	
Age (years)			
21-30	9	9.0	42.0
31-40	31	31.0	
41-50	33	33.0	
51-60	19	19.0	
Above 60	8	8.0	
Level of education			
No formal education	38	38.0	
Primary education	17	17.0	
Secondary education	10	10.0	
Tertiary	12	12.0	
Arabic	23	23.0	
Household size			
1-3	13	13.0	7.0
4-6	24	24.0	
7-9	26	26.0	
10-12	25	25.0	
Above 12	12	12.0	
Monthly income			
Below 20,000	11	11.0	41,000.0
20,000-40,000	35	35.0	
41,000-60,000	23	23.0	
61,000-80,000	17	17.0	
Above 80,000	14	14.0	
Years of experience in Livestock farming (years)			
Below 5	12	12.0	12.0
6-10	24	24.0	
11-15	35	35.0	
16-20	9	9.0	
Above 20	20	20.0	
Membership of Cooperative			
Member	70	70.0	
Non-member	30	30.0	

Source: Field survey, 2020

The use of ICTs in the study area

Table 2 shows that livestock farmers' perception on the usefulness of ICT rated radio ($\bar{x}=1.44$) and mobile phone ($\bar{x}=1.27$) as first and second as useful ICT tools for livestock farming respectively. Similar results have been reported among crop farmers' perception of high relevance of radio and mobile phone to crop farming in Kwara state (Farayola *et al.*, 2020). Results in Table 2 further rated newspaper ($\bar{x}=1.17$), DVD ($\bar{x}=1.06$) and television ($\bar{x}=1.02$) as third, fourth and fifth positions of livestock farmers' perception on the usefulness of ICT. These show that newspaper, television and DVD were useful ICT tools in accessing relevant information for livestock production in the study area. This finding is also in

line with Agwu and Chah (2007) who asserted that ICTs when available to farmers improve the amount and quality on information either indirectly through producers, associations, extension workers and the like or through broadcast radio information and mobile phone messaging. Some the reasons for wide range of radio and mobile phone acceptance could be that the devices are portable, cheap, ease of use and accessibility couple with their multitasking capabilities makes it the most useful information technology today (Komolafe, Adesiji, Abogunrin and Akinnifesi. 2018). Even the ill-educated can use it, at least to receive calls. Radios have unique qualities, and its mention in this study might even refer to radios embedded in mobile telephones. Radios are portable and can operate on batteries.

Table 2: Use of ICT among livestock farmers in the study area

ICT	Mean	Standard deviation	Rank
Radio	1.44	0.73	1 st
Phones	1.27	0.51	2 nd
Newspapers	1.17	0.38	3 rd
DVD	1.06	0.24	4 th
Television	1.02	0.14	5 th
Computer	1.01	0.10	6 th
Camera	1.01	0.10	7 th
Web publishing	1.01	0.10	8 th
Multimedia	1.01	0.10	9 th
Handbill and fliers	1.01	0.10	10 th
Cinema	1.00	0.00	11 th
Fax	1.00	0.00	12 th

Source: Field Survey 2020

Constraints hindering the use of ICT in agricultural extension service delivery

Results presented in Table 3 revealed that 98% of the respondents indicated that unstable power supply, high cost of alternative power supply, and poor funding of extension agent were the severe constraints hindering the use of ICT in agricultural extension service delivery. Furthermore, 97.0% indicated high cost of service rate while 84.0% indicated limited access to computer as constraints hindering the use of ICT in agricultural extension

service delivery. These findings imply that unstable power supply, high cost of alternative power supply, poor funding of extension agent, high cost of service rate and limited access to computer were the main constraints to hindering the use of ICT in agricultural extension service delivery in the study area. These findings also almost agreed with the findings of Akinola (2010) which stated that lack of infrastructural facilities especially electricity is a factor militating against the effective use of ICTs by farmers.

Table 3: Constraints hindering the use of ICT among livestock farmers

Constraints	Highly severe (%)	Moderately severe (%)	Not severe (%)	Mean
Unstable power supply	98.0	2.0	0	2.9
High cost of alternative power supply	98.0	2.0	0	2.9
Poor funding of extension agent	98.0	2.0	0	2.9
High cost of service rate	97.0	3.0	0	2.9
Limited access to computer	84.0	16.0	0	2.8

Source: Field Survey 2020

CONCLUSIONS AND RECOMMENDATIONS

Based on the major findings, radio, mobile phone, newspaper, DVD and television were the commonly used ICTs applied by farmers in accessing livestock information. The leading constraints to use of ICTs are unstable power supply, high cost of alternative power supply, and poor funding of extension agents. This study therefore recommends that concern government agencies in the supply of electricity should improve on services of power supply to farming communities. An agricultural programme could be initiated by federal or state government for alternative power supply to the farmers in Nigeria. This will go a long way improve that ability to apply ICT gadgets for livestock farming. Also, funds should be made available and accessible by government to the livestock farmers. This will help that farmer to access and apply ICT gadgets for livestock production in the study area.

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DETERMINANTS OF ADOPTION OF TME 419 CASSAVA PRODUCTION PRACTICES AMONG FARMERS IN CROSS RIVER STATE

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ABSTRACT

This study was designed to ascertain the determinants of adoption of TME 419 cassava production practices among farmers in Cross River State, Nigeria. Both primary and secondary data was used for the study. A multistage sampling procedure was used to select 175 respondents in four Local Government Areas and were interviewed using structured questionnaire. Data were collected on socioeconomic characteristics of farmers, benefits of producing TME 419 cassava variety and levels of adoption of TME 419 cassava production practices. Analysis of the study was done using percent, frequency, mean and regression analysis. The results revealed that 57.7% of the respondents were males, 48.0% were between the ages of 39-58 years, 38.0% had secondary education, and 37.0% had 3-5 years of farming experience. It was revealed that farmers had high yield ($\bar{x}=0.99$) as the best benefit derived from TME 419 cassava and there was high (61.1%) level of adoption of the production practices among the respondents. Result of regression analysis revealed that age ($\beta=0.112$), household size ($\beta=-0.380$), farming experience ($\beta=1.295$) and farm size ($\beta=0.112$) were determinants of adoption of TME 419 cassava production practices in the study area. Policies aimed at improving adoption of other cassava varieties should critically consider the roles of age, household size, farming experience and farm sizes for plausible outcomes.

Keywords: Production practices, TME 419 Cassava variety, technologies, Cross River State

INTRODUCTION

The strength of the Nigerian Agricultural Sector is immense and reflected in Nigeria being the world's largest producer of cassava, yam and cowpea in sub-Saharan Africa. The agricultural sector of Nigeria currently plays an essential role in the development of Nigeria's economy and is poised to remain a major source of economic growth in the foreseeable future. The sector provides food, security, employment, foreign reserves, and is set to be a major facilitator in the reduction of poverty and unemployment in the country currently being responsible for engaging about 70% of the labour force (United Nation, 2020). In spite of all its potentials, according to Chiazor and Chinwuba, (2017) there has been low rate of growth in the sector. In many developing tropical countries, cassava has been widely acknowledged as a popular staple crop and its role in food security and poverty alleviation can never be over emphasized (Achem, 2013). It is a drought resistant crop grown mainly in dry areas, which is why globally, production of cassava lies predominantly in the tropical countries of Latin America, Asia and Africa with Nigeria being the largest producer in sub-Saharan Africa. Cassava is ranked 19th in the top crop production in the world, with total annual production at 269,125,963 metric tons (FAOstat, 2021). Cassava is an important staple food crop in Nigeria produced both for household consumption. In Nigeria, the major producers of cassava are the North Central zone, followed by the South-South and South West zones (Igwe, Mbanaso, Okoye, and Imuse, 2018).

In recent years however, the crop has gradually transcended into a cash crop as it is not only produced for household consumption but

required by industries and export for the production of flour, animal feed, alcohol, starches for sizing paper and textiles, sweeteners, prepared foods and bio-degradable products (Agricultural Research Council, 2021). Some special initiatives have also become invested in cassava due to its importance. One of these initiatives is the Presidential Cassava Initiative that recognized cassava as a crop which can reduce poverty in Africa. (Donkor, Onakuse and Bogue, 2017). With its new found possibilities of the crop, there has been an increase in demand for the crop hence, the need for a more disease resistant, high yielding cassava varieties suitable for all the aforementioned uses. This need for a more advanced cassava varieties resulted in the development of improved varieties by research institutes like the International Institute of Tropical Agriculture (IITA) Ibadan, for the farmers to adopt in order to boost yield. In 2016, IITA introduced The African Cassava Agronomy Initiative (ACAI) project to increase the availability of appropriate and affordable technologies to sustainably improve cassava productivity (ACAI, 2019). The project introduced the high yielding TME 419 cassava variety to local farmers distributing over 500,000 bundles of the cassava cuttings through the state Agriculture Development Projects (ADPs) to farmers alongside other production essentials for the variety.

According to Okulola, (2019), the TME 419 cassava variety has a field yield range of 10.69-23.45 t/ha and has a dry content of cassava estimated as percentage (DM) of total fresh root weight ranging from 30.68 to 31.26%, the level of cyanide in the root (CNP- Cyanogenic Potential) is 6.33ppm. This variety is mainly composed of starch but with



a very low percentage of protein. The quantity of starch contained by percentage in this variety ranges from 63.08 to 73.93% while the quantity of protein by percentage ranges from 0.80 to 1.52%. The other varieties of cassava such as TME-7; which has a field range of 5.73 – 8.80t/ha, dry matter of 33.1%, estimated CNP of 0.53, MS-3, and; MS-6 that gives lower yield in tons of output, contains lesser dry matter low CNP, low starch contents for industrial use, but having high resistance to pest and diseases (Nigerian seed portal initiative, 2020), leading to difference in market requirements.

Dissemination of TME 419 cassava variety suitable for both industrial and domestic is expected to boost cassava production in Cross River State, especially with several benefits accrued to the production. However, it has not been confirmed what informed the cassava farmers willingness to adopting TME 419 cassava variety production practices. As the first step to assessing the usefulness a technology to farmers is to determine the attributes responsible for the choice of the technology. Early studies by (Adebayo and Sangosina, 2005; Echebiri, 2008; Kanu, 2020) show that farmers decision to adopt a particular technology were influenced by a plethora of reasons, some of which are socio-culturally based or market driven. It therefore becomes important to ascertain the determinants of adoption TME 419 Cassava variety among farmers in Cross River State, Nigeria.

The specific objectives of the study were to:

1. describe the socio-economic characteristics of respondents
2. identify benefits of producing TME 419 cassava
3. determine the level of adoption of TME 419 cassava production practices

The study hypothesized that there is no significant relationship between cassava farmer's socio-economic characteristics and adoption of TME 419 in the area

METHODOLOGY

The study was conducted in Cross River State Nigeria. Cross River State is located in the South-South geopolitical zone of Nigeria, covers a total of 20,156 square kilometres of land mass and belongs to tropical rainfall belt with humid tropical climate of about 1300 to 3000mm rainfall and 300C mean annual temperatures, except on the Obudu Plateau, where the climate is sub temperate, with temperatures of 150C and 230C.

The population for the study consists of cassava growers in Cross River State. A multi- stage sampling procedure was used for this study. Firstly, two agricultural zones from three (based on the Cross River Agricultural Development Project (CRADP) zoning system) were purposively selected using purposive sampling technique. The purposive

selection was based on the fact that the TME 419 variety was distributed in these two zones in the State. Secondly using purposive sampling technique, four Local Governments Areas (LGAs) were purposively sampled from the selected zones based on the concentration of cassava farmers and extent of TME 419 cassava production and processing within the LGAs, these are Ikom, Bekwarra, Ogoja and Yala. Simple random sampling technique was then used in the third sampling stage to select 30% of the farmers in each LGA from a list of all registered cassava farmers in the Local Government Areas. All registered cassava farmers by LGAs were; Ikom (201), Bekwarra (120), Ogoja (150) and Yala (111). This amounted to 175 farmers (respondents). Socio economic characteristics such as age, sex, marital status, education levels and monthly income from producing TME 419 cassava variety, were measured using nominal and interval scale. The adoption levels of TME 419 cassava production practices was measured by providing respondents with a list of 19 recommended production practices, they were asked to state the frequency at which they adopt each of the recommended production practices with response option of always (3), occasionally (2), rarely (1) and non-practice (0). Thereafter, a frequency index was computed and use to determine the level of adoption of TME 419 cassava production practices. The mean for the activities were calculated and used to categorized into high and low levels of adoption. Data for this study was collected from primary sources using structured questionnaire. Data for this study was analysed using descriptive statistic and Regression analysis.

RESULTS AND DISCUSSION

Socioeconomic characteristics

Table 1 shows that majority (48.0%) of farmers were between the age brackets of 39-58 years, males (57.7%), married (73.1%) and (38.9%) had secondary education. This implies that cassava farmers are mature middle-aged people who can still be economically productive, males dominated, married and literate, capable of adopting new improved cassava varieties. Education could increase the ability of farmers to use their resources efficiently, while giving them leverage on effective information diagnosis, analysis, and interpretation. Hall and Khan, (2003) showed that education was positive and significantly associated with adoption level. Therefore, it is expected to positively influence adoption of improved cassava varieties.

Most (46.3%) had households with 6-10 persons, 3 to 5 years farming experience of the variety (37.7%), had total annual income above N100,000 (54.9%), farmed on 2 acres or less of land (78.9%) and used a combination of family, friends and hired labour for their farming operations. This indicates that the farmers likely had access to family

support for their farming activities, had acquired some practical skills and knowledge for the production of the variety which will increase with more years of cultivating the variety, this aligns with reports of Ajok, (2016) and Melisse, (2018) that large households lowered labour cost as family members contributed immensely to farm labour and farmers experience enhance decision making which is more likely to enhance adoption of new technologies, but opposes the reports of Vitale, Vitale and Epplin (2019) that an increase in farmers farming experience would result in decrease of farmer's efficiency and production levels.

It can also be inferred that producing the variety played a major role in the increased total income of the respondents as from the 95% of them with high total annual income, 75% of them are high

earners from TME 419 cassava production even with prevailing land tenure issues resulting in shortage of agricultural land in the area, leading to cassava production being dominated by small holder farmers. This is supported by Danso-Abbeam, Bosiako, Ehiakpor and Mabe (2017) who stated that high income benefits facilitates adoption of technology. Farmers using all-labour types arrangement hire workers mainly for bush clearing, land mounding and weeding, friends for weeding where herbicides are not used, planting and harvesting while family labour is engaged mostly for planting, processing and supervision. This corroborates Abila, (2012) that family labour is featured in most of the labour sources as farmers and their spouses are involved in the supervision of most operations.

Table 1: Distribution of respondents by socio-economic characteristics

Variables	Frequency	Percentages
Age Range		
19-38	77	44.0
39-58	84	48.0
59 and above	14	8.0
Sex		
Male	101	57.7
Female	74	42.3
Marital Status		
Single	31	17.7
Married	128	73.1
Divorced/widowed	4/12	2.3/6.9
Educational Level		
No Formal Education	26	14.9
Primary school	31	17.7
Secondary school	68	38.9
Tertiary Education	50	28.6
Household size		
Less than 5	72	41.1
6-10	81	46.3
11-15/16 and above	15/7	8.6/4.0
Farming Experience		
0-2	49	28.0
3-5	66	37.7
Above 5 years	60	34.3
Labour Source		
Family only	10	5.7
Hired only/ Friends only	25/1	14.3/0.6
Family and friends/ Family and Hired	16/27	9.1/15.4
Family and Friend and Hired	96	54.9
Annual Income /income from TME 419 production		
Less than 50,000	9/44	5.1/25.1
50,000 – 100,000	70/99	40.0/56.6
Above 100,000	96/32	54.9/18.3
Farm Size (Acre)		
0 – 2	138	78.9
3–5/6 and above	31/6	17.7/3.4

Source: Field survey, 2021



Benefits of producing TME 419 cassava variety

Table 2 shows that the main benefit of cultivating the variety was its high yield ($\bar{x}=0.99$), high nutritive value ($\bar{x}=0.95$), increased income ($\bar{x}=0.92$), resistance to pest ($\bar{x}=0.82$) and improved storage quality ($\bar{x}=0.81$). This connotes that with high yield farmers could have enough produce both for consumption and economic purposes which would invariably increase their financial income and improve their wellbeing. Furthermore, farmers would be willing to adopt varieties which they feel possessed some high nutrient attributes necessary for body improvement or medicinal value.

Similarly, Ugochukwu, (2020) progressive health and nutritional impacts are major gains from high nutrients varieties research and dissemination in countries. Reduced cost of production and reduced expense on chemical were ranked 9th and 10th respectively as the least benefits the respondents derived from producing the variety which could probably deter them from producing the variety on a larger scale. This implication is consistent with findings of Agwu and Anyaeche, (2007) who noted that farmers' adoption of improved cassava varieties could be determined by the extent to which they possess desirable qualities. Ebewore and Okedo-okojie, (2016).

Table 2 Distribution of respondents by benefit derived from producing TME 419 cassava

Benefits	Mean	Std. deviation	Rank
High yield	0.99	0.11	1 st
High nutritive value	0.95	0.22	2 nd
Increased income	0.92	0.27	3 rd
Resistance to pest	0.82	0.39	4 th
Improved storage quality	0.81	0.39	5 th
Better market	0.79	0.41	6 th
early maturity	0.76	0.43	7 th
Reduced labour	0.43	0.5	8 th
Reduced cost of production	0.32	0.47	9 th
Reduced expense on chemical	0.3	0.46	10 th

Source: Field Survey, 2021

Level of adoption of TME 419 cassava production practices

Table 3 shows the adoption frequency of TME 419 cassava by production practices. Most of the practices are always practiced, but majorly the respondents always processed cassava in neat

environment using neat utensils (92.0%), 91.4% stored produce in neat containment to prevent spoilage, 80.6% ploughing the field before planting, 77.1% harvest cassava at eighth months and 74.9% slash and clear farmland before cultivation TME 419 cassava variety.

Table 3: Frequency of adoption of TME 419 cassava variety production practices

Production practices	Always	Occasionally	Rarely	Not at all
Plant on non-stony or shallow soils	52.6	30.3	10.9	6.3
Do not plant on sloped land	48.0	28.6	17.1	6.3
Slash and clear land before cultivation	74.9	20.0	4.6	0.6
Stump before ploughing	53.1	18.9	28.0	0.0
apply glyphosate containing herbicides at recommended rates for weed control	70.3	22.9	6.9	0.0
Plough field before planting	80.6	13.1	5.1	1.1
Plant on ridges	52.0	28.6	6.3	13.1
plant recommended disease free cuttings	67.4	21.1	11.4	0.0
plant in lines 1m between rows	61.7	22.3	9.7	6.3
Plant in moist soils after two good rains	60.6	31.4	7.4	0.6
Apply recommended fertilizers	69.7	22.9	7.4	0.0
Confirm profitability of fertilizers before use	58.9	24.0	16.6	0.6
Weed each time weed cover 1/3 of the field and reach 4-5 leaf stage	61.7	22.9	14.9	0.6
Apply fertilizer when soil is moist after 1 or 2 rain showers	60.6	19.4	20.0	0.0
Apply first split of fertilizer one month after planting	62.3	20.0	17.1	0.6
Apply fertilizer in furrow 20cm away from each plant	60.6	19.4	18.3	1.7
harvest cassava after 8 months and no less	77.1	17.1	5.1	0.6
Process cassava in neat environment using neat utensils	92.0	6.3	1.7	0.0
Store produce in neat containment to prevent spoilage	91.4	6.3	1.7	0.6

Source: Field Survey, 2021

Occasionally, some respondents plant on stony or shallow soils (30.3%), plant on sloped land (28.6%), plant on ridges (28.6%) and apply glyphosate containing herbicides at recommended rates for weed control (22.9%). This may be due to prevailing land tenure issues and increasing cost of purchasing herbicides. This agrees with (Adetomiwa, Iseoluwa and Babatunde, 2020) that the available land rental system do not make the cassava farmers land secure as land can be revoked at any time period from the farmers and it will have an effect on the continuous adoption of improved cassava varieties as guarantee of continuous access to farmland by farmers is ambivalent.

Table 3.1 indicates the level of respondents' adoption of TME 419 cassava variety production practices. Most (61.1%) of the respondents were in the high adoption category for the production practices of the variety, while 38.9% were in the low adoption category. The high adoption of these practices implies that majority of the respondents had gone past the evaluation level of the variety, with the practices not having much difference from what the farmers are used to and could be linked to farmer's scale of production as most of the practices are easily applied on a small scale.

Table 3.1: Cassava farmer's level of adoption of TME 419 cassava variety production practices (n=175)

Category	Frequency	Percentage	Mean
Low	68	38.9	47
High	107	61.1	

Source: Field Survey, 2021

Determinants of adoption of TME 419 cassava

Age ($\beta=0.112$), farming experience ($\beta=1.295$) and farm size ($\beta=0.112$) positively and significantly determined the adoption of TME 419 cassava variety production practices among cassava farmers in the study area. This finding suggests that the higher the farming experience the more a respondent is likely to adopt the cassava variety. Meanwhile a negative coefficient observed in household size household size ($\beta=-0.380$) of the higher the household size, the less a respondent is

likely to adopt TME 419 cassava variety. The findings agree with (Ntshangase, Muroyiwa and Sibanda, 2018) who confirmed in a similar study that farming experience influenced the adoption of improved technologies. The findings is also in line with (Kanu, 2020) and Salum, (2016) who found out in a similar study that young beneficiaries adopt new technology faster than older ones because of their level of exposure and education which eventually results into improved agricultural production and adoption of improved cassava varieties decreases as farmer's household size increases.

Table 4: Result of linear regression model for farmers

Variables	β	Std. Error	Beta	t-value	P-value
Age	0.112	0.039	0.238	2.843	0.005*
Sex	-0.207	0.879	-0.019	-0.235	0.814
Marital status	0.607	0.488	0.095	1.242	0.216
Education	-0.052	0.433	-0.010	-0.120	0.905
Household size	-0.380	0.120	-0.278	-3.168	0.002*
Farming experience	1.295	0.555	0.191	2.333	0.021*
Annual income	0.396	0.623	0.050	0.635	0.526
Farm size	3.021	1.256	0.505	1.686	0.016*
Labour source	0.017	0.247	0.005	0.068	0.946

$R^2 = 0.334$ adjusted $R^2 = 0.069$

*Significant at $p \leq 0.05$

CONCLUSION AND RECOMMENDATIONS

The study concluded that respondents were within the economically active age group, more likely to take risk and have energy to cope with the rigors of TME 419 cassava production practices. High yield from TME 419 cultivation was a major benefit derived and respondents always apply the recommended practices. There was high level of adoption of the variety production practices thus, implying that farmers were comfortable with the variety. Age, household size, farming experience

and farm size determined adoption of TME 419 cassava production practices. Hence, extension strategy for subsequently introduction of new cassava varieties should consider cassava farmers' age, household size, farming experience and farm size as well as benefits to be derived from such variety ahead dissemination. As revealed in this study, reduced expense of chemicals, labour and access to better market are not esteemed benefits of cultivating the variety, these could pose danger to adoption of production practices. It is therefore recommended that cassava markets should be sited



closer to the farmers and subsidies on farm inputs be provided to farmers by government and other stakeholders to facilitate adoption and production.

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