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REFERENCES should be cited within the text as follows: Abiodun (2009) found that ..... On the other hand, after stating the findings, the author's name and year of publication can be inserted; for example, income was positively correlated with educational attainment (Abiodun, 2009). The references should then appear in alphabetical order of the names of first authors in the list of references. For the reference list, the APA Publication Style Manual should be adopted. E.g. Abiodun, J. R. (2009) for single authored paper and Abiodun J. R. and Alabi, O. E. (2009) for double authored.

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CONTRIBUTIONS OF SOCIAL CAPITAL TO WELLBEING OF FOOD MARKETERS IN IBADAN METROPOLIS, IBADAN, OYO STATE, NIGERIA

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ABSTRACT
To move from lower to higher levels of social interactions, participation in informal networks, organizations, associations and social movement to gain economic benefits is vital. This study was conducted to assess the contribution of social capital to wellbeing of food marketers in Ibadan Metropolis, Ibadan, Oyo State. Multi-stage sampling procedure was used to sample 120 food marketers for the study. Data was collected using structured questionnaire and analyzed using descriptive and inferential statistics such as; Chi-square and Pearson Product Moment Correlation (PPMC) to analyse data. Results show that majority of the food marketers were female(76.7%), between the ages of 40-49 years, 82.5% were married, mean household size was six and 50% had secondary education. The three important social groups identified were; commodity specific, religious and saving and credit group. Benefits derived from participating include a sense of belonging, friendship among group members. Result of analysis showed that 9.2% of the respondents had fair level of wellbeing, 42.5% were better-off and 48.3% were worse-off. There were significant relationships between religion (x^2 =6.828; p-value=0.033), marital status (x^2 =31.591; p-value=0.000), age of respondents (r=0.270; p-value=0.003), household size (r=0.257; p-value=0.005), monthly income (r=0.204; p-value =0.025) and the wellbeing status of respondents. It was also established that there was significant relationship between benefit (r=0.215; p-value=0.018) respondents derived from their associations and wellbeing status. The study concluded that social capital contributed to the wellbeing status of respondents although there is evident need for improvement.
Keywords: Social Capital, Wellbeing, Food marketers

INTRODUCTION

The use of collective action and interactions among individuals is to better the national economy particularly in agriculture. A number of farmers come together with unifying interest of improving their occupational operations. The motivation and the unifying interest amongst members in such group suggests like mindedness and potential to work for and even help each other absorb variability in personal income and other economic shocks (Emerole*et al*, 2013).Many of these local institutions and groups are social, others are economic while yet a good number of the groups serve both social and economic purposes in livelihood of their members. When the groups are social groups, they help in creating social capital which among other assets includes institutional identity, relationships within, members' attitudes, and values that govern interactions among them as a people. These contribute to economic and the social development of the communities (Grootaert and van Bastelear, 2002).

Social capital is a sociological concept which has been applied to a variety of issues in recent times. Olomola (2001) defines the concept as the aggregate, the actual or potential resources which are linked to the possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition. Intuitively, the basic idea of "social capital" is that one's family, friends and associates constitute an important asset, one that can be called upon in a crisis, enjoyed for its own sake, and/or leveraged for material gain (Woolcock, and Narayan, 2002). According to Gillivray (2007), wellbeing is generally viewed as a description of the state of people life's situation. Also, Polllnac *et al.* (2006) views it as a degree to which an individual, family, or larger social grouping (e.g., firm, company) can be characterized as being healthy (sound and functional), happy and prosperous. Similarly, it is said to be a judgment about satisfaction with one's overall life or with domains, or the extent to which life has meaning or purpose or having what you need for life to be good. It is now widely accepted that the concept of wellbeing is multidimensional: encompassing all aspects of human life (Gillivray, 2007).

Narayan, Chambers, Shah and Petesch (2000). expresses wellbeing as synonymous with good quality of life which include; material wellbeing often expressed as having enough bodily, wellbeing which include; being strong, being in the right frame of mind and looking good, social wellbeing which include; caring for children, having self-respect, peace and good relations in the family and community, having security, including civil security and confidence in the future having freedom of choice and action including being able to help other people in the community. Wellbeing is measured with indicators; like income, health and education which are the most commonly used. Other measures include housing, autonomy, exposure to mass media and leisure, empowerment and participation, good nutrition. The instrumental benefits of social capital arise from its contributions to improved economic performance and social insurance.

As Olayinka and Aminu (2006) defined, a market has an area over which buyers and sellers negotiate the exchange of a well-defined

commodity. The most important factors for the existence of markets are that the goods to be sold must exist, there must be seller and buyer, and both must agree on a price.

Though Nigeria is blessed with abundant physical and human resources, there had been progressively worsening welfare and poverty conditions of its nations (Okunmadewa, 2001). The problems associated with the agricultural sector of our country have made group formation especially of farmers very crucial, as this help them to benefit from the publicly instituted poverty reduction programmes (Yusuf, 2006). Some of the significant findings also show that local associations and networks do have a positive impact on economic welfare and local development, and play a positive role in environmental management. A typical household survey does not have information on the types of variables that might reflect social capital. Growing attention is given to the role of social capital in affecting the level of development of communities and nations. Increasing global attention is being given to the study of social capital and its influence on various aspects of human life and the environment. Although social capital has attained an important place and a vital factor necessary for an understanding of differences in economic outcomes. Wellbeing and welfare of individuals, groups and communities remain an inexhaustible point of universal discuss because it is a relevant indicator and contributor to the growth and advancement of any economy. On wellbeing issue in Nigeria, recent projects have focused emphasis on group formation as a strategy for enhancing household wellbeing. It is aimed at improving access of the poor to social and economic infrastructure and increase the availability and management of development resources at the community level in Nigeria. This study seek to provide the basis for using group formation as a strategy for enhancing household wellbeing through poverty alleviation and community development as well as provide justification for or against this strategic approach in reducing poverty in Nigeria.

The qualitative assessment of poverty tagged voices of the poor in Nigeria which fed into the World Development Report (2000/2001) identified local level institutions as key to sustaining wellbeing of the poor (World Bank/DFID,2000). As a result, there is need for quantitative analysis of the contribution of social capital to wellbeing of household. This would assist in validating the qualitative assertion in the voices of the poor. Therefore this research will provide answers to the following questions: what are the socioeconomic characteristics of the respondents?,what are the different social groups the respondents belong to?, what are the benefits of social capital to the respondents?, what is the level of wellbeing of the respondents?, what are the challenges faced by respondents that hinder them from participating in social capital?

The main objective of the study was to examine the contribution of social capital to well-being of food marketers in Oyo State.

The specific objectives were to:

1. assess the socio-economic characteristics of the respondents;
2. identify the different social groups the respondents belong to in the study area;
3. examine the benefit of social capital to the respondents;
4. ascertain the level of wellbeing of the respondents;
5. identify the challenges faced by respondents that hinder them from participating effectively in social capital;

The following hypotheses stated in the null form will be tested in this study:

$H_0$1: There is no significant relationship between socioeconomic characteristics of the respondents and their wellbeing.

$H_0$2: There is no significant relationship between benefits derived by respondent's participation in social capital and their wellbeing status.

METHODOLOGY

The population of the study includes food marketers such as rice, beans, garri, maize (grain marketers) and yam marketers in some major markets in Ibadan metropolis, Ibadan, Oyo state.

A multi-stage sampling procedure was used to select respondents for this study. The sampled food marketers were identified through their various registered marketing unions or associations. At the first stage, the five (5) local governments in Ibadan metropolis was purposefully selected due to the presence of standard food markets, the selected local governments are Ibadan North, Ibadan North East, Ibadan North West, Ibadan South East and Ibadan South West.

In the second stage, a market was purposefully selected from each of the local governments selected. The selection was due to their recognition and concentration of grain and yam marketers in the metropolis. The selected markets are Bodija, Aleshinloye, Oritamerin and Molete from Ibadan North, Ibadan North West, Ibadan South West and Ibadan South East respectively. In the third stage, random sampling technique was used to select 30% of registered grain marketers and 20% of registered yam marketers. Simple random sampling technique was employed for the study to select 120 respondents from two categories marketers in the market which were: Grain marketers and yam marketers. Quantitative data was collected through structured questionnaire and data was analyzed using descriptive statistics, percentages, frequency, and mean, while inferential statistics, such as; chi

square and Pearson Product Moment Correlation (PPMC).

RESULTS AND DISCUSSION

Socioeconomic characteristics of food Marketers

The results of Table 1 show that majority (49.2%) marketers were within the age range of 40-49, and the mean age was 45. This implies that youths and younger adults are at the fore front of economic activities. This disagrees with Ayinde (2014) that stated that majority of the workforce is between 33-43 years. Table 1 also reveals that the respondents were predominantly were female (76.7%). The result of analysis in table shows that majority of the respondents were married (82.5%), Oludipe (2009) stated that majority of farmers are married and assistance from family gives more income to improve standard of living, 80% were Muslims while 20% were Christians. The implication of this to extension work is that religious centres are very resourceful in information sharing and it goes a long way in determining the participation in religious gathering as a means of improving the social capital of an individual. It was found that 50% of the respondents attained the secondary school education, 43.3% were primary school certificate holders while 4.2% of the respondents attended one form of tertiary institution and 2.5% of the respondents had vocational education. This presupposed that educated marketers will generally appreciate the need to engage more in social networks in order to receive and evaluate information for business improvement and productivity. Food marketer household size on the average has a population of 6 members per households. This finding agrees with Oni and Adeyemo (2013) that household with a greater number of members have more opportunity to improve their livelihood than those with smaller sizes. About 8.3% of the respondents had farming as their secondary occupation. This means that the respondents were mostly marketers and only a few got involved in other occupation. Majority (55%) of the respondents had been in the market for more than 10 years with mean of 14 years. It has been reported that higher social capital benefits accrue to individuals with a relatively longer period of local organization affiliation (Akpabio, 2008). About 40% of the respondents earned between N20,001 to N40,000 monthly income from marketing, while 39.2 percent of the respondents earned N20,000 and less, 17.5 percent earned between N40,001 to N60,000 while 3.3 percent of the respondents earned more than N60,000 monthly. The mean monthly income of respondents in the study area was N31,897.

Table 1: Percentage Distribution of respondents based on socio-economic characteristics (n=120)

Variable	Frequency	Percentage	Mean	Standard Deviation
Age				
Below 30	0	0.0		
30-39	30	25.0	45.0	7.68
40-49	59	49.2		
40-59	28	23.3		
60 and Above	3	2.5		
Sex				
Male	28	23.3		
Female	92	76.7		
Marital status				
Single	6	5.0		
Married	99	82.5		
Divorced	4	3.3		
Separated	4	3.3		
Widowed	7	5.8		
Religion				
Islam	96	80.0		
Christianity	24	20.0		
Educational Level				
Primary	52	43.3		
Secondary	60	50.0		
Tertiary	5	4.2		
Vocational	3	2.5		
Household size				
1-4	24	20.0	6.0	1.76
5-8	86	71.7		
9 and above	10	8.3		

Variable	Frequency	Percentage	Mean	Standard Deviation
Primary occupation				
Food commodity marketing	120	100		
Secondary occupation				
Farming	10	8.3		
Years of marketing				
1-10	54	45.0	14.0	6.30
11-20	52	43.3		
21-30	14	11.7		
Monthly income				
1-20000	47	39.2	318,912	18,015
20001-40000	48	40.0		
40001-60000	21	17.5		
More than 60000	4	3.3		

Source: Field survey, 2017

Distribution according to social group

The result from Table 2 reveals that the marketers in the study area belonged to more than two associations. The most prominent association in the study area was commodity specific group (yam and grain marketers) representing totality of the respondents (100 percent), however religious group, cooperative societies, savings and credit group and thrift group represented 20%, 5%, 2.5% and 0.8% respectively. The table also indicates that food marketers were also involved in religious activities, the Muslims had mosque in the market and this brings the Muslims together while the Christians held fellowship meetings which help in enhancing their social capital. And according to OECD (2010), which asserted that faith- based organizations are also a good source of community social capital.

Table 2: Distribution of respondents based on the social group they belong (N=120)

Association	Frequency*	Percentage
Cooperative group	6	5.0
Thrift group	1	0.8
Saving and credit group	3	2.5
Commodity specific group	120	100.0
Religious group	24	20.0

*Multiple responses
Source**:** Field survey, 2017

Benefits derived by respondents from participation in social group

The table reveals that respondents considered invitations to social function, sense of belonging and security of goods respectively as the more important benefits they derive from participation in social group. Likewise, the respondents reiterated that task sharing, easy access to policy makers and access to credit and loan as the less important benefits they derive from participation. Other benefits they derive includes satisfaction from involving in developmental activities in the market, involvement in decision making, increased solidarity and access to manufacturing companies or cheaper source of goods. The result supported with the central idea of social capital that it focused on social relations and network which had productive benefits. Social capital is not a name of a tangible good but rather it is a collective intelligence of a society that functions collectively for the solution of the problem and welfare of individuals (Taga, 2013).

Table 3: Distribution of respondents based on benefits derived from participation in social capital (N=120)

List of benefits derived from participation	Highly beneficial	Beneficial	Less beneficial	Mean	Rank
Access to credits and loan	5.0	27.5	67.5	1.37	10th
Developing a sense of belonging and friendship among group members	3.3	94.2	2.5	2.01	2nd
Invitation to social function by group members, e.g. ceremonies like wedding, naming, etc.	6.7	93.3	0.0	2.07	1st
Access to manufacturing companies or cheaper source of goods	3.3	45.0	51.7	1.52	7th

Easy access to policy makers	0.8	37.5	61.7	1.39	9th
Involvement in decision making	5.0	67.5	27.5	1.78	5th
Satisfaction from involving in developmental activities in the market	2.5	84.2	13.3	1.89	4th
Security of goods	3.3	92.5	4.2	1.99	3rd
Increased solidarity	1.7	59.2	39.2	1.62	6th
Task sharing	43.3	56.7	0.0	1.43	8th

Source: Field survey, 2017

Distribution of respondents based on their wellbeing status

The results were arrived at by measuring the wellbeing of respondents based on the ten wellbeing dimensions which are subjective wellbeing, health status, civic engagements, environmental quality, personal security, education and skills, social connections, income and job earnings and housing.

The result from Table 4 (subjective dimension distribution of respondents) revealed that majority (83.3%) strongly agreed that they had confidence about the future with (MS= 4.8333) while 24.2% agreed that they had lost hope about the future, with the lowest means score (MS=1.8667) which indicates that the respondents were quite sure of a better tomorrow. This implies that the subjective wellbeing of respondents is quite positive as they believe that as long as they live and work they will eventually get better in the future than they are at present. As regards their health status, the highest mean score of 3.8583 was revealed where 91.7% of the respondents confirmed that they got good quality medical care from their participation in social groups and in relating with people in the market. This implies that their health status has improved as a result of their participation in social groups and their relationship with other marketers. This correlates with studies (Stephen *et al.,*2004; Viswanath *et al.,*2006) that found membership organizations as conduits of health information. Result revealed on the civic engagement of respondent showed that 82.5% agreed that they had good relationship with others in the market mean score= 4.03. Also 77.5 percent with (mean score 3.8667) stated that they participated actively in decision making in the market but 87.5% disagreed that they didn't see any role for themselves in decision making and community affairs with a mean score of (2.12). The marketers 89.2% (mean score 3.8333) perceived the market environment to be wet and messy mostly during raining season thus not conducive enough, 22.5% agreed and 77.5% disagreed that the market environment was clean and conducive. This was due to their lack of cooperation among respondents in ensuring the sanity of the market environment. Also as regards security of the respondents and their goods, 95% agreed that with the cooperation of other food marketers and others, their goods were secure (Mean=4.0000), while totality of the respondents 100% disagreed that they lived in fear of harm and chaos in the market. This implies that security is better and efficiently achieved collectively. The result also shows that 96.7% agreed that criminal activities were minimal in the market and if there are, they are easily apprehended through collective efforts (mean=4.0333). Result shown on education and skill of respondents revealed that 60.8% agreed that they were well skilled in their occupational activities with (mean score 4.2917). This was seen in the number of years of experience they had spent as marketers and also in the market. Social connection result revealed that 85% were close to influential and important people in the market, 85.8% reported that when there was something important they always got to know. This further explains the benefits of social networking in enhancing wellbeing of individuals.

As pertaining the earning of the food marketers, 94.2% agreed that they could afford their basic need from the work they were doing. About 64.2% agreed that their business gave them joy and satisfaction while 5.0% were undecided and 28.3% disagreed. According to Human Development Index (HDI) 2015, work and human development was synergetic, as work enhances human development by providing incomes and livelihoods by reducing poverty and by ensuring equitable growth, empowerment, participation and voice. In correlation with this, the result of this study showed that respondent's standard of living and wellbeing was enhanced by their job and earnings as most of them can afford to get their basic needs from the work they did and also most of them derived joy and satisfaction from the business they did. Concerning the income of the market women, 80.8% agreed and 17.5% disagreed that they were satisfied with their level of income while 1.7% were undecided. Although, 34.2% agreed that they needed more income generating activities to improve their income level. As regards housing status of respondents, 73.3% agreed they lived in comfortable houses and environment through the help of people who they were related with. Also, 56.7% agreed that they could afford their self-owned house through participation in social groups while 41.7% disagreed. This may be attributed to the fact that they were not active in the social group they belonged. Respondents wellbeing

based on their housing indicate a positive result as majority with mean score 3.6333 had a well furnished and comfortable room.

Table 4: Distribution of respondents based on wellbeing indicators, n=120

Items	SA	A	U	D	SD	Mean
Subjective wellbeing						
I have confidence about the future	83.3	16.7	0.0	0.0	0.0	4.83
I expect more good things in my life than bad	30.0	70.0	0.0	0.0	0.0	4.30
I feel happy most times	7.5	54.2	10.8	27.5	0.0	3.42
I have lost hope about the future	0.00	4.2	2.5	69.2	24.2	1.87
I am satisfied with my life	5.8	63.3	0.8	30.0	0.0	3.45
My life is going on well	5.0	62.5	6.7	25.8	0.0	3.47
I do experience unhappy feeling most times	0.0	38.3	5.0	55.0	1.7	2.8
I worry a lot about the future of my children	0.0	71.7	3.3	25.0	0.0	3.47
I am optimistic about the future of my children	1.7	87.5	1.7	9.2	0.0	3.82
Health status						
My personal health condition is normal and good with the help of other market women	0.0	74.2	2.5	23.3	0.0	3.51
My state of health makes me worry about the future	0.0	26.7	0.0	73.3	0.0	2.5333
I am able to get good quality medical care from my participation in social groups and in relating with people in the market	0.0	91.7	2.5	5.8	0.0	3.8583
I often worry about my family's health	0.0	13.3	0.8	85.8	0.0	2.2750
I rarely feel troubled or stressed because of my relationship with people in social groups	0.0	65.8	0.0	34.2	0.0	3.3167
I have one form of chronic or lasting health problem that my group members know of and help me to overcome.	1.7	31.7	0.0	66.7	0.0	2.6833
Civic engagements						
I have good relationship with others in the market	10.8	82.5	5.0	1.7	0.0	4.0250
I participate actively in decision making in the market	7.5	77.5	9.2	5.8	0.0	3.8667
I don't see any role for myself in decision making and community affairs	0.0	4.2	8.3	87.5	0.0	2.1667
I look for ways to help others in the market	0.0	96.7	2.5	0.8	0.0	3.9583
I am not concerned with other people in the market	0.0	15.0	0.0	85.0	0.0	2.3000
I am very selective in joining and participating in social groups in the market.	2.5	77.5	3.3	16.7	0.0	3.6583
I trust the participants in the social group or groups I belong to with my money and other resources	0.0	53.3	1.7	42.5	2.5	3.0583
Environmental quality						
The market environment can be wet and messy mostly during raining season and thus not conducive enough	0.8	89.2	2.5	7.5	0.0	3.8333
The market environment is clean and conducive	0.0	22.5	0.0	77.5	0.0	2.4500
Health issues like catarrh and other airborne disease are common in the market	0.0	70.0	0.0	30.0	0.0	3.4000
The noise in the market is unhealthy	0.0	75.0	0.8	24.2	0.0	3.5083
The activities in the market pollute the air and make us vulnerable to diseases	0.0	54.2	0.0	45.8	0.0	3.0833
Personal security						
With cooperation of other market women and others, my goods are secure	0.8	95.0	2.5	1.7	0.0	3.9500
The market is safe and secure	1.7	97.5	0.0	0.8	0.0	4.0000
I live in fear of harm and chaos in the market	0.0	0.0	0.0	100.0	0.0	2.0000
Criminal activities are minimal and when there is any they are easily apprehended	3.3	96.7	0.0	0.0	0.0	4.0333
Education and skills						
I am well skilled in my occupational activities	35.8	60.8	0.0	3.3	0.0	4.2917
I need to acquire more skill to better enhance my business	0.0	27.5	0.0	68.3	4.2	2.5083
My educational level is satisfactory	0.0	56.7	1.7	39.2	2.5	3.1250
My children's education is satisfactory	0.0	61.7	5.8	32.5	0.0	3.2917
I need more fund to give my children better education	0.0	49.2	5.0	45.8	0.0	3.0333

Items	SA	A	U	D	SD	Mean
Yields from my business affords me with the opportunity to give my children the best education	4.2	77.5	5.8	12.5	0.0	3.7333
Social connections						
I am close to influential and important people in the market and it is beneficial	4.2	85.0	0.0	10.8	0.0	3.8250
I have people I can go to for advice and help	3.3	83.3	0.0	13.3	0.0	3.7667
When there is something important I always get to know	4.2	85.8	0.0	10.0	0.0	3.8417
I don't know anyone important	0.0	8.3	0.0	90.8	0.8	2.1583
I hardly get information in the market	0.0	11.7	2.5	85.0	0.8	2.2500
I belong to a group that helps and support each	3.3	81.7	4.2	10.8	0.0	3.7750
Income and Job earnings						
I am satisfied with my income level	0.0	80.8	1.7	17.5	0.0	3.6333
I need more income generating activities to improve my income level	0.0	34.2	0.0	65.0	0.8	2.6750
I am dealing with my business challenges well with the help of other market women	0.0	86.7	1.7	11.7	0.0	3.7500
I have savings to fall back to in hard times	0.0	36.7	0.0	63.3	0.0	2.7333
I need to borrow money to make ends meet	0.0	16.7	0.0	82.5	0.8	2.3250
I can afford to get my basic needs from the work I do	0.8	94.2	0.0	5.0	0.0	3.9083
My business gives me joy and satisfaction	2.5	64.2	5.0	28.3	0.0	3.4083
My business gives me less stress	0.0	9.2	5.8	83.3	1.7	2.2250
Housing						
I live in a comfortable house and environment through the help of people I relate with	1.7	73.3	0.0	25.0	0.0	3.5167
My room is well furnished and comfortable	0.0	81.7	0.0	18.3	0.0	3.6333
The infrastructure of the house is bad and needs repair	0.0	9.2	0.0	89.2	1.7	2.1667
Source of water is close and clean	0.0	90.8	0.0	9.2	0.0	3.8167
I could afford my self-owned house through participation in social groups	0.0	56.7	0.8	41.7	0.8	3.1333
I live in a rented apartment	0.0	61.7	0.0	36.7	1.7	3.2167

Field survey, 2017

Level of wellbeing of respondents

Distribution of respondents according to their level of wellbeing

The result from Table 5 shows that 9.2% of the respondents had average level of wellbeing status, 42.5% had better off wellbeing status and 48.3% had worse-off wellbeing status. This implies that some of the respondent's wellbeing status was better off while some was worst off. This was an indication that their level of participation in the group had an effect on their well-being status as it was noticed that respondents who actively participated had a better wellbeing status than those who were not active in the social group. This is in line with Woolcock (2001), that the well-connected are more likely to be "housed, healthy, hired and happy".

Table 5: Distribution of respondents based on their Level of wellbeing, n=120

Wellbeing status	Frequency	Percentage	Minimum	Maximum	Mean	S.D
Worst off	58	48.3				
Average	11	9.2	170.00	197.00	186.6250	7.77095
Better off	51	42.5				

Source: Field survey, 2017

Challenges faced by respondent's participation in social capital

Table 6 below shows the severity of challenges faced by respondents in participating in social capital and these challenges were either mild or less severe as none of the respondents indicated a highly severe challenge. Illiteracy, conflict among members, poor and inefficient leadership, lack of trust undefined roles were ranked 1st, 2nd, 3rd, 4th and 5th with a mean score of 1.8083, 1.6000, 1.5333, 1.4000 and 1.2667 respectively. Other challenges respondents faced were fraudulent activities which was ranked 6th with mean score 1.2250, decision not made by everyone and domineering personality both were ranked 7th with mean score 1.2167 respectively, inadequate access to information ranked 9th with mean score 1.2083 while inadequate time to participate and poor

communication ranked 10th with mean score 1.1750 and the least ranked challenges were lack of contribution and lack of cooperation which were both ranked 12th with a mean score of 1.1583 respectively.

Table 6: Distribution of respondents based on the Challenges faced in the associations they belong, n=120

Factors	Highly Severe	Mildly	Less severe	Mean	Rank
Illiteracy	1.7	77.5	20.8	1.8083	1st
Poor and efficient leadership	0.0	64.0	46.7	1.5333	3rd
Inadequate time to participate	2.5	12.5	85.0	1.1750	10th
Fraudulent activities	0.0	22.5	77.5	1.2250	6th
Undefined roles	0.0	26.7	73.3	1.2667	5th
Decision is not made by everyone	0.0	21.7	78.3	1.2167	7th
Poor communication	0.0	17.5	82.5	1.1750	10th
Lack of trust	0.0	40.0	60.0	1.4000	4th
Inadequate access to information	0.0	20.8	79.2	1.2083	9th
Domineering personalities	0.0	21.7	78.3	1.2167	7th
Conflict among members	0.0	60.0	40.0	1.6000	2nd
Lack of contribution	0.0	15.8	84.2	1.1583	12th
Lack of cooperation	0.0	15.8	84.2	1.1583	12th

Source: Field survey, 2017

The result from the Table 7 revealed that the wellbeing status of the food marketers was not significantly associated with certain socio economic characteristics like sex ((χ^2=2.801; p-value=0.246), level of education (x^2 =8.653; p-value=0.194) and occupation ((χ^2 =1.364; p-value=0.506). However, the wellbeing status of food marketers was shown to be statistically significant with religion ((χ^2 =6.828; p-value=0.033) and marital status ((χ^2 =31.591; p-value=0.000). The implication from the analysis of result from Table 7 implies that religion had positive significant effect on the wellbeing of the respondents, this might be due to the existence of religious centres in the market and this would help them see to the wellbeing of their members. Marital status was also positively significant because respondent who were married had someone they socially tied to which made them happier as well as being more responsible.

Table 7: Chi-square test of relationship between respondents' selected socio economic characteristics and their wellbeing status

Variable	Chi-square value (χ^2)	df	p-value	Decision	Remark
Sex	2.801	2	0.246	NS	Accept Ho
Religion	6.828	2	0.033	S	Reject Ho
Marital status	31.591	8	0.000	S	Reject Ho
Level of Education	8.653	6	0.194	NS	Accept Ho
Occupation	1.364	2	0.506	NS	Accept Ho

Source: Field survey, 2017

PPMC test of relationship between selected socioeconomic characteristics and level of wellbeing status

The result of the Pearson Product Moment Correlation (PPMC) shown in Table 8 depicts that there was significant relationship between age of respondents (r=0.270; p-value=0.003) and the level of wellbeing of the respondents. This implies that the age of the respondents was part of the determining factors and positively related to achieved wellbeing. This implies that youths and younger adults were at the fore front of economic activities that could enable an individual to enhance their wellbeing. The table further reveals that there is significant relationship between household size of respondent (r=0.257; p-value=0.005) and their wellbeing status. These findings agree with Oni and Adeyemo (2013) that household with a greater number of members have more opportunity to improve their livelihood than those with smaller sizesbut diminishing returns to labour may set in as household size reaches 10 members. Monthly income (r=0.204; p-value=0.025) was also significantly related to wellbeing status, this might have been associated to the increase in food in the market which enable respondents earn more income, such individual are richer and are likely to record more achievement than those with lower monthly income. It is those respondents that have higher levels of income that can make large amount contribution to their social group. Hence, such respondents are not likely to be poor indicating a

better wellbeing status. On the other hand, significant relationship does not exist between years of marketing experience (r=-0.173; p-value=0.059) and wellbeing status. This means that irrespective of their experience as marketers, it does not affect their wellbeing. This may be because there are more passive than active individual in the market.

Table 8: PPMC test of relationship between selected socioeconomic characteristics and level of wellbeing status

Variable	r-value	p-value	Decision	Remark
`Age	0.270	0.003	S	Reject Ho
Family size	0.257	0.005	S	Reject Ho
Monthly income	0.204	0.025	S	Reject Ho
Years of marketing experience	-0.173	0.059	NS	Accept Ho

The Pearson product moment correlation (PPMC) result in the table below established that there was significant relationship between benefit (r=0.215; p-value=0.018) respondent derived from their association and their wellbeing status. Table 4.11 above indicated that Invitation to social function by group members which was ranked 1st benefit could be invariably translated to improving their wellbeing status. Respondents got support from group members, enjoyed happy times together and relieved themselves from burden which could be threatening to their lives. This relates with the growing evidence that social capital is an element for sustainable development due to the role it plays in managing risks, shocks and opportunities. It therefore holds strong position to confront poverty and vulnerability, resolve disputes (Schafft and Brown, 2000) and share beneficial information (Rauch and Casella, 2003). Crucial to understanding economic performance, reduces transaction costs, provides contract enforcement, enables credit constrained households access to funds, fosters adoption of new production technologies and more importantly, provides avenues for risk sharing (Isham, 2002).

Table 9: Correlation between the respondents benefits from association and their wellbeing

Variable	ρ	r-value	Decision
Benefits	0.215	0.018	S

Source: Field survey, 2017

CONCLUSION

In spite of the challenges experienced by the respondents in the study area such as illiteracy and so on, many of the respondents still engage in social capital to improve their wellbeing. The benefits derived far outweigh the challenges faced in participation in social capital. The study concludes that social capital contributes to wellbeing of respondents positively but it is more effective when other forms of capital are available to support its effectiveness.

REFERENCES

Adeyemo, T. and Oni, O. (2013). "A Functioning Approach to Well Being Analysis in Rural Nigeria" *Sustainable Agriculture Research*; 2 (1): 45-48

Akpabio, I. A. (2008). Significant Predictors of Social Capital in Farmers Organizations in AkwaIbom State, Nigeria. *The Journal of International Social Research.* 1(3)*: 61-68*

Collier, P. (2002). "Social Capital and Poverty: A Microeconomic Perspective" in Christian Grootaert and Thierry van Bastelaer (eds.) The Role of Social Capital in Development: An Empirical Assessment New York: Cambridge University Press, pp. 19-41.

Emerole, C. O., Anyiro, C. O. and Osondu, C. K. (2013). Local Institutions in Poverty Reduction and Welfare in Farm Households in Core Igbo States of Nigeria. *Experimental Agriculture and Horticulture.* 2(3):1-12.

Grootaert, C., and Van Bastelaer, T. (Eds.) (2002). "The role of social capital in development: An empirical assessment" Cambridge University Press.

Narayan, D. (1997). Bonds and Bridges: Social Capital and Poverty: Policy Research Working Paper 2167.World Bank Poverty Division. (Washington, World Bank, 1997)

Narayan, D., Peter R., Schaffc, K., Rademacher, A. and Koch-Schulte, S. (2000a).

Narayan D., Chambers R., Shah M.K and Petesch P. (2000b)

Nwachukwu, O. 'Poverty eradication, what hope for Nigeria?" Business DAY Media Ltd, 2006.

Okumadewa, F. Y. (2001). Poverty reduction in Nigeria: A four point agenda. The House

Annual Guest Lecture, University of Ibadan, Ibadan

Okunmadewa, F., Olaniyan, Y. O., Yusuf, S. A., Bankole, A. S., Oyeranti, O. A., Omonona, B. T,, Awoyemi, T. T. and Kolawole, K. (2005). Human Capital, Institutions and Poverty in Rural Nigeria. Research Report Submitted to African Economic Research Consortium (AERC) Kenya for the second Phase of Collaborative Poverty Research Project

Olayinka, K. A. and S. A. Aminu (2006). *Marketing Management Planning and Control*, Lagos, Sundoley Press Nigeria, pp. 1-12 Press

Olomola, A. S. (2001). Social Capital, Microfinance Group Performance and Poverty Implications in Nigeria. A Research Report Submitted to the Nigerian Institute of Social and Economic Research (NISER) Ibadan, Nigeria.

Pollnac, R. B., Pomeroy, R., Harkes, I. H. T. (2001). Fishery policy and job satisfaction in three Southeast Asian fisheries. Ocean and Coastal Management 44, 531-544

Taga A. A (2013). Social capital and poverty alleviation: same qualitative evidences from Lahore district. International Journal of Basics and Applied Sciences 1 (3), 681-693.

The World Happiness Report 2015UK: Palgrave MacMillan.

Woolcock, M. and Narayan, D. (2000). Social Capital Implications for Development Theory, Research, and Policy, *World Bank Research Observer,* 15(2): 225-249

World Bank/DFID (2000): Voice of the Poor. The World Bank and Department for International Development, Abuja, Nigeria

Yusuf, S. A. (2008). Social Capital and Household Welfare in Kwara State, Nigeria. *Journal of Human Ecol. 23 (3): 219-229*

DETERMINANTS OF YOUTHS' INVOLVEMENT IN AGRICULTURAL VOCATIONAL TRAINING IN OYO STATE, NIGERIA

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ABSTRACT
Development of youth through active participation in agricultural vocational training may bring about proliferation of agricultural enterprises for sustainability of agricultural sector. This study focused on the determinants of youths' involvement in vocational training in Oyo State, Nigeria. A multistage sampling procedure was employed to select 120 respondents. Data were collected via structured questionnaire on respondents' socioeconomic characteristics, reasons for the choice of specific agricultural enterprise training, attitudes towards the trainings, involvement and constraints to the vocational training. Data were analysed using descriptive and inferential (Chi-square, PPMC, and linear regression) statistics. Results show that most of the respondents were male (74.2%), married (70.0%) and entrepreneur (64.2%) with mean age and monthly income of 22years and ₦27,665 respectively. Respondents were mostly involved poultry (120.8) enterprise and personal interest (55.8%) was the main reason for their choice of the enterprise. They had unfavorable attitude (53.3%) and lack of fund (weighted mean=165.9) constrained their involvement. Significant relationship existed between respondents' age (r=-0.31, p=0.00), institutions attended ((χ^2=91.90, p=0.000), monthly income (r=-0.22, p=0.02) and involvement in the enterprise. Major determinants of their involvement in the enterprise were age (β=-0.30; p=0.01) and constraints faced (β=0.20; p=0.03). Since they identified fund-related constraints, subsequent agricultural vocational training programmes should be packaged with credit facilities (with little or no interest rate) to be disbursed immediately after the training programme.
Keywords: Youths' involvement, poultry enterprise, vocational training, attitudes, personal interest and Agricultural Vocational Training Programme (AVTP)

INTRODUCTION

Youth unemployment has become one of the developmental challenges in almost every developing country of the world in the 21st century. According to International Labour Organisation (ILO) (2008), youths made up of as much as 36 percent of the total working age (15 years and above) population of the world in 2007. The report further shows that about 60 million young people (80%) are unemployed which makes youths to be nearly three times as adults that were unemployed in world. Similarly, youth unemployment grows annually at more than 15 percent rate in all the developing countries around the world. Nigeria's past record shows that about 80 million of the 140 million population are youths between the ages of 10 and 24 years (Nigeria Population Reference Bureau, 2007). However, the national joblessness rate in Nigeria was estimated to be 23.9 percent of which the youth proportions were up to 70 % (Small, 2017). However, the issues leading to youth unemployment in Nigeria are rural-urban migration, rural underemployment and urban unemployment, rapid population growth, absence of vibrant manufacturing sector and lack of employable skills among others (Small, 2017). While these facts may not have captured the youth unemployment scenario in Nigeria in totality, they point to the fact that the situation is very serious. To address this problem, various regimes in Nigeria have initiated programmes and established some institutions to promote self-employment and self-dependence among the youths. One of these institutions is the National Directorate of Employment (NDE) of 1986 (NDE, 2009); which was saddled with the responsibility of promoting skills acquisition, facilitation of creative mind, self-reliance and independence. Currently, N55.5 billion has been set aside by the Nigeria government for youth empowerment programme under the Accelerated Agricultural Development Scheme (Laleye, 2018).

Hence, the skill acquisition programmes (vocational training) have been identified as panacea for the substantial youth unemployment, poverty and hunger in Nigeria; where about 70 percent of the unemployed population are unskilled (Ojei, 2010 and Food and Agriculture organisation of the United Nations (FAO), Technical Centre for Agricultural and rural cooperation (CTA) and International Fund for Agricultural Development (IFAD), 2014). In order to address the lack of employable skill among the Nigerian youth, the Federal Government in collaboration with the NDE and Institute of Agricultural Research and Training (IARandT) (Moor plantation, Ibadan), facilitated short term vocational training programmes for vocational skills acquisition in order to make youths to be self-employed, economically self–reliant, enhance their socioeconomic wellbeing, strengthens their agricultural skills, encourages youth involvement in the agricultural sector of the economy and even becomes employers of labour (Ojei 2010; and NDE, 2009). Consequently, vocational skills development programme equips youths with the human capital needed to avoid poverty and to have a more fulfilling life as the training involves the use of informal sector

operators such as master craftsmen/women as training centres, where youths spend appreciable period long enough for them to acquire the requisite skills. Nigerian youths have benefited from this scheme in some of the areas such as fishery, poultry, beekeeping, tree planting, and piggery among others. Based on the acquired skills youths are expected to be able to establish their individual businesses with the help of resettlement packages from NDE, bank credit facilities and family support to facilitate the take-off of the entrepreneurs' businesses. It is therefore important to evaluate the determinants of youths' involvement in agricultural vocational training in Oyo state, Nigeria.

Therefore, this paper examined the determinants of youths' involvement in agricultural vocational training in the study area. Hence, the study ascertained the socioeconomic characteristics of the respondents, attitudes of youths towards involvement in agricultural vocational trainings, the extent at which youths are involved in the agricultural vocational training programmes, reason(s) for the choice of their enterprise, constraints to their involvements in the Agricultural Vocational Training Programmes (AVTP). It was hypothesised that no significant relationship existed between the socioeconomic characteristics of the respondents and their involvement in the vocational training.

METHODOLOGY

The study was carried out in Oyo state, Nigeria. Study population were all the youth participants or ex-trainees of the agricultural vocational training programmes in Oyo state before year 2014. Multistage sampling procedure was used to select respondents for the study. The first stage involved the purposive selection of two Local Governments Areas (LGAs) that have institutions which are involved in agricultural vocational training programmes in Oyo state. These are Federal College of Agriculture, (FCA) in Ibadan southwest LGA and National Directorate of Employment (NDE) in Ibadan North LGA from where the list of graduates from these two institutions were generated. This gave a total of 720 graduates (350 from Federal College of Agriculture and 370 from National Directorate of Employment) from the two institutions so far as at year 2014. The second stage involved the random selection of 17% of the total participants of the agricultural enterprises of these two institutions (Federal College of Agriculture and National Directorate of Employment). The procedures gave a total sample size of 120 respondents who were used for this study.

Attitudes of youths towards involvement in agricultural vocational trainings was measured by providing them with 25 attitudinal statements with the response options of strongly agree, agree, undecided, disagree and strongly disagree with scores of 5, 4, 3, 2 and 1 assigned, respectively for all positive statements and was reversed for the negatively worded statements. The maximum obtainable score was 125 with a minimum score of 25. Eventually, attitudinal index was computed and mean was used as a bench mark to categorise respondents to favourable and an unfavourable attitude towards involvement in agricultural vocational training programmes. Respondents with scores below mean were regarded as having unfavourable attitude with those with mean score and above categorised as having favourable attitude.

The extent of respondents' involvement in the agricultural vocational training programmes was measured by providing them with 13 agricultural enterprises (poultry, fishery, beekeeping, cash crop production and piggery among others). Thereafter, they were asked to state to what extent they got involved in each of the agricultural enterprises with three response options of "to a large extent", "to a lesser extent" and "not at all" with scores of 2, 1 and 0 assigned, respectively. The maximum obtainable score was 26, while the minimum was 0. Then, weighted mean score was generated and used to rank their responses to isolate the most agricultural enterprise involved in.

To measure motive(s) for the choice of their enterprise, four different reasons (personal interest, peer influence, family influence and affordability) that could inform respondents' choice of enterprise were generated and they were provided with three response options of "to large extent", "to a lesser extent" and "not at all" with scores of 2, 1 and 0 assigned, respectively. The maximum and minimum obtainable score were eight and zero, correspondingly. Then, weighted mean score was generated and used to rank their responses to determine the main reason(s) for the choice of their agricultural enterprise.

The constraints to the respondents involvement in agricultural vocational training programmes was measured by providing them with a list of nine constraint items such as lack of finance, lack of land, lack of incentives, natural hazards and lack of access to market among others. They were asked to state the severity of each constraint items to them and they were supplied with response options of "serious constraint", "mild constraint" or "not a constraint". Response option "serious constraint" was assigned a score of 2, "mild constraint" a score of 1 and "not a constraint" was assigned 0. Minimum obtainable score was 0 and maximum 18. Weighted score was generated and used to rank the constraints to determine the most severe constraints.

Finally, respondents' determinants of involvement in the vocational training programmes

was measured by putting some of the variables measure into linear regression model in other to determine in particular the variables that informed respondents' involvement in agricultural vocational training programmes.

RESULTS AND DISCUSSION

Results in Table 1 show that the mean age, monthly income, years of formal education and household size of the respondents were 32 years, N27,665.00, 16 years and 2 persons, respectively. Majority of the respondents were married (84%) male (74.2%), entrepreneurs (64.2%) by employment status, while the courses vary, ranging from agriculture (26.7%) to social science (28.3%) and engineering (11.6%). This implies that respondents are young and will be agile to practice the vocation they have chosen; they earn above the minimum monthly salary (N18,000) recommended for Nigerian civil servants. They are educated as they have spent considerable number of years in school and this might likely position them to have high access to information on the vocation they have chosen to learn. However, the different course of study undertaken by the respondents aside from agriculture implies that majority of the respondents did not have agricultural studies background. This implies that agriculture as a course is not a criteria for learning or acquiring agricultural vocational skill.

Table 2 presents result on respondents' attitude towards agricultural vocational training programmes. The results show that 93.4% of the ex-trainees agreed that the outcome of AVTP could improve the overall welfare of the society, 92.5% of them were of the opinion that AVTP will ensure their food security, while 91.7% agreed that such AVTP can help youths improve their level of income and as well create a viable employment opportunity. However, Table 2a indicates above average (53.3%) of the respondents had unfavourable attitude to AVTP. This is in contrast with the findings of Thomas and Eforuoku (2016) in which most (68.0%) of the youth had a favourable disposition towards participation in youth-in-agricultural programme.

Table 1: Distribution of respondents by their socioeconomic characteristics

Variables	Frequency	Percentage	Mean
Age (years)			32.2
20 – 30	37	30.8	
31 – 40	83	69.17	
Sex			
Male	89	74.2	
Female	31	25.8	
Marital status			
Single	36	30	
Married	84	70	
Own family size			3.6 persons
2 – 5	64	79.2	
6 – 8	25	20.8	
Household size			1.6 persons
4 – 6	24	92.5	
7 – 11	8	6.7	
Above 11	1	0.8	
Years of formal education			15.5
1 – 6	3	2.5	
7 – 12	12	10	
Above 12	105	87.5	
Course of study			
Agriculture	32	26.7	
Social sciences	34	28.3	
Engineering	14	11.6	
Arts	8	6.5	
Sciences	5	4	
Education	7	5.7	
Employment status			
Currently employed	10	8.3	
Previously employed	6	5.0	
Underemployed	12	10	
Entrepreneur	77	64.2	
Trainee	5	4.2	

Variables	Frequency	Percentage	Mean
Not employed	10	8.3	
Monthly Income(naira)			27,665
2000 – 20,000	52	43.3	
20,001 – 40,000	47	39.2	
40,001 – 60,000	15	12.5	
60,001 – 80,000	2	1.7	
80,001above	4	3.3	

Source: Field survey (2014)

Table 2: Distribution of respondents by their attitude to vocational training

Perception statements	SA	A	N	D	SD
Agricultural vocational training programmes have motivated me to take up agribusiness.	39.2	45.8	1.7	7.5	5.8
Agricultural vocational training programmes have helped me in introducing new techniques and practices in crop and animal production.	25.0	56.7	6.7	7.5	4.2
Agricultural vocational training programmes may help improve the income of youths	37.5	54.2	2.5	4.2	1.7
Agricultural vocational training programmes can help solve the production and agro-processing problems.	35.0	54.2	4.2	4.2	2.5
Agricultural vocational training programmes has enhanced my livelihood status.	23.3	51.7	12.5	8.3	4.2
Government is not committed to agricultural programmes.	12.5	24.2	31.7	24.2	7.5
Agricultural vocational training Programmes is not addressing the felt needs of the youth.	15.0	36.7	6.7	34.2	7.5
I have had no regret in participating in agricultural vocational training programmes	8.3	10.8	3.3	40.8	36.7
Agricultural vocational training programmes will ensure my food security.	35.0	57.5	3.3	3.3	0.8
Outcome of Agricultural vocational training programmes could improve overall welfare of the society.	34.2	59.2	4.2	2.5	0
Agricultural vocational training programmes are empty promises; nothing spectacular might come from them.	8.3	35.0	8.3	35.8	12.5
AVTP comes with appropriate financial incentive that facilitates implementation.	9.2	39.2	10.0	20.0	21.7
I am participating in Agricultural vocational training programmes because I am jobless	13.3	35.0	2.5	30.8	18.3
Agricultural vocational training programmes has not significantly enhanced my capacity.	10	40.8	13.3	31.7	4.2
Government policies to improve agricultural productivity through agricultural vocational training programmes are not effective.	12.5	22.5	18.3	35.8	10.8
Active participation in agricultural vocational training programmes has not raised the production efficiency and productivity of the beneficiaries.	14.2	34.2	9.2	35.0	7.5
Agricultural vocational training programmes can create a viable employment opportunity for me.	32.5	57.5	5.0	4.2	0.8
Agricultural vocational training programmes implementation requires huge capitals to start, which is not usually available.	5.0	18.3	6.7	45.8	24.2
Agricultural vocational training programmes implementation requires a lot of risk which discourages most people from being involved.	18.3	47.5	2.5	22.5	9.2
Agricultural vocational training programmes can prevent poverty.	44.2	47.5	2.5	4.2	1.7
Agricultural vocational training programmes implementation involves lots of physical activities which discourages me.	10.8	29.2	5.0	40.0	15.0

SA= Strongly Agree, A= Agree, N= Neutral, D= Disagree and SD= Strongly Disagree

Table 2a: Categorisation of respondents' attitude towards the vocational training

Attitude categories	Frequency	Percentage
Unfavourable	64	53.3
Favourable	56	46.7
Total	**120**	**100**

Source: Field survey (2014)

Results in Table 3 show participants ranked poultry first with the highest weighted mean score of 120.8 as the enterprise they were involved in during their training at AVTP. This is directly followed by fishery (101.7) and beekeeping (98.4), while the least agricultural enterprises involved were farm machinery and maintenance (5.1). This implies that the respondents were involved in poultry, fishery and beekeeping than other agricultural enterprises. This might be due to ease in starting up, reasons for their choice of involvement as well as possible profitability of the enterprises.

Table 3: Distribution of respondents by their involvement in vocational training

Agricultural enterprise	To a larger extent	To a lesser extent	Not at all	Weighted score	Rank
Poultry	53.3	14.2	32.5	120.8	1st
Fishery	45.0	11.7	43.3	101.7	2nd
Beekeeping	41.7	15.0	43.3	98.4	3rd
Cash crop production	28.3	6.7	65.0	63.3	4th
Piggery	25.0	11.7	63.3	61.7	5th
Exotic vegetable production	25.8	9.2	65.0	60.8	6th
Tree planting/ crops	25.0	10.0	65.0	60.0	7th
Arable crops production	22.5	12.5	65.0	57.5	8th
Snailry	22.5	10.8	66.7	55.8	9th
Horticulture	20.8	14.2	65.0	55.8	9th
Fruit processing	20.8	13.3	65.8	54.9	10th
Quailry	20.8	13.3	65.8	54.9	11th
Farm machinery and maintenance	1.7	1.7	96.7	5.1	12th

Source: Field survey (2014)

Table 4 indicates personal interest was ranked first, then peer influence and enterprise profitability with weighted mean scores of 186.6, 140.0 and 70.2 individually, as reasons that motivated respondents in picking their choice of enterprise during the course of agricultural vocational training programmes. This suggests that personal interest was the main motive for the respondents' choice of agricultural vocational training rather than profitability of the enterprise. This is probably because initially prior to the training programme they might not really have details as to what enterprise will be profitable than other, so they were to stocked to the best reason (personal reason) known to them. This is in agreement with the assertion of Ayinde and Latopa (2015) that interest and passion were the two interconnected elements for sustainability of youths' involvement in agricultural programme.

Table 4: Distribution of respondents by their motive(s) for choice of agricultural vocational programme

Motive(s) for choice of vocational programme	To a large extent	To a lesser extent	Rarely	Not at all	Weighted score	Rank
Personal interest	59.2	1.7	5.8	33.3	186.8	1st
Peer influence	41.7	5.8	3.3	49.2	140	2nd
Family influence	44.2	0.8	5.0	50.0	139.2	3rd
Affordability	22.5	5.0	1.7	70.8	79.2	4th
Profitability	20.1	3.3	3.3	73.3	70.2	5th

Source: Field survey (2014)

Table 5 reveals that lack of finance with weighted mean score of 165.9, lack of land (104.2), lack of incentives (63.3), occurrence of natural hazards (58.3), market access (39.9) and inadequate training (31.7) were the most severe constraints faced by the respondents as they were ranked first, second, third, fourth and fifth, respectively. This indicates that almost all the respondents' constraints revolve round fund because if they had money they could actually purchase land and there

will not be need for any incentives from governments. This corroborates the assertions of Adekunle, Adefalu, Oladipo, Adisa and Fatoye (2009) and FAO, CTA and IFAD (2014).The studies implicated lack of credit facilities and inadequate access to financial services as constraints affecting AVTP and youths' participation in agricultural training programme.

Table 5: Distribution of respondents by their constraints to their involvement in vocational training

Constraints	Serious constraints	Minor constraints	Not a constraint	Weighted score	Rank
Lack of finance	76.7	12.5	10.8	165.9	1st
Lack of land	47.5	9.2	43.3	104.2	2nd
Lack of incentives	25.8	11.7	62.5	63.3	3rd
Natural hazards	17.5	23.3	59.1	58.3	4th
Lack of access to market	13.3	13.3	73.3	39.9	5th
Inadequate training	12.5	6.7	81.6	31.7	6th
Parental influence	6.7	6.7	87.5	20.1	7th
Peer pressure	4.2	10.0	85.8	18.4	8th
Low self interest	5.0	7.5	87.5	17.5	9th

Source: Field survey (2018)

Table 6 shows that institutions attended (χ^2=91.90; p= 0.00), employment status (χ^2=13.69; p=0.02), age (r=-0.31; p=0.00) and monthly income (r=-0.22; p=0.02)of the respondents were significantly related to the respondents' involvement in the AVTP among other socioeconomic characteristics. However, institution attended and employment status have direct relations to their involvement in the AVTP, while both age and monthly income the inverse (negative) relationship. This implies that the younger and the less income earner were the ones more involved in the AVTP. This is expected because the programme actually targeted the unemployed youths.

Table 6: Chi-square for test of relationship between socioeconomic characteristics and involvement in vocational training programme (n=120)

Characteristics	χ^2	Df	p-value	Decision
Institution attended	91.90	1	0.00	Significant
Sex	1.05	1	0.21	Not significant
Marital status	2.07	1	0.11	Not significant
Course of study	43.32	37	0.22	Not significant
Employment status	13.69	5	0.02	Significant
Variable	**r-value**	**NA**	**p-value**	**Decision**
Age	-0.32	-	0.00	Significant
Years of formal education	0.11	-	0.25	Not significant
Household size	0.06	-	0.50	Not significant
Owned family size	-0.09	-	0.33	Not significant
Monthly income	-0.22	-	0.02	Significant

Source: Computation analysis (2014)

Table 7 indicates that age (β= -0.30; p=0.01) and constraints faced (β=0.20; p=0.03) significantly determined the respondents' involvement in the vocational training programme. This indicates that age contributed 30 percent (although negative) meanwhile constraints contributed 20 percent to their involvement in AVTP. This implies that as respondents' age is increasing their involvement in AVTP is decreasing, practically this is pointing to the fact that youths are the ones interested in AVTP. This is in tandem with the studies of conducted by Nnadi and Akwiwu (2008) and Thomas and Eforuku (2016). They identified age and constraints as part of determinants of youth participation in rural agriculture.

Table 7: Regression Analysis of determinants of youths' involvement in agricultural vocational training

Variables	β-value	r-value	p-value	Decision
Age	-0.30	-2.79	0.01	Significant
Own family size	-0.01	0.03	0.98	Not significant
Household size	-0.13	-0.71	0.48	Not significant
Years of formal education	0.11	1.25	0.22	Not significant

Variables	β-value	r-value	p-value	Decision
Monthly income	-0.16	-1.86	0.07	Not significant
Index of attitude to AVTP	0.06	0.65	0.52	Not significant
Constraints index	0.20	2.16	0.03	Significant

Source: computation analysis (2014)

CONCLUSIONS AND RECOMMENDATIONS

Conclusively, respondents were male, married, entrepreneur, young and small income earners. They were involved in poultry enterprise during the AVTP for personal interest or reason. They had unfavourable attitude towards involvement in AVTP, had fund-related constraints and significant relationship existed between institutions they attended, age, monthly income and their involvement in AVTP while age and constraints faced were the determinants of their involvement in AVTP.

The study recommends that in order to enhance and encourage youths to get involved in subsequent agricultural vocational programmes, age and identified constraints should be giving high consideration. Youths' age should be pruned to really include main target group (stating specifically age limit) so as to have desired impact. While identified constraints such as lack of fund, access to land and incentives could be solved by providing them with loan credit facilities with little or no interest rate immediately after the training programme.

REFERENCES

Adekunle, O. A., Adefaju, L. L., Oladipo, F. O., Adisa, R. S. and Fatoye, A. D. (2009). *Journal of Agricultural Extension*. Vol. 13 (1), 102-108.

Ayinde, A. and Latopa, S. (2015). Identifying the census of decline in youth participation in Agricultural empowerment programme of youth integrated training farm, Malete, Kwara state. *Research Humanities and Social science*. 194-201. ISSN (Paper) 2224-5766. ISSN (online) 2225-0484

Food and Agriculture organisation of the United States (FAO), Technical Centre for Agricultural and rural cooperation (CTA) and International fund for Agricultural Development (IFAD). (2014). Youth and agriculture: key challenges and concrete solution. Pgs. 1-128

International Labour Organisation (ILO) (2008). Global employment trends for youth. October 2008. ISBN 978-92-2-121545-5. Pgs. 1-40 Retrieved OCTOBER, 13, 2018, from http://www.ilo.org/wcmsp5/groups/public/-dgreports/dcomm/documents/publication/wcms_077664.pdf

Laleye, D. (2018). Federal Government provides #55,5bn for youth empowerment in Agriculture. This day, June 1, 2018. Accessed October 15th, 2018

National Directorate of Employment (NDE) (2009). Annual report and statement of account, December, 2009.

Nigeria population reference Bureau (2007). 2007 world population data sheet. Pgs. 1-14. August 2007. ISSN 0085-8315

Ojei, B. (2010). NDE Registers 320 for Skill Acquisition in Enugu. Retrieved from http://www.nigerianbestforum.com/generaltopics/?p=42339.

Small. S. (2018).Encouraging youth involvement in Agriculture and Agribusiness; Food tank, the think tank for food accessed 15th October, 2018.

Thomas, K. A. and Eforuoku, F. (2016). Determinants of participation in youth-in-Agriculture programme in Ondo state, Nigeria. *Journal of Agricultural extension*. Vol. 20(10). ISSN (e): 24086851; ISSN (Print); 1119944x. http;//dx:doi.org/10.4314/jae.v20i2.8. Page 104-117

DEVELOPING A RESEARCH FRAMEWORK FOR YOUTH ENGAGEMENT IN AGRIPRENEURSHIP: APPLICATION OF THE THEORY OF PLANNED BEHAVIOUR

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ABSTRACT
Africa has a huge youthful population. This important part of the demography is facing high rates of unemployment, underemployment and poverty. The agriculture and rural economy sector has the potential of providing the required employment, improving the livelihood of agripreneurs, turning around the rural economy and engendering national development. While indicators show that young people are less inclined to get involved in agribusiness activities, few formal studies have been conducted to theoretically and inferentially understand why this is so. A robust research should be designed to assess the predictors of agripreneurship intention and behaviour of youth in Africa. The findings of such would highlight the important factors for consideration in youth and rural development efforts and policymaking from the viewpoint of the youth. The central thesis of the Theory of Planned Behaviour (TPB) is that attitudes, subjective norms and behavioural control – which are derivatives of behavioural, normative and control beliefs, respectively – determine behavioural intention. The intention, in turn, influences actual behaviour. In addition to the three established predictors, this study will extend the theory to enhance its explanatory power. The qualitative aspect of the study would explore the challenges faced by established and successful agripreneurs in Africa and add such to the conceptual model in the form of perceived lack of facilitating conditions. This is because literature has shown that issues such as land tenure system, infrastructure, and access to credit could affect agripreneurship engagement. Another construct relevant to this study is the aspiration of youth. These two would be assessed by induction and added to extend the TPB for better parsimony in explaining youth agripreneurial engagement. Based on this theoretical background and review of empirical literature, this study proposed a framework for studying African youth engagement in agripreneurship.
Keywords: Agripreneurship; intention; theory of planned behaviour; youth

INTRODUCTION

Africa, being the youngest continent (Filmer and Fox, 2014) with a median age of 18, has a large youth population trooping into the labour market. In Sub-Saharan African (SSA) alone, a whopping 800 million new entrants into the labour force is expected by 2050 (Losch, 2016).In addition to huge (unskilled and low skilled) human capital, limited infrastructure and facilities and high poverty levels stimulate concern over the prospects of youth in SSA finding decent work (AU, 2015; Losch, 2016; Proctor and Lucchesi, 2012).Having 186 million people, Nigeria is the most populous African country (World Bank, 2017) with a youth bulge expanding in absolute terms and high rates of unemployment, underemployment and poverty (Adesugba and Mavrotas, 2016a; Filmer and Fox, 2014; Moore, 2015). Africa's improving agricultural and food systems are expected to present the largest livelihood opportunities for much of the young population. Agricultural development is also key to youth emancipation and national development (Haggblade *et al*., 2015; Losch, 2016). The large population presents a huge, fast growing market complemented with natural resources endowment, geographical size and diverse ecosystems (Losch, 2016). SSA is experiencing fast economic growth. Its GDP grew at an average of 4.5% between 2000 and 2012, more than double the rate in the prior two decades. This denotes a higher purchasing power for value-added goods and services (Filmer and Fox, 2014).However, agricultural and rural economy sector is not attracting enough youths. Those that found themselves in agriculture are always looking for alternative often-non-existing "good" formal jobs. This growing disinterest in agricultural activities has been attributed to many reasons including low productivity, meagre returns, negative perception of agriculture in the society and decent work deficit (Filmer and Fox, 2014). Hence, the need to understand the factors influencing the willingness of young people to engage in profitable agribusiness activities and device ways of promoting and easing engagement.

Many youth initiatives exist. But they are often too generalized, top-down, and without involvement of (especially rural) youths (Losch, 2016). Youth participation is increasingly recognized as having an important role in decision-making, and policy-makers are urged to work not only for but with youth (FAO, IFAD, and CTA, 2014). For agribusiness development policies and programmes to succeed, youth should be considered as partners right from planning stage (FAO *et al*., 2014; Valliere and Gedeon, 2015). This study would assess the behaviour and intention of young people with regards to engagement in agripreneurship, and develop a model of what drives such engagement behaviour using qualitative and quantitative approaches.

Theoretical framework

The theory of planned behaviour (TPB) is arguably the most popular and influential theory used in predicting human behaviour (Ajzen, 2011). It is a psychometric theory that was derived and advanced from the theory of reasoned action, TRA (Fishbein and Ajzen, 1975). The TRA postulated that humans are rational beings whose attitudes, beliefs, intention and behaviour are determined by the information available to them. Meanwhile, the central thesis of TPB is that attitudes, subjective norms (SN) and behavioural control (which are derivatives of behavioural, normative and control beliefs, respectively) determine behavioural intention. The intention, in turn, influences actual behaviour (Ajzen, 1991). It implies the person's willingness and readiness to perform the said behaviour. In human psychology, intention is seen as the most accurate predictor of behaviour (Taha, Ramlan, and Noor, 2017). Multitudes of studies support the effect of intention in predicting behaviour (Kaiser, 2006) agreeing with earlier postulations that intention is the immediate determinant of behaviour(Ajzen, 1991; Fishbein and Ajzen, 1975; Kaiser and Scheuthle, 2003). The TPB supposes that people decide to perform (or not to perform) certain behaviour after rationally examining the information available to them in a systematic way. The theory successfully predicted entrepreneurial intentions (EI) among youths in several studies in various contexts such as among university students in Spain(Robledo, Arán, Martin-Sanchez, and Molina, 2015); comparative study of Chinese and Indonesian youth (Kaijun and Ichwatus Sholihah, 2015); intention to youth ICT among rural entrepreneurs (Zaremohzzabieh *et al*., 2016); entrepreneurship readiness West Bengali youth (Jafar, Ghosh, and Jafar, 2015); and among Malaysian students (Chuah, Ting, Run, and Cheah, 2016). It was observed that despite its efficiency in determining entrepreneurship behaviour and intention, very few studies (Ridha and Wahyu, 2017), used the TPB to specifically explain agricultural entrepreneurship or agripreneurship behaviour. This absence of empirical studies is more glaring in the African context.

In addition to the three established predictors (Ajzen, 1991, 2011), this approach extends the theory to enhance its explanatory power; as Ajzen (1991) supports the addition of predictors that could explain more variance in the intention or behaviour of interests. The qualitative aspect of the study would explore the challenges faced by established and successful agripreneurs in the study area and add such to the model in the form of perceived lack of facilitating conditions. This is because literature has shown that issues such as land tenure system, infrastructure, and access to credit could affect agripreneurship engagement (Elder, de Haas, Principi, and Schewel, 2015; Filmer and Fox, 2014; Moore, 2015). Another construct relevant to this study is the aspiration of youth (Adesugba and Mavrotas, 2016a; FAO *et al*., 2014; Langevang, Namatovu, and Dawa, 2012; Proctor and Lucchesi, 2012; Uneze, 2013). These two would be assessed by induction and added to extend the TPB for better parsimony in explaining youth agripreneurial engagement.

Conceptualisation of Relevant Terms

Agripreneurship engagement: Entrepreneurship has been on the forefront of discourse on economic development and poverty reduction in the past decade. It promotes feasible and sustainable economic development among developing countries (Chuah *et al*., 2016; Emerhirhi, Nnadi, Chikaire, Anyoha, and Ejiogu-Okereke, 2017). Meanwhile, agripreneurship is a relatively new concept, with little presence in literature, which is derived from agriculture and entrepreneurship. It denotes the ability of a person to recognize viable business opportunity in or related to the agricultural industry, gather resources, establish and manage the resulting agribusiness successfully (Otache, 2017). Agripreneurship opportunities abound in all parts of Nigeria from the rural agrarian economies to the industrial urban and peri-urban areas (Emerhirhi *et al*., 2017). However, youth are not embracing agripreneurship. Many essential internal and external factors influence entrepreneur engagement (Agapitou *et al*., 2008). As engagement is behavioural, this study would investigate how this class of factors affect the intention of youth to engage in agripreneurship.

Intention: refers to a person's readiness to perform a behaviour (Ajzen, 1991). An individual's entrepreneurial intention (EI) reflects his/her level of interest in starting a business and therefore a subsequent positive influence in employment creation. An entrepreneurial event is best described by intention towards it (Chuah *et al*., 2016). EI is found to be linked to the entrepreneurial growth aspirations, denoting how entrepreneurs anticipate the number of jobs they think they will have in the future. Furthermore, EIs are related to behaviour, attitudes, SN and PBC (Ajzen, 1991; Robledo *et al*., 2015).

Attitude: according to the TPB, behaviour is determined by three sets of beliefs: behavioural, normative and control. The behavioural beliefs refer to the subjective probability that if the behaviour is carried out, certain expected outcome would be produced. Behavioural beliefs are the precursors of attitude (favourable or unfavourable) towards the behaviour of interest (Mabbutt, 2014). Youth perceive agriculture as a poor man's job with a lot of hard work for meagre returns (IITA, 2014). This mind-set shapes their attitude towards the profession and scares them from engaging in agribusiness unless when necessary (Sanginga, 2015). According to participants in several studies

"good jobs" are those that command respect and high payment (Filmer and Fox, 2014); and are less risky (Losch, 2016). Formal wage jobs in urban areas are considered lucrative and secured, hence preferred by the youth (Filmer and Fox, 2014). Empirical studies have established that attitude influences EI among youth (Shah and Ali, 2013).

Subjective norms: Normative beliefs are concerned with the perceived appropriate behaviour as expected by important individuals or groups such as family, colleagues and friends, also known as reference people. Normative beliefs produce SN which refer to the social pressure to engage or not in certain behaviour considering the expected approval or disapproval from important others (Hyde and Knowles, 2013; Mabbutt, 2014; Ridha and Wahyu, 2017). SN are proposed to affect EI (Shah and Ali, 2013) and to be significantly effective in determining agripreneurship intention in Indonesia (Ridha and Wahyu, 2017). It was found to be the strongest determinant of entrepreneurship among agricultural services providers (Alavion *et al*., 2017).

Perceived behavioural control and facilitating conditions: Control belief is the degree of perception of the availability of factors that could enhance or inhibit the performance of a given behaviour (Chuah *et al*., 2016). Control beliefs produce PBC. It implies the ease or difficulty of performing a behaviour (Hyde and Knowles, 2013). PBC is directly related to behavioural intention as it reflects external conditions (such as facilities) and internal volition of the individual (Vermeir and Verbeke, 2008). It has also been found to influence EI (Shah and Ali, 2013). FC is the degree to which an agripreneur believes that technical and institutional infrastructure exists and is accessible to support engagement (Venkatesh *et al*., 2008). Some of the most important FCs include access to credit and information (Chuah *et al*., 2016; Sanginga, 2015); power supply, irrigation and transportation (Elder *et al*., 2015); IT support and infrastructure (Qin and Juan, 2003). FC is a predictor of behaviour and also PBC (Ibrahim *et al*., 2016).

Aspirations: Disparity between youth aspiration and the reality of agriculture (including uncertainties, limited opportunities, and harsh work conditions) leads to disinterest in the sector (Losch, 2016). As youth grow, they observe and assimilate what is happening in their immediate environment. Youths are not interested in the status and type of employment traditional agriculture provided their parents (Filmer and Fox, 2014; Moore, 2015). Apart from the economic wellbeing, youth aspire for high social status (Proctor and Lucchesi, 2012). Former UN secretary general, Kofi Annan, told the 34th session of IFAD governing council that progress in agri-food systems around the globe depends on making the system attractive to youth in line with their drive and aspirations. However, there is a poor and incomprehensive understanding of the aspiration of (rural) youth in developing countries coupled with their marginalization in the policy process (Proctor and Lucchesi, 2012). There is shortage of empirical studies assessing the influence of aspiration on youth engagement in agripreneurship. Hence, this study will explore the aspirations of Nigerian youth agripreneurs in a qualitative approach. This will follow the method of previous Africa-wide and regional studies (Haggblade *et al*., 2015; Namatovu *et al*., 2012), and provide a deeper analysis of the Nigerian situation.

Competency: refers to the individual's ability to apply or use knowledge, skills, behaviours and attributes to effectively perform tasks, specific functions, or operate in a specified role (Chouhan and Srivastava, 2014; Filmer and Fox, 2014). Competence is the ability or capability (Boyatzis, 2008) to do something efficiently and effectively. It is associated with high performance and "demonstration of particular talents in practice and application of knowledge required to perform a job" (McClelland, 1973). It is an omnibus term covering education, knowledge, ability, proficiency, efficacy and skills to perform a job effectively (Venkatesh *et al*., 2008). Apart from low level of education and training, there is a profound issue of mismatch between the education obtained by the youth and the skills required by the potential employment (Elder *et al*., 2015; Proctor and Lucchesi, 2012). The youths entering African labour market are the most educated ever. But they are facing similar challenges in employment and earnings as their predecessors (Filmer and Fox, 2014). Entrepreneurship education, skills and abilities are requisite for entrepreneurial engagement among Nigerian youth (Michael, Inyang, and Ojeka, 2016) and are significantly related to EI among Greek youth. Agripreneurs need modern entrepreneurial skills and competencies to engage in agribusiness (Otache, 2017).

Gender: roles and expectations are different between young men and young women, with the females mostly at the receiving end of socio-cultural norms (Filmer and Fox, 2014). For instance, the most important reason why women are involved in agripreneurship in Nigeria was reported to be to reduce family poverty (Emerhirhi *et al*., 2017). Also, female entrepreneurs are suggested to be more process-oriented (Venkatesh *et al*., 2008). They are expected to show higher significant effect of PBC on agripreneurship behaviour. Therefore:

H9: Gender moderates the relationship between SN and intention to engage in agripreneurship;

H10: Gender moderates the relationship between PBC and agripreneurship engagement intention,

such that the effects will be stronger among females.

Location of residence (LoR): Residing in urban vs. rural areas have different influence on agripreneurship and its determinants (attitude), hence, may moderate attitude (Haggblade *et al*., 2015). High poverty rates, low educational expectations and low socioeconomic status in rural communities, negatively impact on the aspiration levels of rural young people relative to their urban counterparts (Proctor and Lucchesi, 2012). Therefore, the study will test the hypotheses:

$H_1$1: LoR moderates the relationship between attitude and agripreneurship intention.

$H_1$2: LoR moderates the relationship between aspiration and agripreneurship intention.

The conceptual model and the hypotheses are represented in Figure 1.

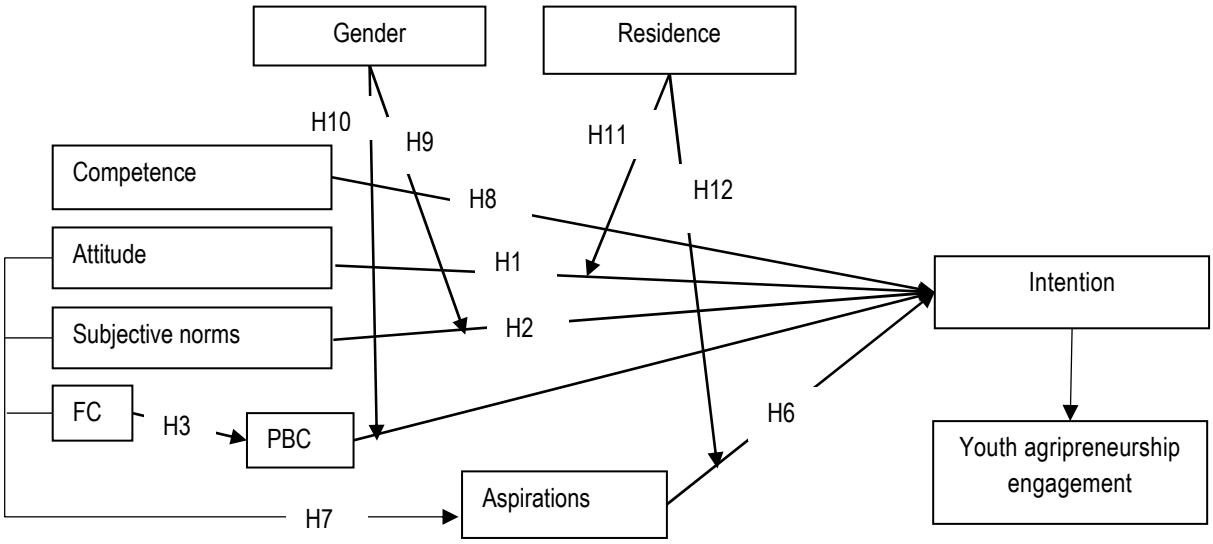

Figure 1: The research model depicting the extended TPB as adopted from Ajzen (1991)

Youths

There are varying definitions of what constitutes the youth. Major international bodies such as the United Nations and the International Labour Organisations pegged the age 15 to 24 years as youth duration. However, the African Union considers people aged 15 to 35 years as youth. Even among SSA countries the age bracket varies from 15 - 30 in Kenya; and 18 - 35 in Nigeria; to 15 - 40 in Mali (FGN, 2009; Filmer and Fox, 2014). The delineation is often determined by the end use of the measurement (Proctor and Lucchesi, 2012). For instance, although individuals up to 35 years old are considered youth according to the national policy, graduates above 30 years old are not eligible for National Youth Service Corps (NYSC) scheme in Nigeria. Youth are a heterogeneous group (FGN, 2009), as diverse as the general population they come from. The Nigeria National Youth Policy acknowledged that youth are the most important and valuable resource of the nation. Therefore, the Government "shall recognize, discover and understand their conditions, needs, interests, issues, aspirations, ideas and capacities and make appropriate provision for their growth and development". Furthermore, the policy added that the youth are "the most active, the most volatile, and yet the most vulnerable segment of the … population" (FGN, 2009). Priority target and vulnerable youth include young women, disabled youths, those in rural areas and urban slums, and the unemployed (Moore, 2015).Youth require viable economic opportunities for their – and their households' – immediate income needs, but also to support their lifelong wellbeing. Such opportunities enable young people build financial assets, competencies, social networks, resilient livelihoods and overall social and economic wellbeing (Moore, 2015). In the case of Nigerian youth, these opportunities could be found in agribusiness and rural economy in the form of agripreneurship. With rising income and growing markets demanding high value products, commercialization of agricultural sub-sectors is pertinent (Maillu, Mukulu, and Kahiri, 2016).

Agripreneurship and benefits of engagement

Agripreneurship is simply entrepreneurship in agriculture. It has been described by the Global Forum for Rural Advisory Services (GFRAS) as the "adaptive and dynamic process of business development within the agricultural sector that brings innovation and value addition, accelerates value creation, and provides for sustainable systems that support equitable social impact" (Ferris, Chander, and Ernst, 2017). It denotes sustainable, market-oriented, socially-reasonable

business initiatives at all levels of operation in agricultural system (Uneze, 2013). Agripreneurship can help youth be more effective actors in the agri-food value chain, not only by raising their livelihood options, but also providing new job opportunities and sources of empowerment. Agripreneurs can be found adding value at any part of the agricultural value chain: upstream and downstream(Losch, 2016). Some examples include: farmers, traders, processors, retailers, and business services providers such as agro-input dealers, production services, equipment maintenance services, market information services, and financial service providers that facilitate the value chain (Ferris *et al*., 2017; Proctor and Lucchesi, 2012). They are also found in all sub-sectors of agriculture and rural economy including horticulture, arable farming, aquaculture, forestry, and livestock (Emerhirhi *et al*., 2017; IITA, 2014; Maillu *et al*., 2016; Sanginga, 2015; Uneze, 2013). Hence, small and medium enterprises (SMEs) opportunities in agribusiness abound at each stage of the value chain.

Youth and agripreneurship

Various studies have assessed youth willingness to engage in agripreneurship in Nigeria (Adesugba and Mavrotas, 2016b; Akintayo and Lawal, 2015; Saliu, Onuche, and Abubakar, 2016). However, some of these studies used primarily descriptive forms of analysis (Akintayo and Lawal, 2015; Saliu *et al*., 2016) and, therefore, could not make inferences; others were limited in scope (Saliu *et al*., 2016). Moreover, some of the studies used secondary data and/or desk reviews, therefore, did not look at the issues from perspective of the youth. This study will fill these gaps by using inferential statistics, covering wider area and sample size, using mixed method approach, and combining primary data collection and desk review.

Agriculture is not just the highest employer of labour in SSA, it holds the potential of triggering economic growth for the region and the desired employment for the youth (Filmer and Fox, 2014). The youth-agripreneur nexus in developing countries is not gloomy in all cases. There are initiatives that have succeeded. For instance, the International Institute for Tropical Agriculture (IITA) established its youth agripreneurship programme (IYA) in 2012 at Ibadan, Nigeria. The programme was effective in changing the mind-set of youths in favour of agribusiness (IITA, 2014; Sanginga, 2015). It was dynamic in the continuous training and re-training of youths and its use of social media platforms for widespread communication and attracting youth (IITA, 2014), and value addition. It recorded so much success that the programme was replicated in Congo DR (2013), Tanzania (2014), Kenya (2015), and Uganda (2015). The Federal Government of Nigeria (FGN) also implemented its Youth Employment in Agriculture Programme (YEAP) in collaboration with FAO; and Youth and Women in Agribusiness Investment Programme (YWAIP) in 2013 and 2014 respectively, with certain levels of success (Adesugba and Mavrotas, 2016a). Red Fox, Ethiopia is an expansive horticultural outfit owned by German entrepreneurs. It supplied 1300 employment opportunities to mostly youth and women. Another example involves vegetable production in Madagascar, where thousands of small-scale agripreneurs are organised to produce for export (Filmer and Fox, 2014).

Scales and Instruments

This is a mixed method study involving both qualitative and quantitative aspects. An interview guide should be used for the in-depth interview in the qualitative part of the study. The outcomes could be ratified in a Delphi process and incorporated as a scale in the questionnaire to be used in the quantitative part of the study. The questionnaire will be designed based on validated scales, rigorous literature review and the Delphi technique.

Data collection

Data collection will employ the use of mixed research methods including in-depth interview with key informants, Delphi technique and survey. In-depth interview will be conducted with the identified successful agripreneurs to establish the challenges and aspirations of youth agripreneurs (Hsu and Sandford, 2007; Kumar, 2011). Structured questionnaire will be designed for the survey part of this study. This will be self-administered by the selected respondents with the help of trained research assistant(s) whom would provide clarifications when required.

Data analysis

To explore the terrain of youth engagement and aspirations in agripreneurship, the data obtained from interview will be subjected to theme analysis (Creswell, 2007)using NVIVO software. Research question number one will be answered using descriptive statistics such as mean, standard deviation, and percentage. The second research question will be answered using multiple regression analysis. The third and fourth will be answered using structural equation modelling (SEM). The data will be analysed using IBM SPSS and AMOS softwares. Assumptions such as normality, presence of outliers and multicollinearity will be assessed and treated (Samah, 2016). Factor analysis will be employed as a data reduction technique (Pallant, 2011). Measurement model will be used to test for model fit, convergent and discriminant validities, normality, and reliability. Finally, a structural model will be formed to show the levels and strengths of inter-relationships, test the hypotheses and contribute evidence to decision and policy

making (Gaskin, 2016; Hair, Babin, and Krey, 2017; Hair, Black, Babin, and Anderson, 2014).

Policy Implications

Whatever efforts are aimed at engaging youth to wholeheartedly embrace agribusiness and rural economy as means of livelihood need to encompass understanding and transformation of the psychosocial image of agriculture in the mind of the target youth and the society. This is because studies (Proctor and Lucchesi, 2012; Sanginga, 2015; SPC, 2010) have shown that youth prefer office jobs in the city and consider career in agri-food systems as condescending, last resort and, in some cases, a stop-gap stint (Proctor and Lucchesi, 2012). Also, as SSA remains predominantly agrarian, youth employment and overall social and economic policies need to understand the entire landscape, taking into consideration what people do, what they think, and where they live (Losch, 2016).However, behavioural change policies targeted at promoting youth engagement in agripreneurship have been tested and found effective elsewhere. For instance, Pacific region's ministers of agriculture met in 2008 to discuss, among other issues, the problem of difficulties faced by youth in their struggle to find formal employment after school (Proctor and Lucchesi, 2012). Hence the Secretariat of the Pacific Community (SPC) was directed to investigate what had to be done to make agro-based careers more attractive. SPC involved young people in its quest for answers. For example, youth were surveyed in order to explore their participation in the rural economy and how to encourage and empower them to realize the full potentials of career in agribusiness. That survey contributed to the policy drafted into the Pacific Youth in Agriculture Strategy 2011–2015 (SPC, 2010).Similarly, in SSA, Ethiopia has shown commitment to youth in agribusiness. Model farmers were identified and engaged to mentor agripreneurs (Proctor and Lucchesi, 2012). The current study will follow suit and assess the factors determining the engagement behaviour of youth in agripreneurship. Among the major constraints to youth engagement in agripreneurship activities is the lack of appropriate youth policies and/or non-inclusion of youth voices in policy making (Proctor and Lucchesi, 2012). The study also aimed to contribute to policy by identifying potential model agripreneurs in the study area, factors determining their engagement behaviour and how to improve such behaviour among other youth.

It is also noteworthy that while several policy dimensions – such as investment and sectoral policies; education and training policies; labour market policies and social protection; youth entrepreneurship and financial inclusion (Elder *et al*., 2015) – are vital when it comes to youth engagement in agripreneurship; youth must play their vital role in the African equation (Losch, 2016). Hence, the African Union at its CAP has reiterated its recognition of the essential need of children, youth and women engagement and development in the region post-2015 plans for a people-centred development (AU, 2015). At their assembly in Addis Ababa, 2014, the African Heads of State and Government, acknowledged youth empowerment as a catalyst for development and aimed to put in place, policies that invigorate entrepreneurship skills and business advisory services, and increase financial services and accessibility with emphasis on gender equality and youth empowerment. Furthermore, the Union also expressed support toward modernizing the agro-industry sector and linkages.

Understanding youth behaviour and its predictors would help in designing policies aimed at promoting engagement in agripreneurship and subsequently the agricultural and economic development of the youth in particular and the society in general. Contemporary agricultural development policies in Nigeria should pay attention to demographic stratifications for effective contribution of various age and gender groups to overall national development (Proctor and Lucchesi, 2012). The role of youth, particularly in agribusiness, can no longer be overlooked. Existing policies are known to be formulated using the top-down method. This study will employ bottom-up approach to youth engagement by presenting the determinants of engagement from the perspectives of the youth. Policies should be guided by evidence-based research. This study will use the powerful structural equation modelling (SEM) techniques to arrive at its findings. For example, this study will use gender as a moderator in the relationships in TPB. Therefore, it will dissect the gender differentials in the youth engagement and determine the cause(s) of such disparities. Hence, the study will be able to make gender-smart recommendations to be included in youth employment drives in agribusiness.

Contribution to the field

Contributions to knowledge – this framework is unique in its approach to knowledge in at least three ways. First, it will use the theoretical approach so that its findings could find and fill a gap in the global knowledge in the field. Second, its use of advanced and robust statistical analysis that enhances prediction by taking care of measurement errors (SEM) is unprecedented in the study area. Third, the findings will be published in some of the most reputable peer-reviewed journals and archived for future references in the academic community.

Contributions to practice – this framework would fashion out a pro-social model of youth engagement in agripreneurship. The factors identified as significant determinants of the

agripreneurship engagement behaviour would be prioritized in youth, agribusiness and rural development efforts. Interested youths would know what to work on for effective agripreneurial engagement based on evidence from this study.

Contributions to policy – this approach will be situated in the context of Nigeria's national youth and employment policies. The findings could lead to evidence-based recommendations for informed policy.

Future research direction

Future studies should subject this proposed framework to empirical studies. Real life data collected from the field would facilitate the acceptance or otherwise of this model.

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REFERENCES

Adesugba, M. A., and Mavrotas, G. (2016a). *Delving deeper into the agricultural transformation and youth employment nexus: The Nigerian case* (No. 31). Retrieved from http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/130281

Adesugba, M. A. and Mavrotas, G. (2016b). Youth Employment, Agricultural Transformation, and Rural Labor Dynamics in Nigeria, (December). Retrieved from http://ebrary.ifpri.org/cdm/singleitem/collection/p15738coll2/id/130962

Agapitou, C., Tampouri, S., Bouchoris, P., Georgopoulos, N., and Kakouris, A. (2008). Exploring Underlying Beliefs on Youth Entrepreneurship of Higher Education Graduates in Greece. *Proceedings of the 5th European Conference on Innovation and Entrepreneurship*, 10–17.

Ajzen, I. (1991). The Theory of Planned Behavior. *Organisational Behavior and Human Decision Processes*, *50*, 179–211.

Ajzen, I. (2011). The theory of planned behaviour : Reactions and reflections. *Psychology and Health*, *26*(9), 1113–1127. http://doi.org/10.1080/08870446.2011.613995

Akintayo, I. O. and Lawal, B. O. (2015). *Willingness of Youth to Practise Agriculture: Implications for Farm Succession and Sustainable Farming Systems in Nigeria*. Ibadan.

Alavion, S. J., Allahyari, M. S., Al-Rimawi, A. S., and Surujlal, J. (2017). Adoption of Agricultural E-Marketing: Application of the Theory of Planned Behaviour. *Journal of International Food and Agribusiness Marketing*, *29*(1), 1–15. http://doi.org/10.1080/08974438.2016.1229242

AU. (2015). *Common African Position (CAP) on the post-2015 development agenda*.

Boyatzis, R. E. (2008). Competencies in the 21st century. *Journal of Management Development*, *27*(1), 5–12. http://doi.org/10.1108/02621710810840730

Chouhan, V. S., and Srivastava, S. (2014). Understanding Competencies and Competency Modelling — A Literature Survey. *IOSR Journal of Business and Management*, *16*(1), 14–22. http://doi.org/10.9790/487X-16111422

Chuah, F., Ting, H., Run, E. C., and Cheah, J. H. (2016). Reconsidering What Entrepreneurial Intention Implies: The Evidence from Malaysian University Students. *International Journal of Business and Social Science*, *7*(9), 85–98. Retrieved from http://www.ijbssnet.com/journals/Vol_7_No_9_September_2016/10.pdf

Creswell, J. W. (2007). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. *Book* (Vol. 2nd ed). http://doi.org/10.1016/j.aenj.2008.02.005

Elder, S., de Haas, H., Principi, M., and Schewel, K. (2015). *Youth and rural development : Evidence from 25 school-to-work transition surveys*.

Emerhirhi, E., Nnadi, F. N., Chikaire, J. U., Anyoha, N. ., and Ejiogu-Okereke, N. (2017). Rural Women Agri-preneurship Opportunities for Poverty Reduction and Improved Livelihood in Imo State, Nigeria. *Journal of Dynamics in Agricultural Research*, *4*(2), 16–23.

FAO, IFAD and CTA. (2014). *Youth and agriculture: Key challenges and concrete solutions*. Retrieved from http://www.fao.org/3/a-i3947e.pdf?utm_source=linkedinandutm_medium=social+mediaandutm_campaign=faolinkedin

Ferris, S., Chander, M. and Ernst, N. (2017). *Rural Advisory Services for Agripreneurship Development* (GFRAS Global good practice notes for extension and advisory services No. 30) (Vol. 12). Lindau,

Switzerland. Retrieved from http://www.g-fras.org/en/download.html

FGN (2009). Second National Youth Policy, 80. Retrieved from http://nigeria.unfpa.org/pdf/snyp2009.pdf

Filmer, D., and Fox, L. (2014). *Youth Employment in Sub-Saharan Africa*. Washington, DC: World Bank. http://doi.org/http://dx.doi.org/10.1596/978-1-4648-0107-5

Fishbein, A., and Ajzen, I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*. Reading (Mass): Addison-Wesley.

Gaskin, J. (2016). Gaskination Statistics. Retrieved February 2, 2017, from http://statwiki.kolobkreations.com/

Haggblade, S., Chapoto, A., Drame-Yaye, A., Hendriks, S. L., Kabwe, S., Mugisha, J., and Terblanche, S. (2015). Motivating and preparing African youth for successful careers in agribusiness: Insights from agricultural role models. *Journal of Agribusiness in Developing and Emerging Economies*, *5*(2), 170–189. Retrieved from http://dx.doi.org/10.1108/JADEE-01-2015-0001

Hair, J. F., Babin, B. J., and Krey, N. (2017). Covariance-Based Structural Equation Modelling in the *Journal of Advertising* : Review and Recommendations. *Journal of Advertising*, *46*(1), 163–177. http://doi.org/10.1080/00913367.2017.1281777

Hair, J. F., Black, W. C., Babin, B. J., and Anderson, R. E. (2014). *Multivariate Data Analysis*. *Prentice-Hall, Inc* (Vol. 1). London: Pearson Education. http://doi.org/10.1038/259433b0

Hsu, C. C. and Sandford, B. A. (2007). The Delphi technique. *Practical Assessment, Research and Evaluation*, *12*(10), 1–8. http://doi.org/10.1576/toag.7.2.120.27071

Hyde, M. K., and Knowles, S. R. (2013). What predicts Australian university students' intentions to volunteer their time for community service? *Australian Journal of Psychology*, *65*(3), 135–145. http://doi.org/https://doi.org/10.1111/ajpy.12014 Copyright

Ibrahim, R., Hilles, S. M. S., Adam, S. M., Jamous, M. M., and Yafooz, W. M. S. (2016). Theoretical Framework Formation for e-government Services Evaluation: Case Study of Federal Republic of Nigeria. *Indian Journal of Science and Technology*, *9*(37). http://doi.org/10.17485/ijst/2016/v9i37/94575

IITA (2014). *Moving Forward: IITA Annual Report 2014*.

Jafar, A., Ghosh, A. K., and Jafar, S. (2015). An Empirical Study of Entrepreneurship Readiness of the Youth in West Bengal. *International Journal of Multidisciplinary Research Review*, *1*(6), 140–145. http://doi.org/10.1017/CBO9781107415324.004

Kaijun, Y., and Ichwatus Sholihah, P. (2015). A comparative study of the Indonesia and Chinese educative systems concerning the dominant incentives to entrepreneurial spirit (desire for a new venturing) of business school students. *Journal of Innovation and Entrepreneurship*, *4*(1), 1. http://doi.org/10.1186/s13731-014-0014-0

Kaiser, F. G. (2006). A moral extension of the theory of planned behaviour: Norms and anticipated feelings of regret in conservationism. *Personality and Individual Differences*, *41*(1), 71–81. http://doi.org/10.1016/j.paid.2005.11.028

Kaiser, F. G., and Scheuthle, H. (2003). Two challenges to a moral extension of the theory of planned behaviour: Moral norms and just world beliefs in conservationism. *Personality and Individual Differences*, *35*(5), 1033–1048. http://doi.org/10.1016/S0191-8869(02)00316-1

Kumar, R. (2011). *Research Methodology: a step by step guide for beginners* (3rd ed.). London: Sage.

Langevang, T., Namatovu, R., and Dawa, S. (2012). Beyond necessity and opportunity entrepreneurship: motivations and aspirations of young entrepreneurs in Uganda. *International Development Planning Review*, *34*(4), 439–460. http://doi.org/10.3828/idpr.2012.26

Losch, B. (2016). *Structural transformation to boost youth labour demand in sub-Saharan Africa: the role of agriculture, rural areas and territorial development* (No. 204). *Employment Policy Department EMPLOYMENT Working Paper*. Retrieved from http://agritrop.cirad.fr/582221/

Mabbutt, K. (2014). *Factors affecting intention to volunteer: Conserving the Ural saiga population*. Imperial College London.

Maillu, J., Mukulu, E., and Kahiri, J. (2016). Credit from Groups Savings Associations and the Performance of Smallholder Horticultural Agripreneurs in Kenya. *International Journal of Economics, Commerce and Management*, *4*(12), 549–563. Retrieved from http://ijecm.co.uk/

McClelland, D. (1973). Testing for competence rather than for "intelligence". *The American Psychologist*, *28*(1), 1–14. http://doi.org/10.1037/h0038240

Michael, C. E., Inyang, M. N., and Ojeka, G. O. (2016). Entrepreneurship Skills Education : A Catholicon for Youth Criminality in Nigeria. *Journal of Research in Education and Society*, *7*(1), 1–18.

Moore, K. (2015). Fostering economic opportunities for youth in Africa: a comprehensive approach. *Enterprise Development and Microfinance*, *26*(2), 195–209. http://doi.org/10.3362/1755-1986.2015.017

Namatovu, R., Dawa, S., Mulira, F., Katongole, C., and Nyongesa, S. (2012). Rural Youth Entrepreneurs in East Africa : A view from Uganda and Kenya.

Otache, I. (2017). Agripreneurship development: a strategy for revamping Nigeria's economy from recession. *African Journal of Economic and Management Studies*, *8*(4), 474–483. http://doi.org/10.1108/AJEMS-05-2017-0091

Pallant, J. (2011). *SPSS survival manual: a step by step guide to data analysis using IBM SPSS* (2011th ed.). Australia: Allen and Unwin. http://doi.org/10.1046/j.1365-2648.2001.2027c.x

Proctor, F. J. and Lucchesi, V. (2012). *Small-scale farming and youth in an era of rapid rural change*. London. Retrieved from http://pubs.iied.org/

Qin, H. and Juan, L. (2003). Encouraging Knowledge Worker to Generate Innovation Behavior: an Empirical Research Based on Technology Acceptance Theory. In *Proceedings of the 8th International Conference on Innovation and Management* (pp. 788–791). Retrieved from http://www.pucsp.br/icim/ingles/downloads/papers_2011/part_4/part_4_proc_63.pdf

Ridha, R. N. and Wahyu, B. P. (2017). Entrepreneurship intention in agricultural sector of young generation in Indonesia. *Asia Pacific Journal of Innovation and Entrepreneurship*, *11*(1), 76–89. http://doi.org/10.1108/APJIE-04-2017-022

Robledo, J. L. R., Arán, M. V., Martin-Sanchez, V. and Molina, M. A. R. (2015). The moderating role of gender on entrepreneurial intentions: A TPB perspective. *Intangible Capital*, *11*(1), 92–117.

Saliu, O. J., Onuche, U. and Abubakar, H. (2016). Perception of Kogi State University Agricultural Students on Farming as a Career. *International Journal of Sustainable Agricultural Research*, *3*(4), 72–81. http://doi.org/10.18488/journal.70/2016.3.4/70.4.72.81

Samah, B. A. (2016). *Enhancing extension education research using structural equation modelling*. Serdang: UPM Press.

Sanginga, N. (2015). *Youth in Agribusiness within an African Agricultural Transformation Agenda*. *Feeding Africa*. Retrieved from https://www.afdb.org/fileadmin/uploads/afdb/Documents/Events/DakAgri2015/Youth_in_Agribusiness_within_an_African_Agricultural_Transformation_Agenda.pdf

Shah, N. and Ali, B. (2013). Investigating Attitudes and Intentions among Potential Entrepreneurs of a Developing Country: A Conceptual Approach. In *2nd International Conference on Humanities, Economics and Geography (ICHEG'2013)* (pp. 217–220).

SPC (2010). *Pacific Youth in Agriculture Strategy 2011–2015: echoing the voices of the Pacific youth*. Oceania: Pacific Agricultural and Forestry Policy Network, Secretariat of the Pacific Community Land Resources Division. Retrieved from https://www.google.com/url?sa=tandrct=jandq=andesrc=sandsource=webandcd=1andcad=rjaanduact=8andved=0ahUKEwjHtYmCkM3YAhUPS48KHW-OCCUQFggtMAAandurl=https%3A%2F%2Flrd.spc.int%2Fpafnet-publications%2Fdoc_download%2F1277-pacific-youth-in-agriculture-strategy-2011-2015andusg=AOvVa

Taha, K. A. S., Ramlan, S. N. and Noor, I. M. (2017). The Factors Affecting Entrepreneurial Intentions of University Students in. *International Journal of Business and Technopreneurship*, *7*(2), 189–202.

Uneze, C. (2013). Adopting Agripreneurship Education for Nigeria's Quest for Food Security in Vision 20:2020. *Greener Journal of Educational Research (GJER)*, *3*(9), 1–8. Retrieved from http://gjournals.org/GJER/GJER PDF/2013/November/180913848 Uneze.pdf%0Ahttp://www.globalacademicgroup.com/journals/pristine/ADOPTING AGRIPRENEURSHIP EDUCATION FOR NIGERIA.pdf

Valliere, D. and Gedeon, S. A. (2015). Entrepreneurial desirability and intent among youth in Bhutan. *J. for International Business and Entrepreneurship Development*, *8*(1), 65.

http://doi.org/10.1504/JIBED.2015.066746

Venkatesh, V., Brown, S. A., Maruping, L. M. and Bala, H. (2008). Predicting different conceptualizations of system use: The competing roles of behavioral intention, facilitating conditions, and behavioral expectation. *MIS Quarterly*, *32*(3), 483–502. http://doi.org/Article

Vermeir, I., and Verbeke, W. (2008). Sustainable food consumption among young adults in Belgium: Theory of planned behaviour and the role of confidence and values. *Ecological Economics*, *64*(3), 542–553. http://doi.org/10.1016/j.ecolecon.2007.03.007

World Bank (2017). World Development Indicators. Retrieved January 14, 2018, from https://data.worldbank.org/indicator/SP.POP.TOTL?locations=NG

Zaremohzzabieh, Z., Samah, B. A., Muhammad, M., Omar, S. Z., Bolong, J. and Shaffril, H. A. M. (2016). An investigation into factors influencing rural youth entrepreneurs ' intentions to use ICT : a case of Malaysia. *International Journal of Entrepreneurship and Small Business*, *27*(4), 480–504. http://doi.org/10.1504/IJESB.2016.075010

EFFECT OF E-WALLET PROGRAMME ON RICE PRODUCTION AMONG SMALL-SCALE FARMERS IN NIGER STATE, NIGERIA

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ABSTRACT
The study examined the effect of e-wallet programme on rice production in Niger State, Nigeria. Multistage sampling technique was used in the selection of rice farmers. A total of two hundred and seven (207) rice farmers form the sample size through purposive sampling. Results reveal that most (91.8%) of the respondents were male with mean age of 38 years, 93.2% were married and 87.4% had formal education. Results revealed that most (80.7%) of the respondent's sources of information on e-wallet programme were from radio station. Results also reveal that respondents had a positive perception of the e-wallet programme. Major constraints faced were difficult or no access to extension agents ($\overline{x}$= 4.70) and element of corrupt tendencies at redemption centres ($\overline{x}$= 4.68).The study concluded that the rice farmers have great judgement towards e-wallet programme toward ensure maximum production of rice in order to eradicate poverty in the study area. It was recommended that extension services should be improved upon in order to disseminate e-wallet programme properly at local level or brought closer to the many farmers.
Keywords: Assessment, effect, perception, information, rice production

INTRODUCTION
E-wallet programme is aimed at subsidizing the cost of major agricultural inputs like fertiliser and seeds. The programme started in May 2012, and has so far registered about 14 million farmers throughout Nigeria for direct redemption of farm inputs through the e-wallet system (communicating with rural farmers via e-wallet, precisely SMS). This shows that e-wallet system/new media has a significant role to play in evolving such a paradigm (Meera, Jhamtani and Rao, 2004). The National Food Security Programme, according to the Federal Ministry of Agriculture and Rural Development, is to ensure sustainable access, availability and affordability of quality food for all Nigerians and for the country to become a significant provider of food to the global community (Amobi 2010). As a result, the Federal Government initiated e-wallet programme to actualize the Agricultural Transformation Agenda (ATA), 2009-2015. Okafor and Malizu (2013) observed that in virtually every sphere of life in Nigeria, there are noticeable changes and transformations brought about by the emergence of Information and Communication Technology (ICT) and the agricultural sector is not left out. In Nigeria, ICT infrastructure is springing up fast and Nigerians are increasingly getting used to computing devices, digital imaging, the Internet and Wide Area Networking (WAN), and mixed media.

The Federal Government of Nigeria is implementing an Agricultural Transformation Agenda (ATA) through a set of complementary programme intervention which aim to solve, in a holistic and integrated manner, the constraints and weaknesses that have held down agricultural development in the country for a long time. Among the ATA components, the e-wallet programme provides a unique connecting link as it targets the farmers directly with critically needed modern farm inputs on real-time basis (Okafor and Malizu, 2013). This guarantees registered farmers e-wallet voucher with which they can redeem fertiliser, seeds and other agricultural inputs from agro-dealers at half the cost, the other half being borne by the Federal Government and State Government in equal proportions (Okafor and Malizu, 2013). However, most development agents use mobile phone's SMS capability (text messaging) as one of the new media features that is easily accessible and affordable in Nigeria. This feature tends to cut across literacy and poverty barriers to disseminate needed agricultural information to rural farmers, extension officers and farm produce sellers. Specifically, mobile phones (i.e. through e-wallet system) have the following advantages over other new media, as well as the traditional mass media:

(i) Accessibility and affordability of e-wallet systems by majority of farmers.
(ii) Produce exact duplicates of such information at significantly lower cost.
(iii) Instant delivery of information and knowledge rapidly over large distances through communication networks.
(iv) Develop standardized algorithms to large quantities of information relatively rapidly.
(v) Achieve greater interactivity in communicating, evaluating, producing and sharing useful information and knowledge.

(vi) Deliver personalized information to individual owners.
(vii) Provide other functions such as voice communication (Okafor and Malizu, 2013).

The application of ICT in the agricultural production is becoming increasingly important. Electronic wallet programme introduced in 2011 seeks to tackle the inefficiencies in the distribution of key inputs, making them readily available and affordable. In this regard, agro-dealers are assigned a critical role, especially in implementing the e-wallet project, which took off in 2012. The country has adopted a range of instruments designed to protect local production. The Nigerian National Rice Development Strategy (NRDS) set up in 2009 aims to make the country self-sufficient in rice by raising production of paddy rice from 3.4 million tonnes in 2007 to 12.8 million tonnes in 2018. The NRDS outlines three priority areas of focus to achieve this level of production:

(i) improving post-harvest processing and treatment;
(ii) developing irrigation and extending cultivated lands ; and
(iii) making seed, fertiliser and farming equipment more readily available. The specific objectives of this study are to: Under this programme, farmers are to benefit directly from an innovative electronic wallet programme of delivering subsidized inputs.

The specific objectives of the study are to: (i) identify the sources of information available to farmers about the e-wallet programme. (ii) determine the perception of rice farmers on the usefulness of e-wallet in the study area. (iii) identify the constraints associated with using e-wallet in rice production.

Hypothesis of the study is stated as follows;
There is no significant relationship between socioeconomic characteristics of rice farmers and the constraints associated with using e-wallet in rice production.

METHODOLOGY

The study was conducted in Niger State. The State is located in the north-central geopolitical zone of Nigeria and lies within latitudes 8^0 21` N to $11^0$30`N and longitudes 3^0 30`E to $7^0$ 20`E with about 86,000sq.km, or about 8.6million hectares, representing 9.3% of the total land area of the country. Niger State is predominantly agricultural, with an estimated 80% of its population living in rural areas and earning their livelihood directly or indirectly from agriculture. According to Aregheore 2009, Niger State has an estimated population of about 3,950,249 which is likely to increase at an annual population growth rate of 2.38% with a projected number of 5,454,503 at the end of 2015. Generally, the fertile soil and hydrology of the state permit the cultivation of most of Nigeria's staple crops and still allows sufficient opportunities for grazing, fresh water fishing and forestry development. The target population of the study was rice farmers who got inputs through e-wallet programme in Niger State. A multi-stage sampling technique was used in selecting the sample. The first stage was the purposive selection of one extension block known for rice production in each of the three (3)agricultural zones in Niger State. The second stage involved a random sampling of five cells from each selected extension blocks making a total of fifteen cells. The third stage involves purposive sampling to select three local Government Areas which are Gbako, Gurara and Wushishi LGAs of Niger State, due to the large involvement of rice farmers in the area. Yamane's simplified formula as cited in Singh and Masuku (2013) was used to calculate sample size (n) 207 from N population (sample frame) of 430 rice farmers in the study area.
The formula is given as:

$$n = \frac{N}{1 + N(e)^2}$$

Where n is the sample size, N is the population size, 1 is the constant, and e is the level of precision i.e. sampling error (0.05).

Data collected were analyzed using descriptive such as frequency, percentages and mean, while inferential statistics such as regression was used.

RESULTS AND DISCUSSION

Result in Table 1 reveals that most (91.8%) of the respondents were male while 8.2% were female. There is male dominant involvement in rice farming while female involvement is in post-harvest activities such as processing and marketing. Age categories of rice farmers reveals that most (87 4%) of the respondents were between the age range of 21- 50 years while few (7.7%)were above 50 years of age. The mean age of the respondents was 38 years. This implies that respondents were active and young and expected to be ready to adopt new technologies and innovations such as e-wallet. Most (93.2%) of the respondents were married, with mean household size of 10 members, often times the larger the household size, the greater the productivity. The implication of this finding is that more family labour will be readily available and it will reduce the amount spent on hired labours. This finding agrees with that of Opara (2010) that a large household size is an obvious advantage in terms of family labour supply. Also, result reveals that most (87.4%) of the respondents had formal education ranged from primary, secondary, tertiary

and Arabic education respectively. The mean years of farming experience was 21years. This is an indication that the rice farmers are quite experienced in the area sampled and this may enhance the adoption of technologies to improve production and make more profit. This result corroborates that of Ayoola, Dangbegnon, Daudu, Mando, Kuli, Amapu, Adeosun and Ezui (2011) who stated that the higher the experience the better opportunities of having access to quality information and adoption of new innovation. Above half (51.2%) of the respondents reveal they had a farm size ranging from 1 – 4 hectares of land for their rice production in the study area. This is an indication that most of the respondents in the study area operate on small scale and this will have effect on their level of production. This finding agrees with that of Agumuo (2004) that most farmers in Nigeria operate on small scale. Most (94.7%) of the respondents had no access to credit while few (5.3%) had access to it. Credit is vital in order to boost production capacity. The availability of credit becomes imperative for improving and enhancing income. This means that credit is a catalyst for increased agricultural production and technology adoption. Akudugu, Guo and Dadzie (2012) stressed lack of access to credit make it difficult for farmers to afford technology and innovation.

Table 1: Distribution of respondents according to their socioeconomic characteristic, (n=207)

Variables	Frequency	Percentages	Mean
Sex			
Male	190	91.8	
Female	17	8.2	
Age (years)			
Less than 21	10	4.8	38.1 years
21 – 30	51	24.6	
31 – 40	70	33.8	
41 – 50	60	29.0	
Above 50	16	7.7	
Marital status			
Single	14	6.8	
Married	193	93.2	
Household size			
1 – 5	42	20.3	10.1
6 – 10	97	46.9	
11 – 15	48	23.2	
16 – 20	15	7.2	
Above 20	5	2.4	
Educational level			
No formal education	26	12.6	
Primary education	22	10.6	
Secondary education	93	44.9	
Tertiary education	31	15.0	
Arabic education	35	16.9	
Years of farming experience			
1 -10	45	21.7	21.4 years
11 – 20	93	44.7	
21 – 30	35	16.9	
31 – 40	25	12.1	
>40	9	4.3	
Farm size (ha)			
0.01-1.00	100	48.3	1.61
1.01-2.00	84	40.6	
2.01-3.00	15	7.2	
3.01-4.00	7	3.4	
>4.00	1	0.5	
Access to credit			
Yes	11	5.3	
No	19	94.7	

Sources: Field survey, 2015

Source(s) of information

Source of information on e-wallet programme was based on extension method of disseminating information which is through individual, group and mass media method. Result in Table 2 shows that most (80.7%) of the respondents source information about e-wallet from radio programmes (mass media method) which ranked 1st among the extension method of disseminating information. Above half (58.5%) of the respondents source information on e-wallet programmes from village heads (individual method) which ranked 2nd among the extension method of disseminating information while almost half (49.3%)sourced information about e-wallet from co-operative society(group method) which ranked 3rd among the extension method of disseminating information to farmers. Dissemination of the right information at the appropriate time among farmers is a key to providing change in agriculture (Asiedu-Darko, 2013). This is essentially promoted through the transfer of information and technologies to farmers in order to increase sustainable agriculture (Van Niekerk, Stroebel, Van Rooyen, Whitfield and Swanepoel, 2011). Researchers (Daudu and Anyanwu 2009; Oladele, 2011; Ota and Shimayohol, 2011 and Oladeji, 2012) observed that farmers can get needed information through different channels; majorly through agricultural extension agents, mass media, folk tales, social networking, and agricultural project administrators like FADAMA officials. This result also corroborates with Tologbonse *et al.* (2010) found out that the most important source of information on agricultural production were radio and television.

Table 2: Distribution of respondents according to sources of information on e-wallet (n = 207)

Variables	Frequency	Percentage	Ranking
Individual methods			
Village head	121	58.5	2nd
Friend/neighbour	50	24.1	7th
Relatives	56	27.1	6th
Extension agents	79	38.2	4th
Group methods			
Workshop	29	14.0	10th
Seminar	33	15.9	9th
Cooperative	102	49.3	3rd
SPAT	1	0.5	12th
Mass media			
Radio	167	80.7	1st
Television	75	36.2	5th
Telephone	40	19.3	8th
Newspaper	3	1.4	11th

Sources: Field survey, 2015*Multiple responses

Perception of rural farmers on usefulness of e-wallet programme

Result in Table 3 reveals the perception on the usefulness of e-wallet programme on rice production in Niger State. Findings indicate that the respondents had a favourable perception towards the usefulness of e-wallet programme in the study area. The mean value result on rice farmers perception towards usefulness of e-wallet reveals that simple/easy process of input redemption ($\bar{X}$=4.34),very cheap cost of fertiliser acquisition ($\bar{X}$=4.31),easy access to fertiliser ($\bar{X}$= 4.28), free seed acquisition ($\bar{X}$= 4.28), encourage youths to embrace agriculture ($\bar{X}$= 4.25), direct farmers orientation/grass root orientation ($\bar{X}$= 4.24), functional connectivity affective network connection ($\bar{X}$= 4.17), short distance transportation of inputs acquired ($\bar{X}$=4.09), effective delivery service ($\bar{X}$=4.07), effectiveness of coordination mechanism ($\bar{X}$=4.06), very close redemption centre ($\bar{X}$=4.05), subsidised input ($\bar{X}$=3.95), improve yield/high productivity($\bar{X}$=3.95), The subsidised farm inputs of e-wallet programme are delivered directly to farmers through their mobile phones. This enables the government to disseminate valuable information to the rice farmers, thus ensuring farmers' progress (Ezeh, 2013). However this finding is in line with IFPR (2010) report that access to subsidized seeds and fertiliser by smallholder producers through the use of a voucher system transformed the food aid dependent economy of Malawi to an exporter of food. It is believed that if the e-wallet approach is sustained in Nigeria, it will go a long way in transforming the Nigerian economy too. This finding is in agreement with the reports of Adebo (2014); Godson-ibeji, Chikaire and Anyaoha (2016) who established that e-wallet quickened accessibility to improved seed, access to fertiliser, subsidized farm input and renewed confidence in government programmes.

Due to the high favourable remark of the respondents on the perception on the usefulness of e-wallet programme in the selected area, the prospects of e-wallet programme suggest that the scheme will serve as a stimulus for contemporary economy and enhance rural farmer's participation in subsequent programme in ensuring food security and eradicate poverty. If this policy frame work is well pursued, it will also reduce Nigeria food import bill and increase agricultural export.

Table 3: Perception of rural farmers on usefulness of e-wallet programme (n = 207).

Perception	SA	A	IN	D	SD	Sum	Mean	Remark
Simple/easy process of input redemption	84(420)	112(448)	9(27)	1(2)	1(1)	898	4.34	Favourable
Functional connectivity effective network connection	50(250)	147(558)	7(21)	2(4)	1(1)	864	4.17	Favourable
Effective delivery services	36(180)	157(628)	7(21)	6(12)	1(1)	842	4.07	Favourable
Short distance transportation of inputs acquired	59(295)	124(496)	10(30)	13(26)	1(1)	848	4.09	Favourable
Very cheap cost of fertiliser acquisition	79(395)	118(472)	8(24)	1(2)	1(1)	894	4.31	Favourable
Free seed acquisition	77(385)	119(476)	8(24)	1(1)	1(1)	888	4.29	Favourable
Little or no inputs acquisition cost	3(15)	165(660)	16(48)	22(44)	1(1)	768	3.71	Favourable
Timely delivery of inputs during cropping season	5(25)	145(580)	9(27)	46(92)	2(2)	726	3.50	Favourable
Easy access to fertiliser and seeds	74(370)	122(448)	8(24)	2(4)	1(1)	887	4.28	Favourable
Easy access to extension services	14(70)	14(56)	15(45)	5(10)	159(159)	340	1.64	Unfavourable
Improved yield / high productivity	2(10)	196(784)	7(21)	1(2)	1(1)	818	3.95	Favourable
Encourage of youths to embrace agriculture	74(370)	119(476)	9(27)	2(4)	3(3)	880	4.25	Favourable
Increased interest in farming	5(25)	191(764)	7(21)	2(4)	2(2)	816	3.94	Favourable
Elimination of corruption tendencies of middle-men	72(360)	76(304)	12(36)	2(90)	2(2)	792	3.82	Favourable
Direct farmers orientation/grass root orientation	74(370)	119(476)	7(21)	5(10)	2(2)	879	4.24	Favourable
Wide area of coverage	4(20)	183(732)	16(48)	3(6)	1(1)	807	3.89	Favourable
Subsidize inputs	4(20)	192(768)	9(21)	1(2)	1(1)	818	3.95	Favourable
No problem of fertiliizer adulteration	5(25)	120(480)	78(234)	3(6)	1(1)	746	3.60	Favourable

Source: Field survey, 2015

Constraints of using e-wallet in rice production

Table 5 shows constraints faced by rice farmers in the usage of e-wallet in their rice production. The findings showed the mean value of major constraints militating against e-wallet programme in the study area which includes difficulties/no access to extension services ($\bar{x}$=4.70) ranked 1st among the constraints, element of corrupt tendencies at redemption centres ($\bar{x}$=4.68) ranked second. However, due to high level of corruption, insincerity and political interruption in the distribution channels, large proportion of these inputs could not reach the farmers (Adebo, 2014). Adesina (2013) pointed out that the old system used in supplying inputs to the farmers was weak, inefficient and fraudulent, hence a large proportion of the farmers could not benefit from it. He stressed that the inputs meant for the farmers were diverted by political elites to other countries for personal gains. It was also noted that most of the fertilisers supplied were adulterated, thus damaging the environment. Untimely delivery of inputs during cropping season ($\bar{x}$=4.62) ranked third, complicated input redemption process ($\bar{x}$= 3.89) ranked fourth. This is contrary to the view of IFPR (2010) that the promotion of a dual fertiliser market (subsidised and free-market) has prevented the required response from the private sector in taking over the role played by the public sector. This calls for capacity building of agro dealers in fertiliser acquisition and distribution strategies. Very distant redemption centres ($\bar{x}$=3.04) ranked fifth among the major constraints facing rice farmers in achieving their goal of maximum

productivity and developed good zeal to the farming enterprises.

Table 4: Constraints of using e-wallet in rice production

Constraints	SA	A	IN	D	SD	Mean	Ranked
Complicated input redemption process	10(50)	178(712)	11(33)	2(4)	6(6)	3.89	4th
Dysfunctional/ineffective network connectivity	4(20)	6(24)	9(27)	185(310)	3(3)	2.14	10th
Ineffectiveness of coordination mechanism	3(15)	4(16)	77(231)	121(242)	2(2)	2.44	9th
Ineffective/untimely delivery of services	2(10)	58(232)	9(21)	137(274)	1(1)	2.62	8th
Unsatisfactory number of bags of fertiliser per head	14(70)	75(300)	11(33)	103(206)	4(4)	2.96	7th
Very distant redemption centres	8(40)	95(380)	10(30)	86(172)	8(8)	3.04	5th
Problem of transportation of inputs acquired	7(35)	92(368)	8(24)	90(180)	10(10)	2.98	6th
High cost of fertiliser acquisition	2(10)	3(12)	9(27)	182(364)	11(11)	2.04	12th
Untimely delivery of inputs during cropping season	146(730)	49(196)	8(24)	3(6)	1(1)	4.62	3rd
Difficulties/no access to extension services	187(935)	3(12)	11(33)	3(6)	3(3)	4.70	1st
Elements of corrupt tendencies at redemption centres	176(880)	7(28)	16(48)	5(10)	3(3)	4.68	2nd
Problem of fertiliser adulteration	3(15)	2(8)	2(24)	189(378)	5(5)	2.08	11th

Source: Field survey, 2015

Assessing the socioeconomic characteristics of the rice farmers and the constraints associated with using e-wallet in rice production.

The ordinary least square (OLS) was used and the result obtained are presented in Table 5. The coefficient of determination (R^2) showed that (55.38%) variation of the effect on the constraints associated with using e-wallet in rice production was explained by the independents variables included in the models. While the remaining (44.62%) was as a result of non-inclusion of some explanatory variables and error in the estimation. Result in Table 5 showed that out of ten independent variables, four were found to have significant influence on the constraints associated with using e-wallet in rice production. These variables: household size (3.62) which was significant at 1% level of probability, education (0.66) which was significant at 5% level of probability, farm size (13.78) which was significant at 1% level of probability and access to inputs (32.48) which was significant at 10% level of probability were found to have significant influence on the constraints associated with using e-wallet in rice production in the area. The positive coefficient of the household implies that farming household had positive influence on rice production among the respondents. The positive coefficient of education implies that the higher the education the better the farmers' output. Education is very vital because it fast tracks the adoption of innovation and new technology. The positive coefficient of farm size and access to inputs imply that access to adequate farmland and agricultural inputs will positively influence the rice production.

Table 5: Effects of socioeconomic characteristics of rice farmers and the constraints associated with using e-wallet in rice production, n=207

Variables	Coefficients	Standard error	t-value	p-value
Sex	-5.247884	4.019879	-1.31	0.193
Age	-.1597863	.2467158	-0.65	0.518
Hhsize	3.615886	.5333957	6.78	0.000***
Education	.6614678	.3036418	2.18	0.031**
Farming exp	.2150266	.1880175	1.14	0.254
Farm size	13.77984	2.569847	5.36	0.000***
Credit access	-5.362886	7.632219	-0.70	0.483
Cooperative	-16.02133	24.66008	-0.65	0.517

Variables	Coefficients	Standard error	t-value	p-value
Extension	2.392486	3.539883	0.68	0.500
Input access	32.48216	17.9743	1.81	0.072*
Constant	-33.32146	18.75277	-1.78	0.077

R-squared=0.5538, Adj R-squared =0.5310
F-Ratio = 24.32****** = significant at 1% level of probability, **=significant at 5% level of probability, *-=significant at 10% level of probability
Source: Field survey, 2015

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings, it can be concluded that rice production in Niger State were small-scale farmers enterprise and it was dominated by male. The major source of information on e-wallet was through radio transmission. Also, majority of the respondents had favourable perception on the usefulness of e-wallet in the study area. Furthermore, through the use of e-wallet on rice production farming households were found to be positively influenced in the study area. Moreover, difficulties or lack of access to extension services, corruption among others were the constraints faced by farmers in the usage of e-wallet in the study area.

Based on the findings of this study, it is recommended that:

i. The E-wallet programme should extend the sources of information so as to reach more farmers in the study area.
ii. The respondents perception should be strengthen so as to attract other farmers both with the state and outside the state.
iii. Most of the constraints facing the rice farmers such as difficulties/no access to extension services and element of corrupt at redemption centres should be solved so as to deliver proper and efficient programme to the rice farmers.

REFERENCES

Adebo, G. M. (2014). Effectiveness of E-Wallet Practice in Grassroots Agricultural Services Delivery in Nigeria - A Case Study of Kwara State Growth Enhancement Support Scheme. Journal of Experimental Biology and Agricultural Sciences, Volume 2(4) Available online at http://www.jebas.org[Access on 20 May, 2016]

Adesina, A. (2013). Speech Delivered by Honorable Minister of Agriculture and Rural Development, Federal Republic of Nigeria, Governor from Nigeria, at the 36thSession of the IFAD Governing Council.

Agumuo, (2004). Nigerian Small-scale Farmers. *Nigerian Journal of Rural Sociology*, Vol. 15, No. 1, retrieved from journal.nrsa.org.ng/./142.

Agwu, A. E., Ekwueme, J. N. and Anyanwu, A.C. (2008). Adoption of improved agricultural technologies disseminated via radio farmer programme by farmers in Enugu State. *African Journal of Biotechnology*. Vol. 7 (9), pp.1277-1286. Retrieved from http://www.academicjournals.org/AJBISI indexed Journal Impact Factor 0.456.

Akinboro, B. and Arokoyo, T. (2014). The Electronic Wallet for the Growth Enhancement Support Scheme (GES): The Nigerian Experience. A Report presented to the National Working Committee on Agricultural Extension Transformation Agenda (AETA).

Akudugu, M. A., Guo, E. and Dadzie, S. K. (2012). Adoption of modern agricultural production technologies by farm households in Ghana: What factors influence their decision? *Journal of Biology, Agriculture and health,* 2(3), 1-13.

Amobi, B. O. (2010). *Solving Unemployment Problems through Sustainable Agricultural Production.* President's Address delivered at 34th Annual Conference of Nigeria Statistical Association held in Owerri from 22nd -24th Sept. 2010.

Aregheore, E. M. (2009). *Country Pasture/Forage Resources Profiles:* Nigeria FAO, Rome. 2006 pop. wikipedia (2015).List of Nigerian States by Population. Available at www.en.wikipedia.org.

Ayoola, J. B., Dangbegnon, C., Daudu, C. K., Mando, A., Kudi, T. M., Amapu, I. Y., Adeosun, J. O. and Ezui, K. S. (2011). Socioeconomic factors influencing rice production among male and female farmers in Northern Guinea Savanna Nigeria: Lesson for promoting gender equity in action research. *Agricultural and BiologyJournal of North America*. 2 (6), 1010-1014.

Food and Agricultural Organisation, (FAO) (2001). Food insecurity, when people live with hunger and starvation. Retrieved fromwww.fao.org/docrep/003/y1500e/y1500e01. htm#. Retrived on January 9, 2016.

Godson-ibeji, C. C, Chikaire, J. U. and Anyaoha, N.O., (2016).Assessing the Effects of E-wallet Scheme in Farm Inputs Distribution to Rural Farmers in Imo state, Nigeria, E3 Journal of Agricultural Research and Development 6(2). pp. 034-041, August, 2016, http://www.e3journals.org, (Retrieved on 25 Sept. /2016).

Jirko, R. K. (2011). Impact Assessment of Project Agape Microcredit on the Trading, Income and level of living of Women Traders in Nasarawa State. PhD. dissertation. Department of Agricultural Economics and Rural Sociology, A.B.U Zaria. Nigeria.

Meera, S. N., Jhamtani, A. and Rao, D. M. U. (2004). Information and Communication Technology in Agricultural Development. A Comparative Analysis of three Projects from India. *Agricultural Research and Extension Network (AGREN) Network Paper* No. 135, p.14.ODI (Oversea Development Institute) London.

Okafor, G. O. and Malizu, C. F. (2013). "New Media and Sustainable Agricultural Development in Nigeria". Retrieved online at http://www.iiste.org/Journals/index.php/NMMC/article/view.9643.

Opara, U. N. (2010). Personal and Socioeconomic Determinant of Agricultural Information Use by Farmers in Agricultural Development Programmes (ADP) Zones of Imo State, Nigeria. *Libary Philosophy and Practice* Vol 5 No 1, pp 2. ISSN 1522-0222

Singh, A. S. and Masuku, M. B (2013). Fundamentals of Applied Research and Sampling Techniques. *International Journal of Medical and Applied Sciences.* 2(4), 124–132.

Tiri, G. D., Ojoko, E. A. and Aruwayo, A. (2014). Growth Enhancement Support Scheme (GESS) and the Challenges of Food Security in Nigeria: A Review. Asian Research Publishing Network. www.arpnjournals.com, (Retrieved on 5 May 2015).

Tologbonse, E. B., Auta, S. J., Bidoli, T. D., Jaliya, M. M., Onu, R. O. and Issa, F. O. (2010). Farmer's Perception of the Effects of Climate Change and Coping Strategies in Three Agro-Ecological Zones of Nigeria. *Journal of Agricultural Extension,* 14 (1), 144-

Tosho, B. A. (2005). Economic of Tomato-based Cropping System under Small Scale Irrigation in Sokoto State,Nigeria "Unpublished Msc thesis submitted to Department of Agricultural Economics and Farm Management, University of Ilorin Nigeria", pp.30-31

EFFECT OF THE THIRD NATIONAL FADAMA ADDITIONAL FINANCING PROJECT ON THE OUTPUT AND POVERTY LEVELS OF RICE FARMERS IN ENUGU STATE, NIGERIA

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ABSTRACT
The study analysed effect of the Third National Fadama Additional Financing project on the output and poverty levels of rice farmers in Enugu state, Nigeria. Multi-stage random sampling technique was used to select 240 respondents (120 Fadama and 120 non - Fadama rice farmers). Data for the study were collected through a structured questionnaire as well as field observation and analyzed using descriptive statistics and Z-test analysis. Results showed that 60.0% (Fadama farmers) and 61.7% (non-Fadama) farmers were males, both farmer groups had mean household sizes of 6 persons and mean annual income ofN479, 398.37 (Fadama farmers) and N179,426.80(non - Fadama farmers). Results indicate that Fadama farmers had mean rice output of 2014.58kg/ha as against 802.50kg/ha for non-Fadama farmers, Poverty status showed that 67% and 71.0% of Fadama and non – Fadama farmers were poor, while 53.0% (Fadama farmers) and 49.0% (non – Fadama farmers) were non poor. Results of Z-test on rice output and poverty levels showed that there were significant differences in rice output and poverty levels of Fadama and non – Fadama rice farmers at ($Z= p<0.01$)in the study area. The study recommended prompt delivery of farm inputs, payment of counterpart funds by Federal, State and Local Governments and extension of the project to non-beneficiary communities in order to increase rice output and reduce poverty.
Keywords: Effect, Fadama, Output, Poverty, Rice Farmers

INTRODUCTION

The Federal Government of Nigeria has taken several steps over the years to use agriculture as a vehicle to alleviate poverty and attain food security. There is low and declining productivity of Nigeria's rice agricultural sector due to poorly developed irrigation facilities, non - access to funds inadequate infrastructure, ineffective agricultural research and extension systems, non- availability and poor distribution of key inputs(Fertilisers, chemicals, machinery and improved seeds) (Ajala and Gana, 2015). In Nigeria, rice has witnessed some remarkable developments particularly in the past ten years both in production and consumption. According to Nigeria rice production statistics, the imports stood at 50% and has risen to 7 million metric tons with only 2.7 million metric tons produced by Nigerian farmers in 2017 (Federal Ministry of Agriculture and Rural Development, 2017; Nwaobiala, 2015). Akinbile, Aminu and Sokeye (2008) reported that the high rate of rice production in Nigeria has forced government to take several steps to redress this trend, by restricting rice importation through land borders to encourage domestic production.

Poverty is a global menace that threatens the standard of living of the people across various countries of the world and it is an endemic phenomenon that is on the increase in Nigeria (Olorunsanya, Falola and Ogundeji, 2011). Despite various efforts of Government to reduce the incidence of poverty through different poverty alleviation programmes and strategies, Nigeria continues to be one of the poorest countries in the world (International Fund for Agricultural Development, 2017). Poverty in Nigeria is pervasive although the country is rich in human and natural resources that should translate into better living standards (Nwaobiala, 2014). According to United Nations' Sustainable Goal (2017), 86.9 million of Nigerians now living in extreme poverty represents nearly 50% of its estimated 180 million population with Enugu State having a poverty index of 28.8%. .However, a significant reduction in poverty requires sustained long-term double digit growth. This is a major challenge, given that public sector funds are still being invested in loss making public enterprises and policy implementation remains weak (Institute of Development Studies, 2016). However, evidence suggests that the key to alleviating poverty in many parts of the world is a more productive and profitable agricultural sector (Ogbonna and Nwaobiala, 2014). This is because agriculture paves the way for economic growth in developing nations; through income distribution and food security (World Bank, 2013; Food and Agriculture Organisation, 2010).

Despite millions of dollars committed into various development projects in Nigeria by past successive governments and international donor agencies the agricultural sector appears to be undeveloped (Nwaobiala, 2013).Due to the shortcomings of past Fadama Development Projects, the World Bank initiated a financing approach to ensure that rice production in the rice producing areas of Nigeria is drastically improved; create employment opportunities, encourage access and adoption of improved rice production technologies and reduce poverty (World Bank, 2013). Though these development programmes were centred towards increasing rice output, alleviating rural poverty and to raise the standard of living of the people, especially the poor resource

farmers, it seems the effect has not been determined. In view of the foregoing the study was designed to analyse the effect of the Third National Fadama Additional Financing project on the output and poverty levels of rice farmers in Enugu State, Nigeria. The specific objectives are to:

i. describe selected socioeconomic characteristics of Fadama and non – Fadama rice farmers in the study area
ii. estimate the rice output of Fadama and non – Fadama rice farmers and;
iii. determine the poverty status of Fadama and non – Fadama rice farmers

The hypotheses of the study are stated as follows;

$H_0$1: There is no significant difference in the output levels of Fadama and non-Fadama rice farmers in the study area.

$H_0$2: There is no significant difference in the poverty levels of Fadama and non-Fadama rice farmers in the study area.

METHODOLOGY

This study was conducted in Enugu State. It is one of the states in South – Eastern Nigeria and beneficiary of the Fadama Additional Financing Project. The State is located at 6°30′N 7°30′E of the Equator and 6.500°N 7.500°Eof the Greenwich Meridian (Enugu State Planning Commission, 2006). The study comprised of all Fadama III additional financing beneficiary and non-beneficiary rice farmers in Enugu State. Multi-stage random sampling technique was used in the selection of Local Government Areas, Fadama Community Associations (FCAs), Fadama Users Groups (FUGs) and Fadama rice farmers and non-farmers. First 5 (five) LGAs were randomly selected out of seven (7) that participated in the project. Second, two (2) FCAs each were randomly selected from the selected LGAs to give a total of 10 FCAs. Four (4) FUGs were randomly selected from each FCA to give a total of 40 FUGs. From the selected FUGs three (3) Fadama rice farmers each were randomly selected to give a sample of 120 Fadama rice farmers. Finally one hundred and twenty (120) non Fadama rice farmers were randomly selected from the areas where the beneficiary farmers were chosen from a sampling frame of 180 rice farmers. This gave a grand sample size of two hundred and forty (240) rice farmers (120 each for Fadama and non – Fadama farmers). Specifically, objectives i and ii were analyzed using means, percentages and frequency distribution while objective iii was analysed using poverty gap analysis and hypotheses tested with Z-test analysis

Model specifications

The poverty levels of Fadama and non Fadama rice farmers in the study area were tested with Poverty gap which as expressed below;

H= q/n…….(i)

H= head count ratio

Q= Number of poor Fadama and non – Fadama rice farmers

N= Total number of poor Fadama and non - Fadama rice farmers

1= [(z-y)/z]……..ii)

1= Poverty gap

Z=Poverty line estimated using the mean household expenditure of Fadama and non - Fadama rice farmers

Y= Average income of Fadama and non - Fadama rice farmers

(a) The poverty line is expressed thus

Z=2/3(y)

Where,

Z= Poverty line measured in Naira (N).

Y= Mean of per capita household expenditure of Fadama and non - Fadama rice farmers in Naira (N)

Given that; Mean Capita House Food Expenditure

$$= \frac{\text{Total per capita household expenditure}}{\text{Total number of household}}$$

Per Capita Expenditure

$$= \frac{\text{Total monthly household expenditure}}{\text{household size}}$$

i. Z-test analysis of comparison of output levels of Fadama and non Fadama rice farmers is specified thus:

$$Z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

$n_1 + n_2$ - 2 degrees of freedom

Where,

"Z" = "Z" statistic

$\bar{X}_1$ = sample mean of output of Fadama farmers

$\bar{X}_2$ = sample mean of output of non-Fadama farmers.

σ^2_1 = standard deviation of output of Fadama farmers

σ^2_2 = standard deviation of output of non-Fadama farmers

n_1 = sample size for Fadama farmers

n_2= sample size for non-Fadama farmers

ii. Z-test analysis of comparison of poverty levels of Fadama and non Fadama farmers is specified thus:

$$Z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

$n_1 + n_2$ - 2 degrees of freedom

Where,

"Z" = "Z" statistic

$\overline{X}_1$ = sample mean of poverty levels of Fadama farmers
$\overline{X}_2$ = sample mean of poverty levels of non-Fadama farmers
σ^2_1 = standard deviation of poverty levels of Fadama farmers
σ^2_2 = standard deviation of poverty levels of non- Fadama farmers
n_1 = sample size for Fadama farmers
n_2= sample size for non- Fadama farmers

RESULTS AND DISCUSSION

Socioeconomic characteristics of respondents

The result in Table1 shows that 60.00% (Fadama) and 61.70% (non Fadama) farmers were males as against 40.00% (Fadama) and 38.30% (non Fadama) farmers that were females. This implies that rice farming in the state is dominated by male farmers. The result is in tandem with Nwaobiala and Adesope (2013) that rice farming is dominated by males in Ebonyi State. The mean ages for the Fadama farmers were 42.70 years as against that of the non – Fadama farmers (49.20 years). The result implies that they were still in their active ages. They can effectively utilise technologies disseminated and withstand rigorous work involved in rice farming. Omninikari (2017) affirmed that farmers within the active age group have more innovative ability and capacity to do manual work than farmers in inactive ages especially in rice production activities. Result also shows that Fadama and non- Fadama farmers had mean household sizes of 6 persons respectively. With the appreciable amount of members of household, it can be inferred that both farmer groups have the opportunity of family labour which will enhance their rice farming activities. The household sizes may have positive implications for these farmer groups since it has been found that most rural households depend on their family members to provide cheap labour (Olajide, 2014). Issa (2017) and Tijani and Aluko (2014) opined thata household size of 4-6 members which could provide labour can be used to defray labour cost. The annual mean income derived from rice production were N479,398.37 (Fadama farmers) and N179,426.80 (non - Fadama farmers). This implies that the annual farm income of rice farmers who benefited from the project was higher than the non-beneficiaries. Ogbonna and Nwaobiala (2014)noted that increased income for beneficiary Fadama farmers may be attributed to yield enhancing rice technologies disseminated to them which translates to increased living standard. In the same vein, Onugu, Agbasi and Nweke (2018) reported that participation of farmers in Fadama projects increased their incomes thereby reducing poverty.

Table 1: Selected socioeconomic characteristics of Fadama and non-Fadama rice farmers in the study area (n = 120 Fadama and n = 120 non – Fadama Farmers)

	Fadama Farmers		Non – Fadama Farmers	
Variables	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Gender				
Male	72	60.00	74	61.70
Female	48	40.00	46	38.30
Age (years)				
21 – 31	31	25.80	12	10.00
32 – 42	20	16.70	13	10.80
42 – 51	36	30.00	44	36.70
52 – 61	31	25.80	39	32.50
62 – 71	2	1.70	12	10.00
Mean	**42.7**			**49.2**
Household Size (numbers)				
2 – 4	33	29.50	46	38.30
5 – 7	62	51.70	37	30.80
8 – 10	19	15.80	37	30.80
11 – 14	6	5.00	-	-
Mean	**6**			
Annual Farm Income (N)				
100,000 – 300,000	18	15.00	114	95.00
301,000 – 500,000	30	25.00	6	5.00
501,000 – 800,000	22	18.40	-	-
801,000 – 1,000,00	59	41.60	-	-
Mean	**479,398.37**			**179.426.83**

Source: Field Survey, 2017

Output levels of Fadama and Non Fadama rice farmers in the study area

Result in Table 2 shows that 53.3% of Fadama farmers had rice output of between 2100-3050kg while, the non - Fadama farmers (94.2%) realized between 1100-1500kg per annum. The mean rice outputs for both groups of farmers were2014.58 kg (Fadama farmers) and 802.50 kg (non-Fadama farmers). This result implies that Fadama rice farmers had more rice output than the non-Fadama farmers. The higher output of Fadama farmers may be attributed to improvement in the yield of rice which is vigorously pursued through the development of improved varieties and cultivars by National Cereals Research Institute and transferred by facilitators of National Fadama Development Project to their farmers. Also regular participation of farmers in different Fadama project phases has enhanced output through trainings and adoption of rice technologies. This result is in tandem with that of Nwaobiala (2017) who obtained a similar result among IFAD farmers in Abia and Cross River States and that of Onwumere and Alimba (2010) that noted that participating in development projects increases farmers' output.

Table 2: Frequency distribution of rice output of Fadama and non Fadama rice farmers in the study area

	Fadama farmers		Non-Fadama farmers	
Rice Output (kg/Annum)	**Frequency**	**Percentage**	**Frequency**	**Percentage**
501-1000	7	5.8	7	5.8
1001-1500	21	17.5	113	94.2
1501-2000	21	17.5	-	-
2001-2500	64	53.3	-	-
25001-3000	7	5.9	-	-
Mean	**2014.58**		**802.50**	

Source: Field Survey, 2017

Poverty status of Fadama and non – Fadama farmers in the study area

Results in Table 3 show the poverty status estimates of Fadama and non- Fadama farmers in the study area. The results show a mean expenditure value of ₦87,279.63 and ₦45,578.24 for the Fadama and non- Fadama farmers respectively, with estimated per capita expenditure of ₦14,136.59 (Fadama farmers) and ₦7,547.69 (non - Fadama farmers). Also 67% of Fadama farmers were poor, as against 71% of the non-Fadama farmers). The result further revealed that 53% and 49%) of Fadama and non – Fadama farmers were non-poor. The result infer that the project has reduced the poverty status of the beneficiary farmers than the non – beneficiaries. This result corroborates with that of Mbagwu (2018) that poverty status of cooperators and non - cooperators in Abia State differ significantly.

Table 3: Frequency Distribution of Poverty Estimates of Fadama and Non- Fadama Rice Farmers in the Study Area

Variables	**Fadama farmers**	**Non-Fadama farmers**	**Total**
Expenditure (N)	87,277.63	45,578.24	
Household Size	5.67	5.67	
Per Capita Expenditure (N)	14,136.59	7,547.69	
Poor (%)	67	71	138
Non-Poor (%)	53	49	102

Source: Result from STAT13

Differences in rice output levels of Fadama and non – Fadama farmers

Results in Table 4 show the Z-test estimates of difference in rice output of Fadama and non - Fadama farmers in the study area. The results show that the Z- test value of 21.79 was highly significant at 1.0% levels of probability, indicating difference in rice output between the beneficiaries and non-beneficiaries. The levels of rice output among the Fadama beneficiaries were significantly higher than the non - Fadama farmers. The result is in agreement with Ogbonna and Nwaobiala (2015) as they obtained a similar result among Fadama and non – Fadama farmers in Gombe State, Nigeria. Nwaobiala, (2015)in his study also found a difference in rice output among famers in Ebonyi State, Nigeria. The hypothesis which states that there is no significant **d**ifference between output levels of Fadama and non- Fadama rice farmers in the study area is hereby rejected.

Table 4: Z-Test analysis of the difference in output levels of Fadama and non-Fadama farmers

Variables	Mean	Standard Deviation	Z-value
Fadama farmers	1989.55	557.480	21.792***
Non-Fadama Farmers	805.00	119.239	
Combined	1397.27	119.041	
Difference	**1184.55**		

Source: *Result from STATA 13*
***P ≤ 0.1

Differences in poverty levels of Fadama and non – Fadama farmers

Results in Table 5 show the Z-test estimates of the difference in poverty levels of Fadama and non Fadama farmers study area. The results show a Z-test value of 9.7054 which was highly significant at 1.0% level. This implies a significant difference in the poverty level of Fadama and non-Fadama rice farmers. The result is in tandem with the findings of National Bureau of Statistics (2015) that poverty profiles of farmers after project execution guide to determine appropriate programme policies to be formulated by donor-sponsored agencies. The hypothesis which states that there is no significant difference between poverty levels of Fadama and non- Fadama rice farmers in the study area is hereby rejected.

Table 5: Z-test analysis of difference in poverty levels of Fadama and non-Fadama rice farmers

Variables	Mean	Standard Deviation	Z-Value
Fadama Farmers	14,136.59	11,333.59	9.7054***
Non - Fadama Farmers	7,547.69	5539.45	
Combined	10,842.13	9,492.19	
Difference	-6588.94	1213.869	

Source: *Result from STAT 13*
***P ≤ 0.1

CONCLUSION AND RECOMMENDATIONS

The study has shown that Fadama farmers realized more income and rice output than the non-Fadama farmers thereby the project reduced the poverty status of the beneficiary Fadama rice farmers.

The study therefore recommends that;

i. Prompt and timely delivery of inputs to Fadama rice farmers by the project facilitators is essential, considering the time bound nature of farming
ii. The need for the State and Local Government to pay their counterpart funds on time in order to sustain the project, due to the time bound nature of farming.
iii. The Project should be replicated in other Local Government Areas of the State. This will help reduce the poverty status of the rural dwellers and in turn increase output.

REFERENCES

Ajala, A. S. and Gana, A. (2015). Analysis of challenges facing rice processing in Nigeria Hindawi publishing corporation. Journal of food processing. Vol. 2015. http://dx.doi.org/10.1155/2015/893673. Accessed 6 October, 2018.

Akinbile, L. A., Aminu, O. O. and Sokeye, I. G. (2018). Constraints encountered in rice production by farmers in Ogun state, Nigeria. Nigeria. *Nigerian Journal of Rural Sociology*, 18(1):85 – 92.

Enugu State Planning Commission (ESPC) (2006). Abia state economic empowerment development strategy report.

Ezeh, C. I. (2012). Midline impact study of the National Fadama III development project in Abia State, Nigeria. Paper Presented to Abia State Fadama III Coordinating Office, Abia State Office, Umuahia.

Federal Ministry of Agriculture and Rural Development (FMA and RD) (2017). Statistics of rice output and production in Nigeria. https://www.odi.orgresources.doc. Accessed October 6, 2018.

Food and Agriculture Organisation (FAO) (2010). International year of rice "Rice is life" Food and Agricultural Organisation, Rome, Italy.

International Fund for Agricultural Development (IFAD) (2017). *Rural Poverty Report 2017: The Challenge of ending Rural Poverty*. Oxford University Press.

Institute of Development Studies (IDS) (2016). Achieving food security and alleviating poverty Vol. 45 Pp. 47 Insight UK.

Issa, F. O. (2017). Management of tractor-hiring entrepreneurship by tractor owners and hiring facility Association of Nigeria.

Journal of Agricultural Extension 21(3):105-115.

Mbagwu, G. I. N. (2018), Factors influencing membership of farmers' in cooperative societies in Abia State, Nigeria. *Scientific papers series management economic engineering in agriculture and rural Development Journal*, 18(1): 239 -244.

National Bureau of Statistics (2015). Annual socioeconomic survey - Nigeria poverty profile report. document produced by National Bureau of Statistics Abuja, Nigeria. www.nigerianstst.gov.ng.

Nwaobiala, C. U. (2013). Appraisal of farmers' participation in IFAD/FGN/NDDC/community -based natural resource management programme in Abia and Cross River States Nigeria. A PhD Thesis Department of Agricultural Economics and Extension Abia State University Uturu.

Nwaobiala, C. U. (2014). Effect of Community--Based Programme on the Poverty Profiles of Farmers in Abia State, Nigeria. *Nigerian Journal of Rural Sociology*. 15(1): 81 – 89.

Nwaobiala, C. U. (2015). Determinants of rice output among ADP contact farmers in mining and non - mining locations of Ivo Local Government Area of Ebonyi State, Nigeria. *The Nigerian Agricultural Journal*, 46(1and2): 304 – 313.

Nwaobiala, C. U. (2017).Factors influencing farmers output in the international fund for agricultural development community based projects in Abia and Cross River States Nigeria. *Journal of Agricultural extension* 21(1):137-150.

Nwaobiala, C.U. and Adesope, O. M. (2013). Economic analysis of small holder rice production systems in Ebonyi State, Nigeria, *RussianJournal of Agricultural and* Socioeconomic *Sciences* 1(23):3 –10.

Ogbonna, M. O. and Nwaobiala, C. U. (2014). Analysis of poverty profiles of participating and non - participating rural farm women in Fadama III development project in Gombe State, Nigeria. *International Journal of Agriculture and Rural Development* (IJARD) 17(2):1762-1767**.**

Ogbonna, M. O. and Nwaobiala, C. U. (2015). Evaluation of participation and Poverty Levels of National FADAMA III development project rural farm women in Gombe State, Nigeria. *Discourse Journal of Agriculture and Food Sciences* 3(6): 83-90 *www.resjournals.org/jafs.*

Olajide, B. R. (2014). Perceived effectiveness of capacity building support component of Fadama III among selected communities in Osun State, Nigeria. *Nigerian Journal of Rural Sociology*, 15(1): 151 – 157.

Olorunsanya, E. O., Falola, A. and Ogundeji, F. S. (2011). Comparative analysis of poverty status of rural and urban households in Kwara state, Nigeria. *International Journal of Agricultural Economics and Rural Development* 4(2):44 - 52**.**

Ominikari, A. G. (2017). Assessment of the effectiveness of National FADAMA III project in empowering the participants in Bayelsa State, Nigeria. Department of Rural Sociology and Extension, Michael Okpara University of Agriculture Umudike, Abia State, Nigeria, Pp. 12.

Onugu, C. U. Agbasi, O. F. and Nweke, G. N. (2018). Effects of Fadama III community infrastructure provision on income of members of Fadama user groups (FUGs) in Anambra state, Nigeria. *Nigerian Journal of Rural Sociology*, 18(1):35 – 41.

Onwumere, J. and Alimba, C. S. (2010). Analysis of socioeconomic factors affecting output of farmers in three management systems of cocoa production in Abia State, Nigeria. *Global Approaches to Extension Practice Journal*, 6(2): 11-17.

Tijani, F. S. and Aluko, O. J. (2014). Effect of displacement on livelihood activities of rural dwellers within Omo forest Research of Ogun state Nigeria. *Nigeria Journal of Rural Sociology,* 14(2):30-38.

United Nations' Sustainable Goal (2017). *Report of the sub-regional workshop on poverty in Africa.* Italy, Rome, United Nation Pp. 37.

World Bank (2013). Poverty in the Midst of Plenty. The challenge of growth in Nigeria. *Report* No. 14733 – United Nations, Pp. 45

EXTENT OF COMPLIANCE TO STANDARD PRACTICES BY BENEFICIARIES AND OFFICERS OF FADAMA PROJECT IN OYO STATE, NIGERIA

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ABSTRACT
The National Fadama Development Project (NFDP) aimed at reducing poverty by improving living conditions of the rural poor and contributing to food security. However, this was not sufficiently realized as poverty and food insecurity still persist among rural households in Nigeria with no exception to Oyo State. This connotes some anomalies among which could be poor compliance to standard practice that eventually lessened expected outcomes despite project investments. Hence, this study examined the extent of NFDP beneficiaries and officers' compliance to standard practices in Oyo state. Multistage sampling procedure was employed to elicit information from 120 beneficiaries selected from 5 LGAs (Orelope, Ibarapa-North, Oyo-East, Ogo Oluwa and Akinyele) under the 4 ADP zones in Oyo state. Questionnaire and in-depth interview were used to obtain data which were analyzed using descriptive and inferential statistics. The mean age of respondents was 45.6 years while most (74.2%) of them were males. Majority (83%) of the beneficiaries never paid their 50% share of inputs purchase; most (97.5%) likewise maintained that Fadama User Group (FUG) members were carried along at each stage of the project. Also 91.7% of respondents disagreed that due process was abused by officials during asset procurements, however, 67.1% of them complained that supplies of input usually arrived late; insufficient finance was a major constraint to project effectiveness according to 97.5% of the respondents. Officers guided beneficiaries in project decisions without lording ideas on them as 76.7% of respondents posited. The study concluded that there was a moderately high level of compliance (56.7%) of both officers and FUGs to project's standard practices. It recommended that project stakeholders should put in more efforts towards better compliance. Also record keeping should be encouraged among beneficiaries to facilitate evaluation while sponsors should improve fund support and ensure timeliness in documents approval, as well as release of fund for the project.
Keywords: Standard practices in programme implementation, Fadama National project, project beneficiaries

INTRODUCTION

The National Fadama Development Project (NFDP) is a project of the Federal Government of Nigeria through the pooled World Bank loan to finance the development of *Fadama* lands by introducing small-scale irrigation in states with *Fadama* development potentials. The project aims at boosting incremental food production and raising the standard of living of the beneficiaries. The *Fadama* Project has a development objective which is to increase the income of users of rural land and water resources on a sustainable basis. By increasing their incomes, the project would help reduce rural poverty, increase food security and contribute to the achievement of a key Millennium Development Goal (MDG).

Specifically, the project aims at increasing the incomes of *Fadama* resource users on a sustainable basis by directly delivering resources to them (i.e. the beneficiary rural communities), efficiently and effectively; and empowering them to collectively decide on how resources are allocated and managed for their livelihood activities and to participate in the design and execution of their sub-projects. It entails the women and other vulnerable groups having a voice in the decision-making process and benefiting equally from the project inputs (Third NFDP Project Implementation Manual, 2009).

Using the CDD approach, the project is expected to help attain national food security and improved wellbeing of the poor and marginalized. This objective of course, as evident by the persistent high levels of food insecurity and rural poverty; has not been achieved despite the efforts and huge capital investments that have been put into the project by various stakeholders, which predicate some anomalies among which could be poor compliance to standard practice that eventually lessened expected outcomes.

The general objective of the study was to examine NFDP beneficiaries and officers' compliance to standard practices in Oyo State and the specific objectives were to:

i. describe the socio-economic characteristics of beneficiaries
ii. determine the perception of beneficiaries on the transparency in the NFDP delivery
iii. examine beneficiaries' satisfaction with the project.
iv. examine beneficiaries and officers' compliance to standard practices of the NFDP

METHODOLOGY

The study was carried out in Oyo State. Oyo State is one of the six states that make up the southwest agro-ecological zone of Nigeria. The state covers a total of 27,249 square kilometres of land mass. Its population makes up about 4% of Nigeria's total population (2006 estimate). There are 33 Local Government Areas (LGAs) in the state, out of which the National *Fadama* Development Project covers 20 LGAs.

The target population for this study was the *Fadama* Community Association members

comprising of the *Fadama* User Groups, and field officers from the selected LGAs as well as the staff of the Project Implementation Unit (PIU).

Twenty out of the thirty-three Local Government Areas benefited from the *Fadama* III project in Oyo State. Twenty percent of the LGAs in each ADP zone was selected; making two LGAs from the Ibadan-Ibarapa zone, one from Ogbomoso zone, one from Saki zone and one from Oyo zone; totaling 5 LGAs in all. Ten percent of the 200 FUGs in the 5 LGAs were sampled; giving a population of 20 FUGs. There are about 20 members in each FUG translating to 400 members out of which 30% of FUG members were randomly selected giving a total of 120 respondents.

At the officer level, all the nine officers at the Project Implementation Unit (PIU), Oyo State *Fadama* Coordination Office were interviewed, as well as one field facilitator from each of the selected Local Government Areas (making five field facilitators in the state). This gave a total of fourteen *Fadama* officers.

RESULTS AND DISCUSSION

Socioeconomic characteristics of respondents

Table 1 presents the descriptive analysis of the beneficiaries' socio-economic characteristics investigated in the study. The result indicates that the mean age was 45.6 years. This means that most of the *Fadama* farmers were within the economically active and productive age therefore constituting a good labour force in agricultural production since the project is aimed at increasing overall food production.

The Table also shows that 74.2% of the respondents were male suggesting that males made up the larger number of the beneficiaries of this project. This corroborates the reports of Fadairo, Olutegbe and Tijani (2015) as well as Thomas and Abegunde (2013) who respectively found 68.6% and 73.3% of males to constitute their study respondents in Oyo and Lagos States of Nigeria. This makes it clear that, there is generally a high ratio of male farmers relative to females in Nigeria.

Majority (95.0%) were married, 2.5% single and 2.5% were widowed. This is not unexpected as married people generally have more responsibilities, which they expect their farm enterprises to help cater for. FAO (1995) concurrently revealed that 91.9% of the women farmers were married in Syria, 85.0% married in Nigeria, 78.8% in Thailand and 61.3% in Trinidad. Another study by Ofuoku *et al*, (2009) further stated that married individuals were more involved in agriculture in Nigeria. Umunna (2010) explained that married farmers are likely to be under pressure to produce more, not only for family consumption but also for sale. Similarly, the availability of family labour could be an incentive to the married farmer to cultivate more crops and to use agricultural information.

Table 1 also shows that most of the beneficiaries (43.3%) had secondary education, 25.0% had primary education, 19.2% had tertiary education while only 12.5% had no formal education. With this appreciable high level of education, the cooperation of the beneficiaries with implementing field officers was enhanced as they had a fair understanding of the procedures of the *Fadama* project as well as knowledge of the importance of inputs like fertilizers, their uses and specifications. Education assisted participating farmers to know how to apply information on improved farm practices.

The mean duration of participation of the beneficiaries in the project was 3.2 years. This implies that majority of the respondents in the *Fadama* III were not beneficiaries of any of the first two phases of the project. This reflects a lack of continuity and little consideration for sustainability in the effect of the project on farmers' livelihood; as the farmers were randomly selected at each phase and none of the respondents participated in *Fadama* I, few of them benefitted from *Fadama* II, while the majority of the *Fadama* III beneficiaries are a new set of farmers.

This lack of continuity and consideration for sustainability is however a contributing factor that affects the consistency and impact of several agricultural development projects in the lives of the selected target beneficiaries. However, Chinedu (2013) opined that the prevailing economic circumstances might entail a change in policy direction, but a careful study of the Nigerian situation shows most of these policy inconsistencies are avenues for siphoning public funds.

Table 1: Socioeconomic characteristics of respondents, n = 120

Variable	Frequency	Percentage	Mean ± SD
Age (Years)			
Less or equal to 30	1	0.8	45.6167 ± 8.43
31-40	29	24.2	
41-50	67	55.8	
51-60	15	12.6	
61-70	7	5.8	
71-80	1	0.8	
Sex			
Male	89	74.2	
Female	31	25.8	
Marital Status			
Single	3	2.5	
Married	114	95.0	
Widowed	3	2.5	
Religion			
Christianity	56	46.7	
Islam	64	53.3	
Level of Education			
Primary	30	25.0	
Secondary	52	43.3	
Tertiary	23	19.2	
No Formal Education	15	12.5	
Years of Participation in *Fadama* Project			
1-2	14	11.7	3.2083 ± 0.68
3-4	104	86.7	
5-6	2	1.6	

Source: Field survey, 2015

Perception of beneficiaries on transparency in the project delivery

Information in Table 2 reveals that 99.2% of respondents agreed that all decisions affecting the community were made in open meetings, implying a high level of openness in the decision-making of the project. Majority (86.7%) equally agreed that information about purchases and hiring was made open to any interested community member. It can be deduced from the table also that 85.0% of the respondents agreed that members can attest that project funds were used as intended. In fact, 70.0% of the respondents consented to the fact that all expenses were accurately recorded in a project cash book which shows a form of transparency in the project delivery.

About half (48.3%) of the respondents revealed that the cash book and other records were not made open to community members. Concurrently also, 43.3% stated that the use of project supplies is not recorded in a stores book. This depicts a dark area for perpetration of sharp practices among field officers. Majority (97.5%) also concurred that no single person could make decisions about the use of project funds without input from other committee members.

From table 3 however, the perception of beneficiaries on transparency in the project delivery was generally favourable as 60% of the respondents attested to this fact. This implies that most of the beneficiaries believe that the officers dealt with them with clearness, openness and honesty as far as they knew.

Table 2: Perception of beneficiaries on transparency in the project delivery

	Statement	Yes		No	
		F	%	F	%
1	All decisions affecting the community were made in open meetings	119	99.2	1	0.8
2	Information about purchases and hiring is made open to any interested community member	104	86.7	16	13.3
3	The cash book and other records are open to any community member	58	48.3	62	51.7

	Statement	Yes		No	
		F	%	F	%
4	There are clear criteria for bidding to do paid work for the community project and bidding opportunities are announced and posted in public	86	71.7	34	28.3
5	Members can attest that project funds were used as intended	102	85.0	18	15.0
6	All expenses are accurately recorded in a Project cash book	84	70.0	36	30.0
7	There are receipts for all purchases and wage payments	86	71.7	34	28.3
8	Use of project supplies is recorded in a stores book	68	56.7	52	43.3
9	No single person can make decisions about the use of project funds without input from other committee members	117	97.5	3	2.5

Source: Field survey, 2015

Table 3: Perception of transparency

Perception	F	%	Mean	SD	Min	Max
Unfavourable	48	40.0	6.867	2.029	2.0	9.0
Favourable	72	60.0				

Source: Field survey, 2015

Beneficiaries' satisfaction with the *Fadama* project

Findings in Table 4 revealed that, majority (70.8%) of the respondents agreed that they had been able to increase their capacity to produce as a result of the intervention. Likewise, 59.2% of the respondents agreed that they have achieved an increase in the yields of their agricultural products as a result of the intervention. Considering the impact of the project, 80.0% disagreed to the statement that they have not experienced any significant positive change brought about by the project. This implies that however little, that *Fadama* project has contributed positively to the success of their enterprises.

On assessment of the effectiveness, 82.5% of the respondents agreed that the management, monitoring and evaluation helped overall project coordination and supervision and strengthened the effectiveness of the project. Sixty percent agreed that the project delivered what was promised and expected while 21.7% were undecided. Only 45.0% of the respondents agreed that their hopes and aspirations were met by the project. From this, one can see that not up to half of the *Fadama* beneficiaries had their hopes and aspirations met. On assessment of general satisfaction with the project, 63.3% of the respondents agree that they were satisfied with the project while 28.3% were undecided.

Table: 4: Beneficiaries' satisfaction with the project, n=120

Statements	SA		A		U		D		SD	
	F	%	F	%	F	%	F	%	F	%
I have been able to increase my capacity to produce as a result of the intervention	20	16.7	85	70.8	7	5.8	4	3.3	4	3.3
Our community infrastructure (roads, storage and processing structures) are now better off because of the project	30	25.0	33	27.5	29	24.2	14	11.7	14	11.7
I have achieved an increase in the yields of my agricultural products as a result of the intervention	21	17.5	71	59.2	17	14.2	5	4.2	6	5.0
The services were timely in responding to our demands and problems	5	4.2	32	26.7	8	6.7	26	21.7	49	40.8
The intervention helped to increase my income and improve local level productivity in general	20	16.7	89	74.2	5	4.2	4	3.3	2	1.7
Benefits of the project were directed more often than not, to a particular set of people	1	0.8	2	1.7	3	2.5	35	29.2	79	65.8
I have not experienced any significant positive change brought	3	2.5	17	14.2	4	3.3	31	25.8	65	54.2

Statements	SA		A		U		D		SD	
	F	%	F	%	F	%	F	%	F	%
about by the project										
The management, monitoring and evaluation helped overall project coordination and supervision and strengthened the effectiveness of the project	22	18.3	77	64.2	20	16.7	1	0.8	0	0.0
The project delivered what was promised and expected	9	7.5	72	60.0	26	21.7	6	5.0	7	5.8
My hopes and aspirations were met by the project	14	11.7	54	45.0	29	24.2	7	14.2	6	5.0
The project needs a lot of adjustments because it is still far from being at its best	51	42.5	52	43.3	14	11.7	0	0.0	3	2.5
I am satisfied with the project	0	0.0	76	63.3	34	28.3	5	4.2	5	4.2

Source: Field survey, 2015

Extent of compliance of officers and FUGs to the project's specified procedures

Results on officers and FUGs compliance to project's procedures were presented on table 5 from responses to different compliance statements about the project. The ranks associated with compliance statements' weighted mean scores show that beneficiaries played a significant role in monitoring and evaluation of project implementation ($\overline{\chi} = 1.78$), project decisions were taken by consensus($\overline{\chi} = 1.73$) and beneficiaries' interest counted in project implementation ($\overline{\chi} = 1.68$). These alluded to the fact that *Fadama* project deployed the bottom-up approach using the Community-Driven Development (CDD) strategy as described by Umar *et al*, (2012). Also, of high importance in terms of compliance to project procedures are statements directed to project implementation actions to which beneficiaries responded. Most (97.5%) maintained that service providers were never forced on them, 95.8% positioned that that there was no favouritism displayed while 91.7% stated that due process was never abused or downplayed during asset procurement. These outcomes are all part of the benefits of CDD approach adopted by the NFDP as it adheres more to participatory techniques which in essence gives project beneficiaries significant level of control in project implementation according to Nkonya *et al* (2008), Dasgupta and Beard (2007) and Dongier *et al* (2001).

From the study also, the field officers occasionally did not deliver the quality and quantity of what they promised to as noted by 45.0% of the beneficiaries. We can therefore say that in project delivery, officers did not fully perform up to beneficiaries' expectation. This can however affect the beneficiaries' participation in other development projects and their adoption of other development practices later in future.

All the respondents (100.0%) never paid more than the stipulated 30% of the sub-project cost in asset acquisition (instruments, machines, structures). Majority (83.4%) of the respondents never paid the 50% of the purchase price of inputs designated for them as stated in the Project Implementation Manual. Some of the respondents (83.4%) who never paid their part of the input subsidy; it was further stated in a discussion that inputs such as seeds and fertilizers were given to them without charge at all. The project accountant in an interview explained that the reason for the free distribution of inputs was because most of the time, the FUGs could not afford their counterpart fund contribution and so did not comply, except in very few Local Government Areas like Surulere, Olorunsogo and Saki- West. Moreover, he added that inputs were not given to defaulting FUGs for free, contrary to their report, because in most cases, they usually paid in kind as permitted by the Project Implementation Manual; for instance, by participating in construction work which usually would have cost the project some money. For instance, they could decide to work with the service provider and their labour was valued to ensure that it covered their 50% counterpart contribution.

Concerning delays in project supplies reported by beneficiaries, one of the officers in his words said *"anything that involves the government usually takes time*". In corroborating these, officers generally affirmed that there were several processes involved in the approval of project supplies and until all the approval was obtained, fund could not be released. They also noted that there was slow movement of files from table to table (bureaucracy) which also facilitated the delay. Even when approval was obtained, the FUGs themselves were sometimes not ready with their counterpart contribution and that constituted more delay to action.

Only 25.0% of the beneficiaries posited that the direction of project decision was not usually decided by consensus, this implies implementing

officers in these areas where consensus is not considered did not do well enough.

Table 5: Extent of compliance of officers and FUGs to project's specified procedures (n=120)

Statements	Always %	Occasionally %	Never %	WMS	Rank
The project was transparently executed by all officers	56.7	32.5	10.8	1.46	7th
Field officers delivered their promises	53.3	45.0	1.7	1.52	5th
Most times, service providers were forced on us	0.8	1.7	97.5	0.03	18th
We were all carried along at each stage of the project	53.3	44.2	2.5	1.51	6th
Rich and highly connected persons were more favoured	0.8	3.4	95.8	0.05	17th
Our views and complaints were respected	48.3	48.3	3.4	1.45	8th
Most of the time, our choice counts	71.7	25	3.3	1.68	3rd
Involvement of FUGs members in planning process inhibited standard mgt	14.2	20	65.8	0.48	11th
Due process was abused in most procurements made by officials	3.3	5	91.7	0.12	15th
Often than not, we paid more than the stipulated 30% of the sub project cost in asset acquisition	0.0	0.0	100	0.00	20th
As specified, we most often paid only 50% of the purchase price of inputs available to us	13.3	3.3	83.4	0.30	13th
On payment of our counterpart contribution, the time before supplies are made is usually too long.	46.7	15	38.3	1.08	9th
We were often denied grants despite fulfilling all the criteria	0.0	18.3	81.7	0.18	14th
Project officers sometimes gave us waiver	3.3	26.7	70	0.33	12th
Identification of beneficiaries for various aspects of project was often influenced by political ties and belongings	0	3.3	96.7	0.03	18th
Formulation of local development plans for *Fadama* projects were often done by the beneficiaries	21.7	8.3	70	0.52	10th
Direction of project decision is decided by consensus	75	22.5	2.5	1.73	2nd
The role we play in monitoring and evaluation is significant	83.3	11.7	5	1.78	1st
Officers usually guide us but do not lord their ideas on us	76.7	8.3	15	1.62	4th
Officers tend to discourage the use of chosen contractors	2.5	5.0	92.5	0.10	16th

Source: Field survey, 2015

According to Table 6, 56.7% of study respondents posited that compliance to project procedures was high while 43.3% said it was low. A close look at the figures supporting the two positions among respondents however revealed a marginal difference showing that while compliance was not low, there still exists a wide room for improvement concerning compliance to procedures in the *Fadama* project implementation which is in consonance with earlier results discussed.

Table 6: Categorisation of extent of compliance to project's specified procedures

Perception	F	%	Mean	SD	Min	Max
Low	52	43.3	15.975	2.958	6.0	22.0
High	68	56.7				

Source: Field survey, 2015

CONCLUSIONS AND RECOMMENDATIONS

The study concluded that compliance to standard practices in the implementation of *Fadama* project in Oyo State was marginally above average. The study therefore recommended that:

i. Incentives and allowances (especially transport allowances and other allowances that will be expended in the course of the project execution) should be promptly provided to encourage the project officers, especially the field facilitators who have direct contact with the *Fadama* beneficiaries. This will help curb the search for other means of compensation (rent-seeking) in the course of the project execution.

ii. There is need to create more awareness in respondents and through adult education, organize trainings on record keeping for beneficiaries. This is in order that there may be a basis for evaluation of the beneficiaries' performance as a result of the project and the input of the facilitators can also be measured.

iii. There is need for the sponsoring bodies to improve fund support and ensure timeliness in approval of documents, as well as release of fund for the project. This will encourage *Fadama* beneficiaries and enable them achieve the goals for their farm enterprises within a reasonable time frame.

REFERENCES

Chinedu, V. A. (2013). Inconsistent Policies and High Rate of Abandoned Government Projects.

Dasgupta, A. and Beard, V. (2007). Community-driven development, collective action an elite capture in Indonesia‖, *Development and Change,* Vol. 38(2), pp. 229–49.

Dongier, P., Van Domelen, J., Ostrom, E., Rizvi, A., Wakeman, W., Bebbington, A., Alkire, S., Esmail, T. and Polski, M. (2001). Community-Driven Development. In J. Klugman, eds., *A Sourcebook for Poverty Reduction Strategies"* Vol. 1. Washington, DC: World Bank.

Fadairo O. S., Nathaniel S. O. and Adewale M T. (2015). Attitude of crop farmers towards e-wallet platform of the Growth Enhancement Support Scheme for input delivery in Oke-Ogun area of Oyo state. *Journal of Agricultural Informatics. 6 (2): 62-71.*

Hassan, T. (2011). Agricultural Policies and *Fadama* Scheme. The Nigerian Daily.com http://www.nigeriandailies/*Fadama*scheme/tina/hassan.htm

Nkonya, E, D., Philip, T., Mogues, J., Pander, M. K., Yahaya, G., Adebowale, T., Arokoyo and Kato, E. (2008). Community-Driven Development in Nigeria‖ IFPRI discussion Paper 00756, IFPRI Washington.

Ofuoku, A. U., Egho, E. O. and Enujeke, E. C. (2009). Integrated Pest Management (IPM) Adoption among farmers in Central Agro-Ecological Zone of Delta State, Nigeria. Nigeria Advances in Biological Research 3 (1-2): 29-33. IDOSI publications

Thomas, K. A. and Abegunde, B. O. (2013). Social engagement and water management practices among vegetable farmers in Ojo Local Government Area of Lagos State. Proceedings of the 22nd Annual National Congress of the Nigerian Rural Sociological Association held at University of Uyo (Town Campus) between 1st-4th October, 2013 pp. 33-40.

Umar, A. M., Phoa C. L. J. and Muhammad K. (2012). An investigation on the impact of Fadama II project on the adoption and demand for advisory services in Adamawa State, Nigeria. *International Journal of Academic Research in Business and Social Sciences.* Vol.2 No. 1, Pp. 62-71.

Umunna, N. O. (2010)**.** Personal and Socio-Economic Determinants of Agricultural Information Use by Farmers in the Agricultural Development Programme (ADP) Zones of Imo State, Nigeria

LEVEL OF INVOLVEMENT OF SHEA BUTTER PROCESSORS IN PROCESSING ACTIVITIES IN NORTH-CENTRAL, NIGERIA

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ABSTRACT
The study examined the level of involvement of Shea butter processors in processing activities in North-central Zone of Nigeria. A multistage sampling procedure was used to select 330 respondents for the study. The data was collected through an Interview schedule and analysed with descriptive and inferential statistics. The result of the findings shows that the average age of the respondents was 40.2 years, with 97.9% and 97.0% being female and of Islamic faith respectively. They have average household size of 8.78 persons and 54.8% were members of cooperative with an average working experience of 19.40 years. Generally, the respondents had low level of involvement in Shea butter processing activities (57.9%), though there was high level of involvement in milling of the nuts (1.69) and boiling dough (1.667). The respondents were able to meet their basic needs of life through their involvement in Shea butter processing activities. However, lack of credit facilities and high cost of processing equipment were the major constraints to Shea butter processing. There were significant relationship between memberships of Shea butter processors (χ^2= 20.8, p=0.00), age (r=0.17, p=0.03), years of experience (r=0.21, p=0.00), benefit (r=0.44, p=0.00) and constraints (r=0.23, p=0.00) with their level of involvement in Shea butter processing. There is the need to sensitise the processors on the benefits inherent in Shea butter production and belonging to Shea butter processors association to increase the level of involvement and income generation for the processors.
Keywords: Shea butter, Involvement, North central zone, Nigeria and Processing

INTRODUCTION
The potential contribution of Shea butter trees to the Nigerian economy is enormous. Jamala, Jada, Yidau and Joel (2013) submitted that more than 2.8 million people particularly women engaged in the transformation of Shea nuts to butter in Sudan savannah region of Africa.

The Shea tree is a blessing to the region where they are found due to the butter produced from the nuts having wide range of benefits such as medicinal, cosmetics and confectionaries. Nigeria though blessed with the resources in abundance, is yet to fully exploit the potentials. (Sanusi, Tijani, and Akinsokeji, 2016). Shea butter production in the country is on a low (Akinsokeji, Tijani, Sanusi, Igene and Orifah 2017). This could be attributed to little or no value was added to the nuts rather the nuts are sold or smuggled across the border to neighboring countries that have mechanical inputs transforming the nuts to margarines, vegetable oil and other useful products later imported to the country. The Shea trees are concentrated in the North-central Agro-ecological zone of the country. According to a baseline survey in Niger State, Shea butter produced is below performance and little or no value is added (Ebayahaya, 2014 and Sanusi and Tijani, 2018). This fact was also corroborated by Kotongora who noted that many of the nuts were smuggled to neighbouring country unabated. (Daily thrust, 2014).

The problem was compounded with the tedious nature of work associated with Shea butter production and low mechanical input to ease the work may be accountable for this and the low production in the country. This could be attributed to the level of involvement of the processors which underscores the need to assess the level of involvement of Shea butter processors in processing activities in North-central Agro-ecological zone of Nigeria.

The general objective of the work is to assess the level of involvement of Shea butter processors in processing activities in North central agro-ecological zone of Nigeria while the specific objectives are to:

i. describe the socioeconomic characteristics of the respondents,
ii. assess the level of involvement of Shea butter processors in the study area
iii. ascertain the benefits derived from Shea butter processing, and
iv. identify the constraints experienced by the processors.

The hypotheses of the study are thus stated:

$H_0$1: There is no significant relationship between selected respondents' socioeconomic characteristics and their level of involvement in Shea butter processing.

$H_0$2: There is no significant relationship between the benefits derived and the level of involvement in Shea butter processing,.

$H_0$3: There is no significant relationship between the constraints and the level of involvement in Shea butter processing.

METHODOLOGY
The study was carried out in North-central Agro-ecological Zone of Nigeria. The zone is made up of six states namely Kogi, Benue, Niger, Kwara, Nassarawa, Plateau and the Federal Capital

territory. The zone has a population of about 21.1 million (National Population Census, 2006) and a land area of 235.110 km² of Nigeria. The two states used for the study are Niger and Kwara States which are known to have a more significant number of Shea butter processors in the Zone.

A multi-stage sampling procedure was used for the study. The first stage involved purposive selection of Niger and Kwara States because of the prevalence of Shea butter processing activities in the two states. The second stage involved a purposive selection of Niger State Agricultural Mechanisation Development Agency zone A and C out of the 3 in Niger State and Kwara State Agricultural development zone A and C out of the 3 in Kwara State. The third stage involved a random selection of 40% of Local government areas in each zone of Niger State Agricultural Mechanisation Development Agency and while all and 50% of the Local government Areas in zone A and C respectively in Kwara State. The selected L.G.As in Niger State are Katcha, Gbako and Lavun from NAMDA zone A and Meshegu, Kotongora and Borgu in NAMDA zone C while in Kwara State Kaiama and Baruten LGAs were selected from KWADP zone A and Asa, Ilorin East and Moro LGAs were selected from KWADP zone C. Thirty respondents were selected from the selected LGA.s to give a total of 330 respondents that were used for the study.

The socioeconomic characteristics were subjected to frequencies counts and mean. The benefits from Shea butter processing and the constraints associated to processing were measured on a 3 point scale of not beneficial (0), moderately beneficial (1) and very beneficial (3) and not a constraint (0), mild constraint (1) and severe constraint (2) for constraint. The mean scores ranked and the most ranked benefits and constraints were considered the most beneficial and severe constraints associated with Shea butter processing. The level of involvement was measured on a 3 point scale of never, occasional and always with score of 0, 1 and 2 respectively. Mean involvement of 32.27 was used to classify level of involvement into high or low for values from mean and above and values below the mean respectively.

RESULT AND DISCUSSION

Result in Table 1 show the distribution of the respondents according to their socioeconomic characteristics. The result revealed that 29.4% and 28.2% of the processors were between ages 21-30 years and 31-40 years respectively. The average age of the respondents was 40.22 years. About Fifty-eight percent (57.6%) of the processors fall between 21-40 years. It shows that the processors are in their active age. A majority of the processors were female (97.9%) with (97%) practicing Islamic religion and an average household size of 8.78. More than half of the processors were members of Shea butter processor association (54.5%) with an average working experience of 19.4 years. This suggests that the respondents are not new in the Shea butter processing activities. The result also revealed that 77.6% engaged in other activities in addition to Shea butter processing while 22.4% depend solely on Shea butter processing for their income. This suggests that the processors engaged in other activities to augment the proceeds from Shea butter processing activities. The processors sourced for the money that they used for processing from personal savings (81.85), followed by relatives (7.6%) and money lenders (7.3%). This implies that Shea butter industry are not supported by formal sector and only supported by the informal sector which may not be good for the industry's sustainability.

Table 1: Socioeconomic characteristics of the processors

Variables	Frequency	Percent	Means
Age			
1-20	7	2.1	40.22
21-30	93	28.2	
31-40	97	29.4	
41-50	76	23.0	
51-60	40	12.1	
61 and above	17	5.2	
Sex			
Male	7	2.1	
Female	323	97.9	
Religion			
Islam	320	97.0	
Christianity	9	2.7	
Traditional	1	0.3	
Household size			
1-10	252	76.4	8.78
11-20	72	21.8	

Variables	Frequency	Percent	Means
21 and above	6	1.8	
Shea butter association			
Non-member	150	45.5	
membership	180	54.5	
Years of experience			
1-10	97	29.4	19.4
11-20	120	36.4	
21 -30	71	21.5	
31-40	29	8.8	
41 and above	13	3.9	
Level of engagement			
Shea butter as a sole occupation	74	22.4	
Shea butter and other activities	256	77.6	
Source of finance			
Government	5	1.5	
Personal savings	270	81.8	
Cooperatives/association	3	0.9	
Commercial bank	3	0.9	
Money lenders	24	7.3	
Relatives	25	7.6	

In order to ensure sustainability of any activity, the benefit must be adequate to ensure the continuous participation of the actors. Table 2 showed the benefits that the respondents derived from engaging in Shea butter production. The processors ranked the benefit of being able to clothe oneself adequately ($\bar{X} = 1.439$) first, followed by increased income generation from Shea butter processing ($\bar{X} = 1.415$), help to reduce their poverty status ($\bar{X} = 1.346$) and being able to feed ones household ($\bar{X} = 1.318$). The result showed the reason why the respondents engaged in Shea butter processing as to be able to clothed themselves, generate more income, reduce poverty and feed the members of their households. These are the basic needs of life that ensures the peaceful coexistence of the people in the rural areas. .

Table 2: Distribution of respondents based on the benefits derived from Shea butter processing

Benefit of Shea butter processing	Not beneficial	Moderate beneficial	Very beneficial	Mean	Rank
Increase in income generation	2 (0.6)	189 (57.3)	139 (42.1)	1.415	2nd
Being politically active.	82 (24.8)	197 (59.7)	51 (15.5)	0.906	12th
Being more mobile	68 (20.6)	199 (60.3)	63 (19.1)	0.985	9th
Belonging to a prestigious social group	101 (30.6)	159 (48.2)	70 (21.2)	0.906	12th
Gaining more knowledge /technical	97 (29.4)	155 (47.0)	78 (23.6)	0.942	11th
Being able to feed one's household well	16 (4.8)	193 (58.5)	121 (36,7)	1.318	4th
Social security (freedom of expression and association)	82 (24.8)	182 (55.2)	66 (20.0)	0.952	10th
Meeting social responsibility	43 (13.0)	199 (60.3)	88 (26.7)	1.136	8th
Acquisition of household assets	29 (8.8)	200 (60.6)	101 (30.6)	1.218	6th
Acquisition of working equipment	40 (12.1)	201 (60.9)	89 (27.0)	1.149	7th
Reducing poverty	7 (2.1)	202 (61.2)	121 (36,7)	1.346	3rd
Acquisition of means of mobility	239 (72.4)	70 (21.2)	21 (6.4)	0.339	14th
Being able to take good care of one's health.	5 (1.5)	220 (66.7)	105 (31.8)	1.303	5th
Being able to clothe oneself adequately	8 (2.4)	169 (51,2)	153 (46,4)	1.439	1st

Constraints are the limitation confronting the processors to achieved their goals in their chosen career, reduce the benefit which they derive from processing and influence their level of involvement in Shea butter production. Table 3 revealed that lack of credit facilities ($\bar{X} = 1.764$) was the most severe constraint to Shea butter processing followed by high cost of processing equipment ($\bar{X} = 1.727$) and lack of government assistance in

term of inputs ($\bar{x}$ =1.694). The result further help to substantiate an earlier result that the Shea butter processors is greatly affected by lack of funds to run the business as the processors used their personal savings or money gotten from their relatives. The processors are also constrained by high cost of processing equipment which is expected to reduce the drudgery associated with Shea butter processing and improve the quality and quantity of butter produced. According to Sanusi, Adeloye and Adegebo, (2017) most processing machines are very expensive and the processors are at the mercy of government and donors to buy the equipment for them. Government policies do not recognize the Shea butter sub sector of the economy because it is still an informal sector with no structure, hence the low assistant gotten from government and financial institutions.

The processors did not recognise the following constraints as a serious threat to their processing activities, inadequate transport facilities and cost ($\bar{x}$=0.946), insect infestations ($\bar{x}$=0.963), lack of technical know-how to operate machines ($\bar{x}$=1.012) progressively. Transportation facilities and cost was not a constraint because most of the processors sell their butter locally at no cost and transport facilities are not required. The processors know how to preserve their Shea nuts hence no insect infestation. Most of the processors did not have processing equipment, so the knowledge of how to operate them is not a threat to the profession.

Table 3: Constraints to Shea butter processing

Constraints	Not constraint	Mild constraint	Severe constraint	Mean	Ranks
Scarcity of Shea nuts	25 (7.6)	124 (37.6)	181 (54.8)	1.473	7th
Lack of storage facility	104 (31.5)	116 (35.2)	110 (33.3)	1.018	19th
Lack of government assistance (inputs)	26 (7.9)	49 (14.8)	255 (77.3)	1.694	3rd
Tedious processing method	24 (7.3)	98 (29.7)	208 (63.0)	1.406	11th
Poor quality/lack of water at processing sites	39 (11.8)	118 (35.8)	173 (52.4)	1.267	16th
Inadequate transport facility and cost	49 (14.9)	144 (43.6)	137 (41.5)	0.946	22nd
Scarcity of labour to help in processing activities	102 (30.9)	144 (43.6)	84 (25.5)	1.430	9th
Poor income accruing to the processors	20 (6.1)	148 (44.8)	162 (49.1)	1.430	9th
Unstable price of Shea butter	19 (5.8)	148 (44.8)	163 (49.4)	1.436	8th
High cost of processing equipment	12 (3.6)	66 (20.0)	252 (76.4)	1.727	2nd
Lack of credit facilities	17 (5.2)	44 (13.3)	269 (81.5)	1.764	1st
Lack information on Shea butter processing and marketing potential	41 (12.4)	156 (47.3)	133 (40.3)	1.279	15th
Indiscriminate felling of Shea trees	34 (10.3)	97 (29.4)	199 (60.3)	1.500	6th
Lack of technical know-how to operate machines	122 (37.0)	82 (24,8)	126 (38.2)	1.012	20th
Low demand of Shea butter	38 (11.5)	122 (37.0)	170 (51.5)	1.400	12th
Lack of electricity to run the machine	74 (22.4)	77 (23.4)	179 (54..2)	1.318	14th
High cost of maintaining the equipment	80 (24.2.)	86 (26.1)	164 (49.7)	1.252	17th
Inadequate machines to go round the processors.	118 (35.8)	85 (25.8)	127 (38.4)	1.027	18th
Snake and scorpion bite	38 (11.5)	128 (38.8)	164 (49.7)	1.382	13th
Insect infestation	115 (34.8)	112 (33.9)	103 (31.3)	0.963	21st
Lack of modern processing technologies	35 (10.6)	60 (18.2)	235 (71.2)	1.606	4th
lack of working material	23 (7.0)	118 (35.8)	189 (57.2)	1.503	5th

Table 4 showed the involvement of the processors in the Shea butter processing activities. The respondents were most involved in grinding/milling ($\bar{x}$= 1.694), followed by boiling dough ($\bar{x}$=1.667) and kneading ($\bar{x}$= 1.609). The result shows the most important stages that are involved in the transformation of Shea nuts to butter. Milling or grinding, boiling the dough and kneading are very important to produce quality butter and in large quantities which are essential for increasing the benefits that the processors derive from Shea butter production. Table 5 shows the level of involvement of the processors in the processing activities. Generally, the level of involvement of the processors was low (56.4%). The reason for the low level of involvement can be adduced to the fact that younger people were involved in Shea butter processing. These set of people are at their prime and would like to venture into many things at the same time and the issue of seasonality of the Shea nuts which may be unavailable at times.

Table 4: Distribution of respondents based on their level of involvement in Shea butter processing

Activities involved	Never	Occasional	Always	Mean	Ranking
Harvesting	54 (16.4)	196 (59.4)	80 (24.2)	1.079	21st
Gathering	52(15.8)	173(52.4)	105 (31.8)	1.161	19th
Transporting	30 (9.1)	158 (47.9)	142 (43.0)	1.339	13th
Washing fruits	52(15.8)	161 (48.8)	117 (35.4)	1.197	17th
De-pulping	48 (14.5)	169 (51.2)	113 (34,3)	1.197	17th
Parboiling nuts	21(6.4)	163 (49.4)	146 (44.2)	1.379	9th
Dry parboiled nuts	23 (7.0)	170 (51.5)	137 (41.5)	1.463	7th
Cracking nuts	23 (7.0)	167 (50.6)	140 (42.4)	1.355	11th
Drying nuts	29 (8.9)	167 (50.6)	134 (40.5)	1.346	12th
Buying Kernel	35 (10.6)	154 (46.7)	141 (42.7)	1.321	14th
Washing kernel	37 (11.2)	175 (53.0)	118 (35.8)	1.246	16th
Drying washed kernel	30 (9.1)	167 (50.6)	133 (40.3)	1.318	15th
Kernel sorting	20 (6.1)	170 (51.5)	140 (42.4)	1.376	10th
Kernel crushing	12 (3.6)	148 (44.9)	170 (51.5)	1.479	6th
Roasting crushed kernel	120 (36.4)	111 (33.6)	99 (30.0)	0.936	22nd
Drying roasted kernel	98 (29.7)	92 (27.9)	140 (42.4)	1.125	20th
Grinding/milling	8 (2.4)	85 (25.8)	237 (71.8)	1.694	1st
Kneading	10 (3.0)	109 (33.0)	211 (64.0)	1.609	3rd
Cold separation	20 (6.1)	124 (37.6)	186 (56.3)	1.503	5th
Hydraulic pressing	315 (95.5)	12 (3.6)	3 (0.9)	0.055	24th
Boiling dough	16 (4.8)	78 (23.6)	236 (71.6)	1.667	2nd
Decanting butter	14 (4.2)	133 (40.3)	183 (55.5)	1.512	4th
Filtration	186 (56.6)	72 (21.7)	72 (21.7)	0.649	23rd
Packaging butter	13 (3.9)	160 (48.5)	157 (47.6)	1.436	8th

Table 5: Level of involvement of Shea butter processors

Level of involvement	Frequency	Percent
Low	186	56.4
High	144	43.6

Mean =32.2727

Table 6 shows the Chi-square of the relationship between membership of Shea butter association and level of involvement. There was positive relationship between membership of Shea butter association and their level of involvement in Shea butter processing. Membership of Shea butter association was found to increase with level of involvement of the respondents' in Shea butter processing because being a member of the processors group will avail the individuals the benefits of training, credit facilities and inputs to enhance their work, thereby increase their level of involvement in processing.

Table 6: Relationship between membership of Shea butter association and level of involvement in Shea butter processing

Variables	χ^2 value	p-value
Membership of Shea butter association	20.8	0.000

$p \leq 0.05$

Table 7 shows the relationship between ages, years of experience, benefits derived from Shea butter processing and constraints to Shea butter processing with level of involvement in Shea butter processing. There were positive relationships between ages, years of experience, benefits and constraints. The higher the age of the respondents the higher the level of involvement. This can be explained based on the fact that the higher the age of the processors, the less they have the power to venture into many things at the same time and concentrate on Shea butter production, hence the high level of involvement. The higher the year of experience the higher the level of involvement can be explained from the point of view that long years of experience allow the processors to know the way of doing the work easily and they are more attached to the work hence the higher level of involvement. Benefits derived are a function of level of involvement. The more the benefits that the respondents derived the more their level of involvement. The relationship between constraints and level of involvement was unexpected because the higher the constraints, the higher the level of

involvement. The reason for this could be that the constraints measured in the study were not considered as constraints by the respondents or the constraints might have been addressed by the processors individually or collectively. It could also be that they get assistance from external sources like the government and other donor organisations.

Table 7: Relationship between ages, years of experience benefits and constraints and the level of involvement of involvement in Shea butter processing

variables	r-value	p-value
age	165	0.03
Years of experience	0.208	0.00
Benefits	0.441	0.00
Constraints	231	0.00

$p \leq 0.05$

CONCLUSIONS AND RECOMMENDATIONS

The level of involvement in Shea butter processing activities was low, though milling, boiling of dough and kneading of butter were the three most involved activities. The respondents derived the benefits of clothing themselves, generating more income and feeding the members of their household. The processors identified lack of credit facilities, high cost of processing equipment and lack of government assistance in inputs as significant constraints to the processing.

Efforts should be put in place to sensitised the processors on the benefits of the profession and increase the numbers of Shea processors in cooperative societies since it was found to increase the level of involvement. Credit facilities should be made available to the processors through commercial banks and government. This is to assist the processors to acquire modern processing technologies which is necessary to produce quality butter and in large quantity. All these will increase the benefits derived by the processors and at the long run will increase the level of involvement of the processors and increase the production of Shea butter in Nigeria.

REFERENCES

Akinsokeji, O. A., Tijani, S. A., Sanusi, M. K., Igene, L. and Orifah, M. O. (2017). Perception of modern processing technology by Shea butter processors in Kwara State, Nigeria. Journal of Agricultural Extension, 21(1): 1-14.

Daily Trust (2014). Women fighting poverty in Niger State through Shea butter production. Hamagam A. M. Published on 20th February 2014. Accessed on line on 16th March 2017

Ebayahaya, M. (2014). GIZ-SEDIN Shea exit strategy: Pro-Poor Growth and Empowerment Promotion (SEDIN) Programme, Niger State, Nigeria. Deutshe Gesellschaft Fūr internationale Zusammenarrbeit (GIZ)/National Planning Commission, Nigeria. Pp.:1-16.

Jamala, G. Y., Jada, M. Y., Yidau, J. J. and Joel, L. (2013). Socioeconomic contribution of Shea tree (Vitellaria Paradoxa) in support of rural livelihood in Ganye, Sourtheastern Adamawa State, Nigeria. IOSR Journal of Environmental Science, Toxicology and Food Technology, 6(5): 75-81

National Population Census (2006). Federal Republic of Nigeria. Pp. 48-49.

Sanusi M. K, Adeloye, F. F. and Adegebo S. A. (2017). Problems confronting Shea butter industry in Nigeria. *International Journal of Sustainable Agricultural Research.* Volume 4; No. 4. Pp.: 101-112.

Sanusi, M. K., Tijani, S. A. and Akinsokeji, O. A. (2016). Level of utilisation of modern processing technologies among Shea butter processors in Kwara State, Nigeria. *Nigerian Journal of Rural Sociology*. Vol. 16 (4) Pp.: 39-45.

Sanusi, M. K and Tijani, S. A. (2018). Utilisation of modern processing technologies among Shea butter processors in Niger State, Nigeria. *Journal of Agricultural Extension.* Vol. 22 (2). Pp. 98

POSTHARVEST INFORMATION NEEDS AMONG PLANTAIN MARKETERS IN SOUTHWESTERN NIGERIA

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ABSTRACT
Paucity of adequate post-harvest handling information among marketers who handle most of the purchasing, storage, ripening and selling functions along the plantain value chain is largely responsible for high postharvest loss of plantain. .In order to bridge this gap, information need of marketers involved in the post-harvest handling of plantain in southwestern Nigeria was investigated in this study. Data on respondents' socioeconomic characteristics, source of information, postharvest handling practices, constraints to accessing information on the practices, and information need on improved practices were collected from 120 randomly selected plantain marketers. Data were analyzed using frequency counts, percentage, mean and Pearson Correlation. Findings reveal that most of the marketers were female (68.0%), married (64.0%) and 39.2% had secondary education. Friends (1.20) served as the major source of information for the marketers, while inadequate extension contact (47.5%) and poor access to information sources (42.5%) were the major constraints faced in accessing postharvest handling information. Marketing (63.3%), sorting (58.3%), transportation (50.0%) and processing (27.5%) were the postharvest handling practices marketers were engaged in. Post-harvest practices (r =3.64, p=0.00) engagement was significantly related to marketers' information need. Information on transportation, marketing and processing of plantain were respondents' main information need. Extension organisations as well as other media agencies that have responsibility for agricultural information dissemination should focus on these key areas.
Keywords: Information need, Postharvest practices, Plantain marketers

INTRODUCTION

Increased agricultural production without improved postharvest handling and processing techniques will fail to yield commensurate improvement in food security as high postharvest food losses continues to plague the food systems in developing countries. In Nigeria, post-harvest losses accounts for about 35%-50% for fruits and vegetables (Price Water House Coopers, 2017). Musa paradisiacal (plantain) is a major starchy staple in the sub-Saharan Africa, it provides more than 25% of the carbohydrate and 10% of the daily calorie intake for more than 70 million people in the continent (Kayode, Ajiboye, Babayeju, Kayode, Oladoye, Adu, 2013). Nigeria is one of the major plantain producing and consuming countries in Africa, producing about 2.11 million metric tons of plantains annually (FAO, 2011; Akinsanmi, Akinsanmi, Oduje, Akinyemi, and Adefegha, 2015). Plantain is a food and cash crop with the potential to contribute to strengthening national food security and decreasing rural poverty (Adejoro, Odubanjo and Fagbola, 2010). Its export potential, processing utilisation and health benefits make it a crop of national importance. However, seasonal glut during the peak periods of harvest from September to February (Adeniji and Ayandiji, 2014) makes the crop vulnerable to high post-harvest losses. Short shelf life, poor post-harvest systems which results in deterioration (Kwami and Nitty, 2014) and poor handling practices (Mebratie, 2015) account for the high rate of plantain postharvest losses.

According to Adeniyi and Ayandiji (2014) and Adewumi, Ayinde, Falana, and Olatunji (2009), the bulk of the postharvest losses of plantain are incurred by the marketers (wholesalers and retailers) that are involved in the transportation, marketing and sales of the produce. On examining the effect of knowledge, attitude and constraints on postharvest losses among plantain farmers and wholesalers in southwestern Nigeria, Ladapo and Oladele (2011), identify the need for an improved knowledge of postharvest practices to address postharvest loss along the plantain value chain. However, improving the knowledge on postharvest handling activities and practice demands addressing the information needs of the farmers, and other crop handlers such as the marketers, who do not have adequate information on proper crop harvesting and post-harvest handling methods, resulting in significant damage during storage and marketing (Abass *et al*, 2014). Achugbue and Anie (2011) also affirm that among the information needs of farmers, postharvest information is the most sought after. This is necessary to minimise economic losses to farmers in the absence of proper storage and adequate market access.

Most studies on plantain in Nigeria have been on production (Baruwa, Masuku and Alimi, (2011), Kainga and Seiyabo (2012), agronomy (Echezona Baiyeri and Aindigh (2011), marketing (Oladejo and Sanusi 2008), processing and postharvest losses (Ladapo and Oladele 2011, Folayan and Bifarin, 2011), economic analysis of postharvest losses (Adeniyi and Ayandiji, 2014). Given the need to address postharvest losses of plantain produce, it is expedient to identify the information need on postharvest handling practices; hence this study was guided by the following objectives:

i. determined the socioeconomic characteristics of plantain marketers in the study area
ii. identified respondents' sources of information on post-harvest handling practices
iii. ascertained the post-harvest handling practices engaged in by the respondents
iv. examined their information need on post-harvest handling of plantain
v. identified the constraints to accessing information on post-harvest handling practices

Hypothesis of the study are as follows;

There is no significant relationship between post-harvest handling practices by respondents and their information needs on postharvest handling.

METHODOLOGY

This study was carried out in Southwestern Nigeria which has six states namely Lagos, Ogun, Oyo Osun, Ondo and Ekiti States. It is located between latitudes 5 and 9 North and longitudes 2 and 8 East. It is bounded by the Atlantic Ocean in the South, Kwara and Kogi States in the north, Eastern Nigeria in the East and Republic of Benin in the West. It has a land area of 114,271 square kilometres. The vegetation ranges from swamp forest in the southern coast to derived savannah in the north. The rain and deciduous forest lies between the two vegetation belts. Rainfall ranges from 300mm in the coastal area to 200mm in the extreme northern parts. The population according to 2006 census is 22,330,670. The agro ecological zone has the highest concentration of research institutes and tertiary institutions that offer courses in agriculture. Plantain production is found mainly in the southern states of Nigeria, with states like Ondo and Osun producing in large quantities which are transported to other parts of the country and nearby cities like Lagos and Ibadan metropolis for marketing.

The respondents were selected from the population using multi-stage sampling procedure. The first stage involved the purposive selection of two states (Lagos and Osun states) with major markets where fruits are traded. The second stage involved a purposive sampling of one local government areas in each state, where plantain markets are located, Lagos (Ketu/Isolo) and Osun (Irewole). In the third stage, one market from each local government areas was selected; Mile 12 market in Ketu/Isolo LGA and Ikire market in Irewole LGA, respectively. Fourthly, snow balling sampling technique was used to generate a list of 100 marketers in each of the markets in the LGA to make a total list of 200 marketers in all. Finally, simple random sampling technique was then used to select 60% of the marketers from each of the market to give a total of 120 respondents for the study.

The dependent variable, (information need) was measured using a 3-point Likert-type scale with eight management postharvest handling practices. Respondents were asked to indicate their level of information need. Response options of high, moderate and low were used and scores of 3, 2 and 1 were assigned, respectively. The mean score for each of the practices was calculated and was used in ranking their information need on the different practices. Data were analyzed using simple frequency counts, percentages, mean and Pearson Moment Product Correlation.

RESULTS AND DISCUSSION

Socioeconomic characteristics

Table 1 shows that most of the respondents were female (64.1%), with the mean age of 37 years. This confirms Ajayi and Mbah (2007) and Adewumi Ayinde, Falana, and Olatunji (2009) findings that plantain production is dominated by men, while women were young, active and were engaged in plantain marketing. Most of the respondents were married (84.2%) and had household size of between 1 and 5 persons. Also, most of the respondents were retailers (55.5%), more than wholesalers (37.0%) and they mostly had secondary school education. This corroborates Adewumi *et al*, (2009) who posited that there were more retailers than wholesalers amongst marketers in plantain marketing in Lagos State.

Table 1: Distribution of respondents based on their socioeconomic characteristics

Variables	Frequency	Percentage (%)
Sex		
Male	32	43.3
Female	68	56.7
Age		
Below 30 years	68	64.1
31-50 years	32	35.9
Educational level		
Tertiary education	9	7.5
Secondary primary	47	39.2
Primary education	40	33.3
No formal education	24	20.0

Variables	Frequency	Percentage (%)
Marital status		
Single	8	10.3
Married	64	82.1
Divorced	5	6.4
Widow	1	1.3
Household size		
0-5	82	68.3
6-11	38	31.7
Marketing occupation		
Wholesaler	35	55.5
Retailer	65	37.0
Wholesaler and retailer	10	7.0

Source: Field survey; 2015

Sources of information on postharvest handling practices

Table 2 shows that friends ranked first as major source of information for the marketers while radio and Cooperatives ranked 2nd and 3rd, respectively. Though, it is worrisome that extension agent ranked 4th and least in the order of importance as source of information to marketers, the picture presented by this result represents the true situation of extension services in Nigeria, which apart from being in short supply (Olajide, 2011), also always concentrate efforts in production component of most crops, but neglect stakeholders in the value addition chain. This result agrees with Asogwa, Abu and Onkpe (2014) which suggest that informal marketing information sources (other plantain marketers) were the most readily available sources of agricultural marketing information among the respondents.

Table 2: Distribution of respondents' source of information

Variables	Mean	Rank
Friends	1.20*	1st
Radio	0.71*	2nd
Cooperatives	0.53	3rd
Extension agent	0.22	4th

Source: Field survey, 2015

Postharvest handlings practices engage in by the respondents

Information in Table 3 shows that the postharvest practice engaged in by marketers were marketing (63.3%), sorting (58.3%) and transportation, while processing was least practiced (27.5%). This corroborates the findings of Ladapo and Oladele (2011) that all the farmers and wholesalers were engaged in sorting, marketing and transportation as postharvest activities. The results also have implication for the neglect of processing as a viable and veritable means of preserving agricultural produce, especially the very perishable ones like oranges, banana and plantain. It is quite disturbing that at this age and time, processing ranked the least of postharvest activities engaged by no less other groups, but marketers.

Table 3: Distribution of respondents based on their postharvest handling practices

Variables	Mean	Rank
Cleaning	0.86	5
Sorting	1.42	2
Packaging	0.94	3
Ripening	0.81	4
Transportation	1.21	3
Marketing	1.63	1
Processing	0.56	6

Source: Field survey, 2015

Information need on postharvest handling practices of plantain

Table 4 shows that information need on marketing ranked highest implying that plantain marketers could be experiencing inadequate marketing facilities. This is in view of Kader's (2005) position that inadequate marketing systems in developing countries is accentuated by lack of

marketing information; Information need on credit and supply inputs ranked second on the information need of farmers. This is consistent with the finding that finance is one of the top-most problems facing the marketers by Oladejo and Sanusi (2008). The result of the study further reveals that marketers also require information on processing (ranked third). This implies that marketers need information on processing as they also engage in processing activities though rarely as earlier reported (see Table 3). This reinforces the fact that though, perhaps, marketers would have loved to engage in processing but they lack information on the modalities of processing to maximize their profit as marketers

Table 4: Distribution of respondents based on their information needs on postharvest practices

Postharvest practices	Mean	Rank
Cleaning	1.43	7
Sorting	1.38	8
Packaging	1.70	4
Transportation	1.61	5
Ripening	1.56	6
Marketing	2.57*	1
Credits and input supplies	2.53*	2
Processing	2.22*	3

Source: Field survey, 2015

Constraints to accessing information on postharvest handling practices

Table 5 shows that the major constraints to accessing information were inadequate extension contact (47.5%) and inaccessibility (42.5%). The constraint of inadequate extension contact can be attributed to the few number of extension workers while the constraint of inaccessibility to information may be due to lack of electricity/power interruption, and agricultural information being broadcast at odd hours when marketers who need the information are not available (Aina, 2007; Obidike, 2011).

Table 5: Distribution of respondents based on constraints to accessing information on postharvest handling of plantain

Variables	Mean	Rank
Inadequate extension contact	2.03*	2
Information inaccessibility	2.4*	1
Lack of feedback	0.83	3
Irrelevant information	0.80	4

Source: Field survey, 2015

Relationship between postharvest handlings practices by respondents and their information needs on postharvest handling

Data in Table 5 shows that respondents' postharvest handling practices was significantly related to their information needs (r =3.64, p=0.00). This implies that the postharvest handling activities were informed by the information need expressed by the respondents. It can further be deduced that the multiplicity of postharvest handling activities by marketers is directly proportionate to their information need. This is consistent with Achugbue and Anie (2011) who posited that postharvest information needs of farmers is the most sought after.

Table 5: Relationship between respondents postharvest handling practices and their information need on postharvest handling practices

Variable	r-value	p-value	Decision
Postharvest practices/ practices/information need	3.64	0.00	Significant

CONCLUSIONS AND RECOMMENDATIONS

This study concludes that informal source (friends) serves as the main source of information to plantain marketers. Processing was rarely done by marketers, hence, plantain marketers, though rated marketing strategies as their most needed information, the importance of processing was not lost on them as they wanted information on plantain value addition. Poor extension contact remains an albatross to their access to information on postharvest handling. It is therefore recommended that deliberate attempts should be made by extension organisations and other media

outlet to serve the information needs on postharvest handling of practices of plantain marketers.

REFERENCES

Adebayo, B. A., Gabriel N., Per., Bamidele A., Nicholas M. and Mateete B. (2014). Post-harvest food losses in a maize-based farming system of semi-arid savannah area of Tanzania. Journal of Stored Products Research Volume 57, April 2014, Pages 49-57

Achugbue, E. I. and Anie, S. O. (2011). ICTs and Information Needs of Rural Female Farmers in Delta State, Nigeria Library Philosophy and Practice (e-journal). 448.

Adeniyi, O. and Ayandiji, A. (2013). Economic Analysis of Post-Harvest Losses in Plantain and Banana. A Case Study of South Western Nigeria. British Journal of Applied Science and Technology 4(31): 4456-4467, 2014

Adejoro, M. A., Odubanjo, A. O. and Fagbola, B. O. (2010). Research focus on banana and plantain (Musa spp.) Nigerian Perspectives Proc. IC on Banana and Plantain in Africa, Acta Hort. 879, ISHS

Adewumi, M. O. Ayinde, O. E., Falana, O. I. and Olatunji, G. B. (2009) Analysis of Post-Harvest losses among plantain/Banana (Musa Spp .L.) marketers in Lagos State, Nigeria. Nigerian Journal of Agriculture, food and Environment. 5 (2-4): 35 – 38

Aina, L. O. (2007). Globalisation and Small- Scale Farming in Africa: What role for Information Centres? World libraries and information congress 73rd IFLA General Conference and Council. Durban, South Africa.

Akinsanmi, A., Oduje, O. G., Akinyemi, J. A. and Adefegha, A. S. (2015). Assessment of the nutritional, anti-nutritional and antioxidant capacity of unripe, ripe, and over ripe plantain (Musa paradisiaca) peels. International Journal of Advanced Research 3(2): 63-72.

Asogwa, B. C., Abu, O., and Onkpe, M. A. (2014). Marketing Information Usage among rice producers in Benue State, Nigeria. Asian Journal of Agricultural Extension, Economics and Sociology 3(5): 427-444, 2014.

Ajayi, A. R. (2000).Banana and Plantain marketing by women in Nsukka urban area of Enugu State, Nigeria. Proceeding of the sixth Annual National Conference of the Agricultural Extension Society of Nigeria 10th -12th April, 2000.

Ajayi, A. R. and Mbah, G. O. (2007). Identification of Indigenous Ripening Technologies of Banana and Plantain Fruits among Women – Marketers in Southeastern Nigeria. Journal of Agriculture, Food, Environment and Extension Volume 6, Number 2 June 2007 pp. 60 - 66

Baruwa, O. I., Masuku, M. B. and Alimi, T. (2011). Economic Analysis of Plantain Production in Derived Savannah Zone of Osun State, Nigeria. Asian Journal of Agricultural Sciences 3(5): 401-407, 2011. ISSN: 2041-3890.

Kainga, P. E. and Seiyabo I. T. (2012): Economics of Plantain Production in Yenagoa Local Government Area of Bayelsa State. Journal of Agriculture and Social Research (JASR) Vol. 12, No. 1

Kader, A. A. (2005). Increasing food availability by reducing postharvest losses of fresh produce. Proceedings of the 5th International Postharvest Symposium. Acta Hort. 682, no. 1, pp. 2169–2176, 2005.

Echezona, B. C., Baiyeri, K. P. and Aindigh, F. D. (2011): Yield and Economics of Plantain Production under Six Weed Management Systems in a Derived Savanna Agro-Ecosystem. TROPICULTURA, 2011, 29, 1, 14-19.

Kwami, J. K. and Nitty, H. K. (2014). Conceptual Framework for Estimating Postharvest Losses in Food Supply Chains: the Case of Plantain Fruits in Nigeria. International Journal of Business and Economics Research. Special Issue: Supply Chain Management: Its Theory and Applications. Vol. 3, No. 6-1, 2014, pp. 31-37. doi: 10.11648/j.ijber.s.2014030601.15.

Folayan, J. A. and Bifarin, J. O. (2011). Economic analysis of plantain processing industry in Akure south local government of Ondo State. Journal of Agricultural Extension and Rural Development Vol. 3(4), pp. 77-81, April 2011. Available online http:// academicjournals.org/JAERD. ISSN 2141-2154 ©2011 Academic Journals.

Ladapo, M. A. and Oladele, O. I. (2011). Effect of Knowledge, Attitude and Constraints on Postharvest losses among plantain farmers and wholesalers in south-western Nigeria.. Life Science Journal, 2011; 8(2) http://www.lifesciencesite.com

Kayode, R. M. O., Ajiboye, A. T., Babayeju, A. A., Kayode, B. I., Oladoye, C. O., and Adu, K. T. (2013). Proximate, mineral composition and microbial counts of over-ripe fried plantain (dodo-ikire) sold by vendors in Ikire town, Nigeria. International Journal of Biotechnology, 2(4), 68-82. Retrieved from

http://www.aessweb.com/pdf-files/ijb%202 (4), %2068-82.pdf

Miyinyawa, Y. (2002). Farm structures, Ibadan Press, pg 32-37.

Obidike, N. A. (2011). Rural Farmers' Problems Accessing Agricultural Information: A Case Study of Nsukka Local Government Area of Enugu State, Nigeria. Library Philosophy and Practice (e-journal). http://digitalcommons.unl.edu/libphilprac/660

Oladejo, J. A. and Sanusi W. A. (2008). Marketing analysis of plantain in Owo and Ose local government areas of Ondo state, Nigeria. International Journal of Agricultural Economics and Rural Development, 1(2)

Olajide, B. R. (2011). Assessment of Farmers 'access to Agricultural Information on selected Food crops in Iddo District of Oyo State, Nigeria. Journal of Agricultural and Food Information.Vol.12 3and4; 354-363

PROMOTION OF STRIGA TOLERANT MAIZE VARIETY IN TUDUN SAIBU, SOBA LOCAL GOVERNMENT AREA, KADUNA STATE

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ABSTRACT
On- farm demonstration was conducted at Tudun Saibu in Soba LGA Kaduna State, Nigeria during the 2012wet season to create awareness, training and establishment of demonstration plot to compare the performance of improved maize Striga-tolerant variety Acr. 97 TZL Comp. 1-W strip cropped with soyabeans (TGX 1448-2E) as a trap crop and farmers' variety planted sole to control or manage *Striga hermonthica*. A group of fifty-seven farmers were purposively selected as maize farmers group. This selection was done in consultation with the group, village head, Village Extension Agents in charge of the area, availability of land infested with striga and inputs. . The demonstrations were conducted on two farmers' plots infested with Striga. The two plots were planted side by side (experimental and control plots) for farmers themselves to compare the performance. Simple descriptive statistics and t-test analysis were employed to treat the data. The results indicated that improved maize Striga-tolerant variety, strip- cropped with soyabeans significantly produced higher yield of 18.90kg and the farmer's variety was 7.52kg.Also, the striga-tolerant maize variety was taller than the farmers' variety planted sole with 234.73cm and 153.70cm respectively, Based on this study it was concluded that strip cropping of soyabean with Striga-tolerant maize variety assisted in controlling *Striga hermonthica,* which resulted in increase in yield, and could lead to improvement in standard of living of the farmers. The study recommended the use of soyabean as a trap crop for control of Striga, the use of Striga- tolerant maize variety, Acr. 97 TZL Comp. 1-W for control of *Striga*. The extension staff at all levels should be trained to educate the farmers on this technology.
Keywords: Demonstration, awareness creation, and Striga tolerant

INTRODUCTION

The name maize is derived from an *Arawak-Carib* word, '*Mahiz'*. It is also known as 'Indian Corn' and in America simply as 'Corn' (Purseglove, 1972). According to Matsuoka *et al*. (2002), all maize arose from a single domestication in southern Mexico about 9,000 years ago and later, spread from this region over the Americas and Europe. Maize *(Zea mays* L) is a cereal of the grass sub-family *Pannicoideae,* and family *Poaceae.*, It is an important grain crop of the world that is used as an animal feed supplement for silage making, human consumption and the straw for bedding. It also has values such as provision of a high dry matter, starch and fibre in the diet(Acquaah, 2005). Onwueme (1991) reports that maize is currently replacing traditional cereal crops such as sorghum and millet in subsistence farming systems in Northern Nigeria. This is attributed to increased demand for maize for the preparation of various food items and industrial purposes.

The availability of high yielding maize varieties has further attracted more producers and increased production of the crop in the country. In 1994, the estimated total production of maize in Nigeria was 6.90MT from an estimated area of 5.43milion hectares of land (Lagoke et al., 1997). Unfortunately, increased production has been constrained by factors such as drought, Downey mildew, Maize Streak Virus and most of all is Striga spp. infestation which hinders maize production and decreases its yield. *Striga hermonthica* reduces the yield of maize by 80 - 100% up when infection occurs at an early growth stage (Kim *et* a/., 1988; Lagoke *et al.,* 1994).

Parasitic weed (Striga species) problem is endemic in the study area which leads to the decline in maize production in the infested farms .During field observation, it was found that most of the farmers were small scale and are still practising their traditional ways of controlling *Striga*by abandoning their infested lands. This has resulted to poverty, due to the *Striga* infestation.

This study is expected to provide valuable information and training on improved *Striga* management practice. However, with the development of sustainable technologies in *Striga* control by research, farmers should be stimulated to embrace the challenges of tackling Striga infestation in their communities. It will also increase public awareness on recent research findings through understanding the benefit and encourage adoption, integration of the technology in farming systems.

The broad objective of this study was to promote the adoption of Striga control practices through the cultivation of improved maize Striga-tolerant variety strip- cropped with soybeans. The specific objectives were to:

i. create awareness on the superiority of improved striga tolerant maize variety strip-cropped with soyabeans
ii. train farmers on the recommended Striga control technologies/skills.
iii. determine the difference between the improved *Striga*-tolerant maize variety on growth rate and yield with the local variety

METHODOLOGY

The soyabeans variety used in the demonstration was TGX 1448-2E developed by the International Institute for Tropical Agriculture (IITA), Ibadan. The soyabeans variety is non-shattering, moderately resistant to *Cercospora* leaf spot disease, high yielding and is capable of stimulating high Striga seeds germination (Lagoke *et al*, 1997).

The maize variety, ACR 97TZL Comp. 1-W, is an improved open pollinated and *Striga*-tolerant variety which has been released by the Institute for Agricultural Research, Ahmadu Bello University Zaria (IAR/ABU). It is moderately tall in height and late maturing variety.

The demonstrations were conducted on two farm lands infested with *Striga* and were established in June 2012. A Simple Paired Plot Design (SPPD) were placed side by side with normal agronomic practices in the same field as a way for farmers themselves to compare the performance. Each plot measures 50m length and 25m width i.e. 25x50m. Treatment include a strip cropped of soyabeans TGX- 1448-2E identified as a potential trap crop with maize *Striga* tolerant variety, ACR 97TZL Comp. 1 -W, compare with farmers local maize variety planted sole.

The land was ploughed, harrowed and ridged 75cm apart. Maize was sown at an inter row spacing of 25cm between stands, which occupies two ridges, and soyabeans was drilled to one ridge i.e. in strip, maize occupied two (2) ridges and soyabean one (1) ridge spread all over the first plot. All the agronomic practices were carried out at the same time the same method. The two plots were hoe-weeded at three weeks after sowing (3 WAS) and five weeks after sowing (5 WAS) and earthed up at *8* weeks after sowing (8 WAS) followed with hand pulling of other weeds except *Striga*.. Fertilizer was applied to the maize at the recommended rate of 120KgN/ha and $60KgP_20_5$ and $60KgK_20$ using 20:10:10 compound fertilizer and Urea. The nitrogen was split applied at six weeks after sowing. The strip cropped soyabean received a basal $50KgP_20_5$ using single superphosphate (SSP 18% P_20_5)

For the purpose of this study, both primary and secondary data were collected. Primary data were collected from the field observations of *Striga* parameter which include *Striga* shoot count, plant height, stand count at harvest, crop vigour score, yield and yield components of maize and soyabeans. While the secondary information data comprised of mainly documented and reviewed works on the use of different improved varieties of *Striga* control.

Simple descriptive statistics were used for objective one and two while t-test analysis was employed for objective three respectively.

RESULTS AND DISCUSSION

Table 1 Awareness of improved maize Striga tolerant strip cropped with soyabean to control Striga among farmers in the study area, Tudun Saibu

Table 1: Awareness

Participants	Frequency	Percentage
Number aware	0	0.0
Number not aware	57	100.0
Total	57	100.0

Table 1 shows that before the creation of awareness among farmers in the area none of the farmers has any knowledge about improved maize Striga tolerant variety. Demonstration plots were established to create farmers awareness in the study area. The rate of awareness of improved maize Striga tolerant variety (Acr. 97TZL Comp. 1-W) among the farmers was 100%.

Table 2: Famers trained on various agronomic practices of improved maize Striga tolerant variety production

Agronomic activities	Number of Farmers Trained	Number of Farmers that understood	Number of Farmers who did not understand (%)
Land preparation /ridging	57	57	-
Planting/Spacing	57	55	2
Weeding	57	57	-
Fertilizer application method	57	56	1
Harvesting	57	57	-
Storage method	57	55	2
Seed treatment	57	57	-

Determination of differences between the improved maize Striga tolerant variety on growth rate and yield with the local variety under t-test analysis

In trying to find out whether the differences exists in terms of growth rate and yield between the improved Striga tolerant variety and the farmers variety, thirty (30) maize stands were randomly selected each from the two (2) plots out of the plant population. Their heights were measured in cm at 12 weeks after sowing and at the harvest period their yield i.e. grain yield were also collected.

The yield obtained from the improved variety was 18.90kg and the farmer's variety was 7.52kg while the mean height of the improved variety was 234.73cm and that of the local variety was 153.70cm. These were subjected to t-test analysis. The following are the results obtained from the analysis.

The following formula was employed in determining whether there is significant different in the growth rate of improved maize Striga tolerant variety and farmer's variety

$$t = \frac{X_1 - X_2}{\sqrt{\frac{S_1^2+S_2^2}{n^1 n^1}}} = \sqrt{\frac{234.73 - 153.70}{\frac{3.692 + 2.20}{30*30}}} = 122.78$$

X_1 =Mean plant height of the Striga tolerant variety
X_2 = Mean plant height of the local variety
S_1 = Standard deviation of the Striga tolerant variety
S_2 =Standard deviation of the local variety
n_1= Sample size of the improved variety
N_2 = Sample size of the local variety

From the result of the analysis, the t-calculated was 122.79, while the table t-value at 5% level of significance was 1.812. The calculated value was greater than the critical value therefore the hypothesis of no significant difference in the growth rate of *Striga* tolerant and local variety is rejected and the alternative that the Striga tolerant variety is better than the local variety is accepted.

ii. Analysis on yield

From the formula:

Where:
X_1= Mean yield of Striga tolerant variety
X_2 = Mean yield of the local variety
S_1 =Standard deviation of the *Striga* tolerant variety
S_2 = Standard deviation of the local variety
n_1 = Sample size of the improved variety
n_2 = Sample size of the local variety

From the results, the calculated t-value was 10.43 while the critical value was 1.182 at *5%* level of significant. Since the calculated value is greater than the table (critical) value, the null hypothesis of no significant different in the yield is rejected. Therefore the Striga tolerant maize variety is better in yield.

CONCLUSION AND RECOMMENDATIONS

This study reveals that strip cropping of soyabean with Striga tolerant maize variety assisted in controlling Striga hermonthica, which resulted in increase in yield, and could lead to improvement in standard of living of the farmers.

Based on the findings of the study the following recommendations are therefore suggested.

The use of soyabean as a trap crop for control of Striga. The use of Striga tolerant maize variety, Acr.97 TZL Comp. 1-W for control of *Striga.*

The extension staff at all level should be trained to educate the farmers on this technology. Effort should be intensified to enable more farmers understand the full detail of the technology.

REFERENCES

Acquaah, G. (2005). Principles of Crop production, theory, techniques and technology, published by Asoke, K. Ghosh, Prentice-Hall of India.

Kim, S. K., Parkinson, V., Efron, Y., Bello, I. and Dashie, K. (1988). Potential Trap crops as a cultural measure in *Striga* control. Paper presented at the *Striga*-improved management in Africa at the proceedings in FAO/OAU all African consultation on *Striga* control, Moroua, Cameroon, pp. 136 - 146.

Lagoke, S. T. O. (1997). Striga Problem and development of appropriate control technologies in various crops in Nigeria. Pp. 80 - 100. In: Lagoke, S.T.O; Vander Straten, L.E; and M'boob. S.S. (eds). Integrated Management of Striga for the African farmer proceedings.3 General workshop of the Pan African Accra (Ghana).

Lagoke, S. T.O., Shebayan, J.A.Y., Olufayo, O.O., Elemo, K.A., Ado, J.K., Emechebe, A.M., Singh, B.B. and Adeoti, A.A. (1994).Survey of Striga problems and evaluation of Striga control methods and packages in crops in the Nigerian Savannah. In: improving *Striga* management in Africa proceedings, 2nd General Workshop of PASCON 23 - 29 June 1991, Nairobi, Kenya.

Matsuoka, Y.; Vigouroux, Y; Goodman, MM; *(*2002*).* *"A single domestication for maize shown by multilocus microsatellite genotyping". Proceedings of the National Academy of Sciences.99 (9): 6080–4.*

doi:10.1073/pnas.052125199. PMC 122905[illegible]*.PMID 11983901.*

Onwueme, I. C. and Sinha, T. D. (1991).CTA Field crop production in Tropical Africa.Pp. 339.

Purse glove, J. W. (1972). Tropical crops monocotyledons. Published Longman Group Limited (London) pp. 300. Richey, F. D., Dawson, R. F. (1948). A survey of the possibilities and methods of breeding high -niacin corn. Plant Physiology 23: 238 - 254

RESIDENTS' ASSESSMENT OF FARMERS-PASTORALISTS CONFLICT IN ENUGU STATE, NIGERIA

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ABSTRACT

This study focussed on residents' assessment of farmers-pastoralists conflict in Enugu State Nigeria. Multistage sampling procedure was used to select 120 farmers from three Local Government Areas in Enugu State. Data were collected using structured questionnaire, focus group discussion and in-depth interview. Data were analyzed using descriptive statistics while the hypothesis was tested using Chi-square and PPMC. The mean age of the respondents was 46 years. The majority (79.2%) of the farmers were married and 86.7% were male. The average household size of the respondents was 7 persons. Most of the respondents were involved in reporting conflict situation ($\overline{x}$=1.62). Major perceived cause of conflict was destruction of crops by cattle ($\overline{x}$=1.97) and the method mostly used in resolving conflicts was dialogue between the two parties (85.0%) while the predominant consequences of such conflict were displacement of farmers ($\overline{x}$=1.95) and reduction in farm output ($\overline{x}$=1.94). The socioeconomic characteristics of respondents and the consequences of conflict were not significantly related (sex (χ^2=18.147, p>0.05), religion (χ^2=9.172, p>0.05), age (r=-0.710, p>0.05), level of education (r=-0.005, p>0.05)). The study concludes that farmer pastoralist conflict in the study area has resulted in insecurities in terms of food, lives and properties. It was recommended that farmers should be educated by extension agents and other professionals on conflict management strategies and the implications of embarking on conflicts on their livelihood activities.

Keywords: Farmers, Pastoralists, Conflict, Enugu State

INTRODUCTION

The agricultural sector is the backbone of many economies and it provides the basic needs to mankind and raw materials for industrialization. Agriculture has made a significant contribution to the economic prosperity of advanced countries and its role in the economic development of developing countries is vital. Agricultural production in any country requires an enabling environment to reach its maximum potential. Sustainable development in agriculture, among other things demands a peaceful co-existence of producers within the communities (Adelakun, Adurogbangba and Akinbile, 2015). Farmer-herdsmen conflict remains the preponderant resource-use conflict in Nigeria (Ajuwon, 2004; Fasona and Omojola, 2005) and it has had adverse effect on agricultural production of affected communities. The necessity to provide food of crop and animal origins, as well as raw materials for industry and export in order to meet ever-growing demands, has led to both "intensive and extensive" land use (Nyong and Fiki, 2005). The `competition between these two agricultural land user-groups, however, has often times turned into serious overt and covert manifestation of hostilities and social friction in many parts of Nigeria. The conflicts have demonstrated high potential to exacerbate the insecurity and food crisis particularly in rural communities where most of the conflicts are localized, with reverberating consequences nationwide (Adisa, 2011). Sustainable development in agriculture and rural infrastructure cannot be fully actualized if the target communities continually experience conflicts in different dimensions and magnitude. The expected outcome of most of the interventions for agricultural development will be impaired if the benefitting communities do not have enabling environment to fully implement all the improved production practices and innovations introduced to them which is geared towards maximising their output and improving their wellbeing.

It is worrisome that Nigerians continually experience rising conflicts over livelihood, especially the incidents and associated fatalities between pastoralists and farming communities. According to Blench (2003), farmers-pastoralists' conflicts are increasing both in terms of occurrence and intensity. Over the years, the intensity, frequency and geographical scope of these incidents have risen sharply and rapidly. Thousands have been killed; many have been displaced; properties, crops and livestock worth billions of naira destroyed (Odinkalu and Tukur, 2016). The escalating tension, blood-letting and wanton losses of resources in the affected communities create unfavourable environments for sustainable agricultural production. Hence, continued co-existence as a united country, food security, economic and political stability is as well threatened. The continual massive loss of food materials due to farmer-pastoralist conflicts leaves the teeming population of the host communities to experience malnutrition and even death due to food scarcity and starvation. This has claimed a lot of lives in the host communities especially children. The government of Nigeria has taken several measures to end conflict within her territories. For instance, there are 415 government designated grazing reserves throughout the country. Also,

there is an establishment of farmer-pastoralist reconciliatory committees to look into resources related conflicts among farmers and pastoralists in those states in the country prone to farmer-pastoralist conflicts. Furthermore, various non-governmental organisations have been responding to conflict issues though they are more notable for their proximity to amiable donors than for any long-term progress in the field (Blench, 2003). But all these efforts and interventions have not yielded the expected result.

Although some studies have been carried out relating to farmer-pastoralist conflicts in some other states across the country, there is divergence in their findings as regards the causes and consequences of these farmer-pastoralist conflicts. For instance, Ingawa, Ega and Erhabor (1999) reported that the key underlying cause of farmer-herdsmen conflict in Nigeria is due to inadequacy of grazing resources, as increasing crop cultivation and poor management of the existing grazing reserves have resulted in a significant reduction in available livestock feed resources particularly in the Northern States. Also, Ofuoku and Isife (2009) conducted a study on causes, effects and resolutions of farmers-nomadic cattle herders' conflict in Delta State, Nigeria and identified that the major cause of conflicts between farmers-nomadic cattle herders was disregard for the host traditional authority. Until there is an agreement on the causes of conflict, reaching an agreement on how the divided society reconcile may be unattainable (Adisa 2011). Hence, this incongruence in their findings necessitated the conduct of this study to ascertain residents' perspective of the major causes of farmer-pastoralist conflicts; knowing the exact causes of these prevailing conflicts will enhance more understanding on farmer-pastoralist conflicts which will aid in managing future farmer-pastoralist conflicts. The study will be helpful to all stakeholders in agricultural and rural development as it will bring out clearly the major causes and consequences of these conflicts. Hence, stakeholders involved in resolving conflicts will be able to proffer strategies to mitigate them permanently. The specific objectives of the study were to:

i. describe the socioeconomic characteristics of the respondents.
ii. assess the level of involvement of the respondents in the farmer-pastoralist conflicts.
iii. ascertain the causes of farmer-pastoralist conflicts.
iv. ascertain the level of effectiveness of various methods used in resolving farmer-pastoralist conflicts and;
v. investigate the perceived consequences of farmer-pastoralist conflicts.

Hypotheses of the study; there is no significant relationship between the socioeconomic characteristics of the respondents and the perceived consequences of farmer-pastoralist conflicts in the study area.

METHODOLOGY

The study was carried out in Enugu State. Enugu State is one of the states in South-eastern Nigeria. Its capital is Enugu. The state shares borders with Abia and Imo States to the South, Ebonyi State to the East, Benue State to the Northeast, Kogi State to the Northwest and Anambra State to the West. Enugu State has 17 Local Government Areas (LGAs) and had a total population of 3,267,837 people at the census held in 2006 (estimated at over 3.8 million in 2012), with total area of 7,161 km^2 and population density of 460/km^2. The population of this study comprised of all farmers operating in areas that have experienced farmer-pastoralist conflict at one time or the other in Enugu State. Multi-stage sampling procedure was used to select respondents for the study area. The first stage involved the purposive selection of three Local Government Areas (LGAs) on the basis of areas that recently experienced farmer-pastoralist conflicts. The LGAs selected were; Uzo-Uwani, Nkanu West and Enugu East. The second stage involved the purposive selection of two farming communities from each of the selected LGAs to get a total of six farming communities which are; Ekwulu-nimbo and Ukpabi from Uzo-uwani LGA, Attakwu and Amodu from Nkanu west LGA, Ibagwa Nike and Umuchigbo from Enugu East LGA. Twenty arable crop farmers were purposively selected on the basis of those affected by the conflict in the selected farming communities, thus giving a total of 120 respondents interviewed for this study. Data were collected from primary sources through a structured questionnaire, focused group discussion (FGD) and in-depth interview (IDI).

Respondents were asked to indicate their level of involvement in the farmer-pastoralist conflicts from a list of activities provided on a 3-point rating scale scored as regularly =2, occasionally =1 and never = 0. Items with scores from mean and above were regarded as areas where respondents were actively involved in conflicts while those with scores below mean were areas they were not actively involved. Perceived causes of farmer-pastoralist conflicts were measured by asking respondents to indicate the frequency of occurrence of each of the causes of conflict on a three point rating scale using scores of 0 = not at all, 1= occasionally, 2 = always. The grand mean was calculated and used as a benchmark to categorise the causes as severe or not severe. Respondents were also asked to indicate the level of effectiveness of the various methods used in

resolving conflicts on a three point rating scale scored as large extent = 2, lesser extent = 1, not at all = 0. The grand mean was calculated and used to categorise the methods as effective and not effective. Consequences of conflicts were measured using a three point rating scale scored as not at all = 0, to a lesser extent = 1, to large extent = 2. The grand mean was calculated and used to categorise the consequences as severe or not severe. Data were analyzed using descriptive statistics while the hypothesis was tested using Chi-square and PPMC.

RESULTS AND DISCUSSION

Personal characteristics

Table 1 shows that more (44.2%) of the respondents were between 41 and 50 years with an average age of 46 years. This implies that the farmers are still in their productive and active years and may respond violently to conflict behaviour of pastoralists each time they encounter each other in a conflict situation. Majority (86.7%) of the respondents were male while 13.3% were female. This finding agrees with the study of Oladele (2011) that males are dominating agricultural sector as compared to female. Also, majority (79.2%) of the farmers were married, 29.2% had no formal education while 70.8% had formal education and could be described as literate. The average household size was 7 persons; a relatively large family size which may be as a result of the need for more hands to work on the farm. Also, majority (83.3%) of the respondents were Christians while the remaining 16.7% were traditional worshippers. A greater proportion (74.2%) of farmers had less than 5 hectares of farm land with a mean farm size of 4 hectares. This implies that a greater proportion of the respondents were small scale farmers. This finding is in congruent with the findings of Oladele (2011) who reported that small scale farmers in Nigeria owned 1 – 5 hectares of farm land. The average annual income of the respondents was approximately ₦376,000. This implies that majority of the farmers may not be financially capable to expand their enterprise through procurement of improved seed varieties and other innovative agro-technology that could have help them address rural poverty and ensure food security for the people.

Table 1: Personal characteristics of the respondents (n = 120)

Variables	Frequency	Percentage	Mean
Age (Years)			
≤30	6	5.0	46
31 – 40	26	21.7	
41–50	53	44.2	
51–60	25	20.8	
61–70	9	7.5	
>70	1	0.8	
Sex			
Male	104	86.7	
Female	16	13.3	
Marital Status			
Single	15	12.5	
Married	95	79.2	
Divorced	1	0.8	
Widowed	9	7.5	
Educational level attained			
No formal education	35	29.2	
Primary education attempted	27	22.5	
Primary education completed	19	15.8	
Secondary education attempted	18	15.0	
Secondary education completed	13	10.8	
Tertiary education	8	6.7	
Household size			
1 – 5	50	41.7	7
6 – 10	49	40.8	
> 10	21	17.5	
Farm size (in hectares)			
< 5	89	74.2	4
5 – 10	30	25.0	
.>10	1	0.8	

Variables	Frequency	Percentage	Mean
Annual income (in Naira)			
< 300,000	71	59.2	376,000
300,000 – 599, 999	22	18.3	
600,000 – 899,999	17	14.2	
900,000 – 1,199,999	7	5.8	
≥ 1,200,000	3	2.5	

Source: Field survey, 2017

Involvement of Respondents in Farmers-Pastoralists Conflicts

Table 2 shows that the respondents were actively involved in four out of the nine areas of involvement listed. Respondents were mainly involved in reporting conflict situation ($\bar{x}$=1.62), attending reconciliation meeting ($\bar{x}$=1.36) and donation of money for logistics when organising reconciliation meetings and supporting conflict victims ($\bar{x}$=1.06) while purchase of ammunition ($\bar{x}$ =0.48) and use of ammunition ($\bar{x}$ =0.58) were the areas they were least involved. It could be observed from the result that the farmers involvement were mainly in areas that can lead to reduction in conflict situations and not in the main conflict itself. This implies that the respondent involvement in the actual conflict is relatively minimal.

Table 2: Distribution of respondents according to involvement in farmer-pastoralist conflicts

Involvement of respondents	Mean	Rank
Reporting on conflict situation	1.62*	1st
Use of ammunition	0.58	8th
Attending reconciliation meeting	1.36*	2nd
Purchase of ammunition	0.48	9th
Transportation of warriors	0.74	6th
Formulation of strategies to confuse enemies,	0.95*	4th
Donation of money	1.06*	3rd
Removal of bullets from injured people	0.63	7th
Supply of food to the warriors	0.80	5th
Grand mean	**0.93**	

*Active involvement ($\bar{x}$ ≥0.93)
Source: Field survey 2017

Perceived Causes of Conflict between Farmers and Pastoralists

Result in Table 3 shows that the respondents considered 9 out the 19 possible causes of conflict as major causes of conflict between famers and pastoralists. The main causes of conflicts identified were; destruction of crops by cattle ($\bar{x}$=1.97), competition for land and water ($\bar{x}$=1.88) and sexual harassment of women ($\bar{x}$=1.88), while stealing of cattle by farmers/family members ($\bar{x}$=0.13) and low awareness of stock routes by farmers ($\bar{x}$=0.22) were identified as the least causes of conflict. The perception of respondents that destruction of crops by cattle is the most severe cause of conflict between farmers and pastoralists is not surprising. This is because crop products are the main source of income for farmers and any attempt to tamper with their crop yield will be promptly resisted. This finding is in agreement with the findings of Olaleye *et. al* (2010) who opined that crop damage and competition for land and water were the predominant factors causing farmer-herder conflict. Also, Olabode and Ajibade (2010) stated that frequent causes of Fulani/farmers' conflict were the destruction of crops by cattle in the study area.

In one of the FGD sessions among farmers in Ekwulu – Nimbo, participants pointed out that;

"…the pastoralists carry their animals into our farms and destroy our crops and when we complain they attack us and overpower us. This has made our people not to make use of very fertile land far from home that our fore-fathers handed over to us and currently we only make use of the farmland around our houses which are not as fertile as the former farm land…"

In another FGD session among farmers in Attakwu, participants revealed as follows;

"*…These pastoralists carry their animals to our streams and make the streams unhealthy for drinking and unfit for domestic use, they also allow their animals to eat up our vegetables grown close to those streams and because they are heavily armed than us on several occasions that we confronted them, we just have to stop accessing those streams they have hijacked from us…*"

IDI session with the leader of the neighbourhood at Attakwu revealed thus;

"…*Our* women *and daughters have been raped on several occasions* on *their way to farms and even streams and sometimes killed having been raped, we are not happy about that…*"

These concerns raised are capable of constantly causing conflicts; but if they are properly addressed, conflict between farmers and pastoralist will be drastically reduced.

Table 3: Perceived causes of conflict between farmers and pastoralists

Perceived causes of conflicts	Mean	Rank
Destruction of crops by cattle	1.97*	1st
Indiscriminate bush burning by pastoralists	1.86*	4th
Low awareness of stock routes by pastoralists	0.23	17th
Low awareness of stock routes by farmers	0.22	18th
Ethnic rivalry	1.00	11th
Stealing of crops by pastoralists	1.16	10th
Stealing of cattle by farmers/family members	0.13	19th
Sexual harassment of women	1.88*	2nd
Contamination of streams by cattle	1.78*	5th
Over grazing of fallow land	1.64*	6th
Harassments of pastoralists by the youths	0.77	15th
Competition for land and water	1.88*	2nd
Deliberate hostility by both parties	0.53	16th
Low level of compliance to stock routes	1.00	11th
Depleting soil fertility	0.93	13th
Indiscriminate defecation of cattle on the roads	1.34*	9th
Disregards for traditional authority	1.64*	6th
Blockage of major roads	1.49*	8th
Poisoning of farm	0.83	14th
Grand mean	**1.17**	

*Major cause of conflict ($\bar{x} \geq 1.17$)
Source: Field survey, 2018

Methods used in resolving farmer – pastoralist conflicts

Table 4 shows that 5 out of the 11 listed methods were identified as effective methods for conflict resolution. The respondents considered dialogue between parties involved ($\bar{x}$=1.83), praying for peace to reign ($\bar{x}$=1.73) and seeking the intervention of the traditional leaders in fostering peace between the parties involved ($\bar{x}$=1.18) as the methods mainly used in resolving conflict. The least used methods were; payment of compensation to victims ($\bar{x}$=0.09) and establishment of grazing routes ($\bar{x}$=0.09). Although, dialogue between parties, praying for peace and seeking the intervention of the traditional leaders among others have been frequently used in resolving conflict in the study area, the parties have not experienced harmonious co-existence. As a result, sustainable development in agriculture and improvement in the normal livelihood activities of the residents have been jeopardized. In one of the FGD sessions among farmers in Ekwulu – Nimbo, participants revealed as follows;

"…*we have adopted several conflict resolution methods but all amount to futility. How do you explain a situation when after dialogue between both parties, intervention by our traditional leaders and even local government chairman, the pastoralists will continue to destroy our crops, hijack our streams and even claim lives of our people and if they are challenged they will attack us? Currently, we live in fear and our mind is not at rest at all…*"

Table 4: Methods used in resolving farmers – pastoralists conflicts

Methods of Conflict Resolutions	Mean	Rank
Dialogue between parties involved	1.83*	1st
Payment of compensation to victims	0.09	10th
Intervention by traditional leaders	1.18*	3rd
Establishment of grazing routes	0.09	10th
Sought court verdicts	0.78*	5th
Educating farmers and pastoralist by person or bodies responsible for conflict resolution	0.38	6th
Intervention by NGOs	0.28	8th
Local community crop farmers/pastoralists intervention	0.30	7th

Methods of Conflict Resolutions	Mean	Rank
Intervention by law enforcement agents	0.91*	4th
Prayed for peace	1.73*	2nd
Punishment of offender	0.13	9th
Grand mean	**0.7**	

*Frequently used methods ($\bar{x} \geq 0.7$)
Source: Field survey, 2017

Perceived consequences of farmer-pastoralist conflicts

The mean distribution of the consequences of farmer-pastoralist conflicts by the respondents as shown in Table 5 indicates that the main consequences of farmer-pastoralist conflict as perceived by the residents were; displacement of farmers ($\bar{x}$=1.95), reduction in output/yield ($\bar{x}$=1.94), reduced access to land ($\bar{x}$=1.93), loss of lives ($\bar{x}$=1.92) and scarcity of food items ($\bar{x}$=1.86). As a result of these consequences, some farmers in the affected communities have abandoned the cultivation of some crops and farm land to avert conflicts with herdsmen. In a similar vein, agricultural labour which is usually supplied by the rural youths has been seriously affected as most of the youths migrate to more peaceful locations and thereby creating labour scarcity in the conflict prone zones. During a session of FGD among farmers in Ekwulu-nimbo, participants reported as follows;

> *"... We are afraid of going far from our surroundings to carry out our farming activities for fear of attacks by the pastoralists. They sometime rob us of our belongings and at the same time rape our wives and daughters..."*

Table 5: Perceived consequences of farmer-pastoralist conflicts

Perceived causes of conflicts	Mean	Rank
Destruction of crops by cattle	1.97*	1st
Indiscriminate bush burning by pastoralists	1.86*	4th
Low awareness of stock routes by pastoralists	0.23	17th
Low awareness of stock routes by farmers	0.22	18th
Ethnic rivalry	1.00	11th
Stealing of crops by pastoralists	1.16	10th
Stealing of cattle by farmers/family members	0.13	19th
Sexual harassment of women	1.88*	2nd
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Harassments of pastoralists by the youths	0.77	15th
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Deliberate hostility by both parties	0.53	16th
Low level of compliance to stock routes	1.00	11th
Depleting soil fertility	0.93	13th
Indiscriminate defecation of cattle on the roads	1.34*	9th
Disregards for traditional authority	1.64*	6th
Blockage of major roads	1.49*	8th
Poisoning of farm	0.83	14th
Grand mean	**1.17**	

*major consequences ($\bar{x} \geq 1.52$)
Source: Field survey, 2017

Relationship between the socioeconomic characteristics of the respondents and the perceived consequences of farmer-pastoralist conflicts

Result in Table 6 shows that there is no significant relationship between the socioeconomic characteristics of respondents and the consequences of farmer-pastoralist conflicts in the study area. This implies that the socioeconomic characteristics of the farmers had no influence on the perceived consequences of farmer-pastoralist conflicts in the study area.

Table 6: Relationship between the socioeconomic characteristics of the respondents and the perceived consequences of farmer-pastoralists' conflicts in the study area

Variable	χ^2	df	r-value	P-value	Decision
Sex	18.147	15		0.255	Not Significant
Religion	9.172	15		0.868	Not Significant
Marital status	37.629	45		0.774	Not Significant
Age			-0.710	0.443	Not significant
Level of education			0.005	0.563	Not significant
Household size			0.000	0.997	Not significant
Farm size			0.015	0.869	Not significant
Annual income			0.054	0.557	Not significant

CONCLUSIONS AND RECOMMENDATION

Based on the findings of the study, it could be affirmed that farmer-pastoralist conflicts in Enugu state weakened the agricultural production capabilities of farmers due to farmers' displacement resulting in continual insecurities in terms of food, lives and properties.

Therefore, the following recommendations were made:

1. The farmers should be educated by extension agents and other professionals on conflict management strategies, the implications of embarking on conflicts on their livelihood activities/general wellbeing and better approaches of addressing conflict situations when they arise.
2. The offenders should be seriously punished by the state government to serve as a caution to others that may have tendency of promoting conflicts or indulging in conflicts themselves.
3. The state government being the owner of the land should demarcate grazing reserves for pastoralists along their grazing tracks in each state of the federation to avoid destruction of crops by cattle.
4. Victims of farmer-pastoralist conflicts who lost their crops, family members and properties should be adequately compensated by the government. This will help to eliminate already existing anger among the people that experienced losses during the conflicts thereby reducing the rate of reprisal attacks.

REFERENCES

Adelakun, O. E., Adurogbangba, B. and Akinbile, L. A. (2015). Socioeconomic effects of farmer-pastoralists conflict on agricultural Extension service delivery in Oyo state, Nigeria. *Journal of Agricultural Extension* 19(2): 1-12.

Adisa, R. S. (2011). Patterns of Conflict and Socio-psychological Coping Strategies among Natural Resource User-groups in Tourism Communities of the Nigerian Savannah. *The Journal of Tourism and Peace Research,* 1 (3): 1-15.

Ajuwon, S. S. (2004) Case Study: Conflict in Fadama Communities. In Managing Conflict in Community Development. Session 5, Community Driven Development.

Blench R. M. (2003). The transformation of conflict between pastoralists and cultivators in Nigeria. Paper in press for a special issue of the *Journal Africa.ed.M.Montz*. Retrieved From http://www.rogerblench.infor/Developmen t/Nigeria Livestock survey.pdf on March 23, 2016.

Fasona, M. J. and Omojola, A. S. (2005). Climate change, human security and communal clashes in Nigeria. Paper presented at the international workshop on human security and climate change. Holmen Fjord Hotel Oslo, 21-23 October, 2005

Ingawa, S. A., Ega, L. A. and Erhabor, P. O. (1999). Framer-Pastoralists conflicts in core states of Nigeria Fadama Project, FACU Abuja. Retrieved 20th September 2016 from www. mediate.com/proactive.

Nyong, A. and Fiki, C. (2005). Drought-related conflicts, management and resolution in the West African Sahel. Proceedings of the International Workshop on Human Security and Climate Change, June 21-23, 2005, Oslo, Asker, pp: 5-16.

Odinkalu, C. A. and Turkur, M. B. (2016). The urgent need to address farmer pastoralists conflicts in Nigeria. Retrieved on 23rd March 2017 from https://opinion.premiumtimesng.com/2016 /04/27/172508/

Ofuoku, A. U. and Isife, B. I. (2009). Causes, effects and resolution of Farmers-Nomadic cattle herders conflict in Delta state Nigeria. *International journal of sociology and Anthropology* I (2):47-54.

Olabode, A. D. and Ajibade, L. T. (2010). Environment induced conflict and sustainable development: A case of Fulani-farmers' conflict in Oke-Ero L.G.A. Kwara State Nigeria. J. Sustain. Dev. Afr. 12:259-262.

Oladele, O. I. (2011). Contributions of indigenous vegetables and fruits to poverty alleviation in Oyo State, Nigeria. *J Hum Ecol,* 34(1): 1-6

Olaleye, R. S., Odutola, J. O., Ojo, M. A., Umar, I.S. and Ndanitsa, M. A. (2010). Perceived effectiveness of conflict resolution methods for improved Farmer-Pastoralist relationship in Chikun Local Government Area of Kaduna State, Nigeria. *The Nigerian Journal of Rural Extension and Development,* 3:54-58

UTILISATION OF HIV/AIDS INFORMATION AMONG PEOPLE LIVING WITH HIV/AIDS IN RURAL COMMUNITIES OF OYO STATE

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ABSTRACT
HIV/AIDS information is an indispensable factor in enhancing the well-being of People Living with HIV and AIDS (PLWHAs) and remains a major challenge in rural areas. Therefore, utilisation of HIV/AIDS information among PLWHAs in rural communities of Oyo State was investigated in this study. Multi-stage sampling procedure was adopted to sample 183 PLWHAs. Data were collected on respondents' personal characteristics, source of information, utilisation of HIV/AIDS information and constraints faced in utilising HIV/AIDS information. Data were analysed using descriptive (frequency counts, percentages, mean and standard deviation) and inferential statistics (Chi square and PPMC) at p = 0.05. Mean age of the respondents was 39±11 years, most of the respondents (73.8%) were female, married (62.3%), Muslims (53.6%) and 32.8% had tertiary education. Respondents' main sources of information were health workers (84.2%) and radio (69.4%). Respondents' level of utilisation of HIV and AIDS was low for 63.4%. Fear of ART side effect (0.519), difficulty in understanding the language of the source (0514) and depression (0.508) were the major constraints respondents faced in utilising HIV/AIDS information. Respondents' age (r =0.196) and constraints faced were positively correlated with their utilisation of HIV/AIDS information. There was also significant relationship between respondents' marital status (χ^2=11.049), occupation (χ^2=24.791) and HIV/AIDS information utilisation. State and local action committee on AIDS as well as NGOs should sustain various campaigns currently on-going to address the importance of utilisation of HIV/AIDS information.
Keywords: HIV/AIDS, Information needs, Information utilisation, Rural community

INTRODUCTION

Acquired Immune Deficiency Syndrome (AIDS) is an acute life threatening condition which is caused by Human Immunodeficiency Virus (HIV). HIV is a public health challenge that has defied global efforts at producing a cure. The HIV epidemic varies widely by region in Nigeria. The Antenatal Clinic (2010) survey reported a national HIV prevalence of 4.1% and the states' prevalence ranged from 1% in Kebbi State to 12.7% in Benue State. According to National AIDS and Reproduction Health Survey (NARHS) (2013) Rivers state had the highest HIV prevalence rate of 15.2%, with Ekiti state being the least with 0.2% while Oyo and Ondo states had 5.6% and 4.3% respectively. HIV/ AIDS is a problem of critical importance for social, economic, political and agricultural development of any nation.

Peterson and Obileye (2002) opine that information is vital to People Living with HIV/AIDS (PLWHA) for the relief of physical pain and mental anguish. The need therefore becomes quite pressing for intense campaigns to be mounted to enlighten the masses on HIV/AIDS information availability and how to access them. These campaigns would not just be limited to the health sector but to the rural communities. Rural communities typically have smaller population and an agricultural setting in which most of the farms are small holdings. Agriculture provides a livelihood for most of the three quarters of the world's poor that live in rural areas, particularly in Asia and Africa (Ravallion, Chen and Sangrala, 2007). The overall result of the impact of HIV/AIDS is a decline in agricultural production and off-farm sources of livelihood.

HIV/AIDS information is an indispensable factor in enhancing the well-being of People Living with HIV/AIDS and it remains a major challenge among the PLWHA in rural areas. Non-utilisation of HIV/AIDS information could affect their health and limit their participation in agricultural activities. Past studies have focused on access to and utilisation of HIV/AIDS information among general population of PLWHAs but rarely focused on the rural population of PLHWAs. Therefore, utilisation of HIV/AIDS information among PLWHA in rural communities of Oyo state was investigated in this study. Specifically, the study addressed some research questions by considering the following objectives:

i. Identify the personal characteristics of the PLWHA in the study area.
ii. Access the sources of HIV information available to PLWHA in the study area.
iii. Determine utilisation level of HIV/AIDS information by PLWHA in the study area.
iv. Identify the constraints faced by PLWHA in using HIV/AIDS information in the study area.

METHODOLOGY

The study was conducted in Oyo state, Nigeria. The state is located in the Southwest geographical zone of Nigeria. The state is made up of 33 local government areas. It lies between latitude 7^0 N, 19^0 N of the equator and between 2.5^0 E and 5^0 E of

prime meridian. Oyo state is divided into 3 senatorial districts namely Oyo North, Oyo Central and Oyo South with 13, 11 and 9 LGAs, respectively. The population of the study was People Living with HIV and AIDS that registered with the support groups in the Local Government Areas of Oyo state.

A multi-stage sampling procedure was adopted to sample the respondents for this study. The first stage was purposive selection of two rural local government areas per senatorial district based on presence of registered PLWHA support groups. This gave selection of Iseyin and Saki-West from Oyo North, Ona-ara and Oluyole from Oyo Central and Ibarapa Central and Ibarapa East from Oyo South. In the second stage, all registered support groups were purposively selected; 2 from Ona-Ara, 3 from Saki-west and 1 each from Iseyin, Oluyole, Ibarapa Central and Ibarapa East, resulting in 9 support groups. Lists of registered members in each of the support groups were obtained and 50% of members were systematically selected resulting in a sample size of 183 PLWHA which was used as respondents for this study. Data were analyzed using descriptive statistics such as frequency counts and percentages while inferential statistics (Chi-square and Pearson Product Moment Correlation -PPMC)were used to analyse study hypotheses.

RESULTS AND DISCUSSION

Respondents' socioeconomic characteristics

Information in Table 1 shows that 35.0% of the respondents were in the age range of30-39 with mean age of 38.6±11.2years. This indicates that most of the respondents are adults in their active and reproductive ages. These are productive ages of any population when they should have relevant, timely and accurate information for healthy living, conception and delivery, nutrition, social support as well as information which would guide their attitude and activities in HIV/AIDS issues. This finding supports the view of Gallangher (2000) who reported that the HIV infection rate is highest in age bracket between 19 and 35 years. Table 1further shows that most (73.8%) of the respondents were female. This implies that they are more exposed to high risk sexual behaviour as a result of several factors, including cultural practices such as polygamy, traditional bias, early marriage, and lack of power of young married women to insist on the use of condom during sex (Population Council, 2007). This result is also in consonance with Udoh, Mantell, Sandfort and Eighmy (2009) who opine that female engages in sex work which is viewed as one of the potential pathways to HIV/AIDS transmission.

Table 1 shows that 42.1% of the respondents were Christians, while 53.6 % were Muslims. This is due to the fact that these are the two religions with most adherents in Nigeria (Yekinni and Ajayi, 2011). Olubamide and Umoh (2011) indicate the vital role religious institutions play in the overall health care delivery system in the community. Their recommendations have serious implications for HIV/AIDS control. Religion is known to have influence on the thinking of most individuals. This could influence the belief of respondents on HIV/AIDS, hence utilisation of the HIV information might be influenced by their religion.

Table 1 reveals that most of the respondents (62.3%) were married, while 15.3%, 12.0% and 10.4% were single, divorced and widowed, respectively. This indicates that HIV/AIDS disease cuts across all marital status groups as earlier affirmed by Peterson and Obileye (2002). The findings also have implications for ease of spread of STDs. It can perhaps be said that the marital status of the respondents is a major contributing factor to their status as more than one third of the population are not in any marital union. Table 1 further shows that respondents had 6.84 (approximately 7) years as the mean years of formal education which implies that they were fairly educated in the study area. The educational status of the respondents in this study might also influence their utilisation of HIV/AIDS information.

Result further shows that most prominent occupation involved in by the respondents were trading (30.1%), while 20.7% were involved in farming. The finding on farming is expected because most inhabitants of typical rural areas where this study was conducted depend on agricultural activities (Ghanem, 2015).

Table 1: **Selected socioeconomic characteristics of respondents (n = 183)**

Variables	Frequency	Percentage	Mean	S.D.
Age				
<27	25	13.7		
28 – 39	75	41.0	38.58	11.23
40 – 50	47	25.7		
>50	38	17.7		
Sex				
Male	48	26.2		
Female	135	73.8		

Variables	Frequency	Percentage	Mean	S.D.
Religion				
Christianity	77	42.1		
Islam	98	53.6		
Traditional	8	4.4		
Marital status				
Single	28	15.3		
Married	114	62.3		
Divorced	22	12.0		
Widowed	19	10.4		
Years of formal education				
No formal education	56	30.6		
1 to 6 years	55	30.1	6.84	5.74
7 to 12 years	12	6.6		
>12 years	60	32.8		
Main occupation				
Civil Service	22	12.0		
Hair dressing	19	10.4		
Tailoring	19	10.4		
Electrical works	8	4.4		
Trading	55	30.1		
Farming	38	20.7		
Others	22	12.0		

Source: Field survey, 2016

Sources of HIV/AIDS information

Result in Table 2 reveals sources from which respondents obtain HIV/AIDS information. Information sources for PLWHA were categorised into three namely; media based, outreach based and institutional based information sources. From institutional based information sources, health worker appeared to be the most common source of information as 84.2% percent of the respondents claimed to obtain information from them, while the least patronized source was educational fora – workshop, seminars (17.5%).From outreach based information sources, most of the respondents got their information from outreach programmes (61.2%) while one- third got information from rural campaign and community meeting. From media based information sources, most of the respondents sourced information from radio (69.4%) This may be because this source of information does not actually require the user to meet with anyone. Surprisingly, internet which supposed to be the major information provider especially in this age of technology constituted a non-significant source (14.8%) by respondents in the study area. This could be simply because of challenge of energy failure in the country or perhaps, none availability of internet infrastructure in the study area.

Table 2: Sources of HIV/AIDS information among the respondents, n=183

Variables	Frequency	Percentage
Religious bodies: Church, Mosque	88	48.1
Health workers	154	84.2
Radio	127	69.4
Newsletter	40	21.9
Rural campaigns	65	35.5
Internet	27	14.8
Television	121	66.1
Hand bills	120	65.6
Magazine	71	38.8
Friends/Colleagues/Relatives	69	37.7
Bill boards	80	43.7
Community meeting	65	35.5
Outreach programme	112	61.2
School	39	21.3
Educational fora: (Workshops, Seminars, Journal)	32	17.5
Posters	122	66.7
Other infected person	109	59.6

Extension agents	84	45.9

Source: Field survey, 2016

Utilisation of HIV/AIDS information

In order of prevalence as shown on information in Table 3 the most utilised HIV and AIDS information was antiretroviral therapy (1.007), this may be so because they need treatment in order to stay healthy. This is followed by HIV and AIDS adherence counselling (0.940),this may be as a result of the fact that the PLWHA need counselling on how to have access to drugs and capital and to enable their compliance to drug therapy, then HIV testing (0.878), nutrition counselling (0.783), child care (0.595) and foreign aids and donor (0.541).

Table 3 further shows that 63.4% of the respondents had low level of utilisation, while 36.6% had high level of utilisation. This may be due to the fact that PLWHA in the rural communities of Oyo State still need to be oriented on the need to utilise information on HIV/AIDS in order to make them stay healthy, live longer and significantly reduce the risk of transmitting HIV to others. It may also be as a result of various constraints as reported in this study when trying to access or utilise information on HIV and AIDS. This is an indication that more still needs to be done to improve utilisation of HIV and AIDS information among the PLWHAs in the study area.

Table 3: Respondents level of utilisation of HIV/AIDS information (n = 183)

Extent of information utilisation	Always	Sometimes	Never	Weighted mean score	Rank
Treatment:					
Antiretroviral therapy	84.7	14.8	0.5	1.007	1st
Post exposure prophylaxis	8.7	42.1	49.2	0.325	10th
Prevention:					
HIV/AIDS adherence counselling	73.2	25.7	1.1	0.940	2nd
PMTCT	25.1	35.0	39.9	0.466	7th
HIV Testing	67.2	26.2	6.6	0.878	3rd
Nutrition:					
Nutrition counselling	45.9	51.4	2.7	0.783	4th
Social Support:					
Child Care	27.9	53.0	19.1	0.595	5th
Home based care	15.8	53.6	30.6	0.466	7th
Legal support	13.7	24.6	61.7	0.284	11th
Funding/Policies:					
Foreign aids and donors	20.8	57.4	21.9	0.541	6th
Grants and scholarship	5.5	16.4	78.1	0.150	14th
Government policies	12.0	23.0	65.0	0.257	13th
Human right and other infringements	7.7	34.4	57.9	0.272	12th
Non-governmental organisations	16.4	45.9	37.7	0.430	9th
Overall level of utilisation of information		**Percentage**			
Low (4 -13)		63.4			
High (13.5245-28)		36.6			
Total		100			

Source: Field survey, 2016

Constraints faced by PLWHA in utilising HIV/AIDS information

Results in Table 4 on constraints faced by PLWHA shows that constraints mostly encountered by the respondents were those that bothered on fear of side effect associated with ART (0.519), difficulty in understanding the language of the source of information (0.514), depression (0.508) and illiteracy (0.463). This implies that fear of ART side effect; difficulty in understanding the language of the source; depression and illiteracy constitute major constraints in accessing HIV/AIDS information. This result is in consonance with Adesoji and Olalekan (2012) who opine that illiteracy and difficulty in understanding language of sources was responsible for misconception of useful information. This agrees also with the finding of Thom (2009) that depression has potential of being a challenge to successful treatment programmes, as PLWHA often have negative thoughts because of the side effects the treatment has. According to Karishma and Rivett (2004), discrimination against PLWHA and the stress of the disease can lead to depression and loss of hope, thus encouraging negative behavioural patterns that can expose them to

secondary infections and the continued spread of the disease.

Table 4: Constraints faced by PLWHAs in utilising HIV/AIDS information (n=183)

Constraints	Not a constraint	Mild constraint	Severe constraint	Weighted mean score	Rank
Illiteracy	25.7	63.9	10.4	0.463	4th
Depression	20.8	65.6	13.7	0.508	3rd
Difficulty in understanding the language of the source	23.5	59.0	17.5	0.514	2nd
Fear of the ART side effect	25.1	54.6	20.2	0.519	1st
Cultural belief (local medication)	43.7	49.7	6.6	0.344	5th
Non-involvement of PLWHA in the provision of information	53.0	37.7	6.3	0.308	6th

Figures are percentages
Source: Field survey, 2016

Relationship and correlation analysis of PLWHA's personal characteristics and their utilisation of HIV and AIDS information

Result from the analysis shows a significant correlation between respondents' age (r =0.196) and level of utilisation of HIV information (Table 5). The finding meant the adolescent and the middle aged are likely to be more predisposed to the use of HIV information as compared to older population. Respondents' marital status (χ^2 = 11.049) and occupation (χ^2 =24.791) also had significant relationship with level of utilisation of HIV/AIDS information. On marital status, this suggests married respondents utilises information on HIV and AIDS probably because they want to stay healthy, stay married or do not want to transmit HIV to their partners or children and the single couple needs various information that differs from the kind of information needed by married couples. On the type of occupation, respondents with low income job are more likely not to utilise information because they may need money for transport cost or treatment cost. The result confirms previous finding by Sebastian et.al (2012) that health care utilisation is significantly associated with employment status.

Table 5: Relationship and correlation analysis of PLWHA's personal characteristics and utilisation of HIV/AIDS information

Variables	PPMC(r)	χ^2	df	p-value	Decision
Age	0.196**	-	-	0.008	S
Years of formal education	-0.032	-	-	0.670	NS
Sex	-	0.301	1	0.583	NS
Religion	-	0.005	2	0.997	NS
Marital status	-	11.049	3	0.011	S
Occupation	-	24.791	13	0.025	S

** Correlation is significant at the 0.01 level (2-tailed).
df – degree of freedom, S- significant, NS – Not Significant, χ^{2-} Chi- square

Correlation between constraints faced by respondents and utilisation of HIV and AIDS information

The PPMC result reveals that there was a significant correlation between respondents' constraints faced in utilising HIV/AIDS information and its utilisation (Table 6). This indicates that the constraints faced by PLWHA have influence on their level of utilisation of HIV/AIDS information. It can be inferred that constraints such as stigmatization, illiteracy, depression, poverty will hinder the PLWHA from utilising HIV/AIDS information. The more the constraints faced by respondents, the less their utilisation of HIV/AIDS information. The finding agrees with the view of Edewor (2010) who posits that inadequate fund, information materials not being explicit enough, stigmatization and discrimination as barriers to utilising HIV information.

Table 6: Correlation between constraints and utilisation of HIV/AIDS information

Variable	r-value	p-value	Decision	Remark
Constraints	0.175	0.018	S	Reject H_o

Source: Data analysis, 2016

CONCLUSION AND RECOMMENDATIONS

The study concludes that health workers, radio, posters, handbills, television outreach programme and other infected person are the most sought sources of HIV/AIDS information. Respondents' utilisation of HIV/AIDS information in the study area was low. Respondents are constrained by fear of ART side effect, difficulty in understanding the language of the source, depression, illiteracy, cultural belief and in-explicit information materials in utilising HIV and AIDS information. Age, marital status, occupation and constraints are factors that affect utilisation of HIV/AIDS information in the study area.In line with the findings of the study, it is recommended that the state and local action committee on AIDS, NGOs should sustain on-going campaigns to address the importance of utilisation of HIV/AIDS information. Explicit information should always be provided for PLWHA in relevant books, posters, handbills and other HIV and AIDS materials in local dialects for proper understanding of the message.

REFERENCES

Adesoji, A. O. and Olalekan, A. A. (2012). Analysis of HIV/AIDS in formation awareness and effectiveness among artisans in Ogbomoso, Oyo State, Nigeria.*Library philosophy and practice journal.* Retrieved from http://www.digitalcommons.unl.edu/libphiprac/696

Edewor, N. (2010). Access to Health Information by People Living with HIV/AIDS in Nigeria. *Library Philosophy and Practice.* Retrieved 12th January 2014 fromhttp://www.webpages.uidaho.edu/~mbolin/edewor.html

Gallagher, P. (2002). Poverty Causes AIDS: The Actual Message of the Durban Conference, Conscience International pp.34-37.

Ghanem, H. (2015). Agriculture and Rural Development for Inclusive Growth and Food Security in Morocco. Global Economy and Development working paper no 82. Global economy and development, Brookings, pp 28

Karishma, B. and Rivett, U. (2004). The use of a spatial information system in the management of HIV/AIDS in South Africa. Retrieved 27th February, 2014 from http://www.ij-healthgeographics.com/content/3/1/13

National Aids and Reproductive Health Survey (NARHS) (2013). National HIV/AIDS preservation plan 2014-2015, Nigeria.

Olubamide, A. J. and Umoh, J. O. (2011). An Assessment of the Relevance of Religion to Health care Delivery in Nigeria: Case of AkwaIbom state. *Journal of Sociology Soc Ante*, 2 (1):47-52

Peterson, K. and Obileye, O. (2002). Access to drugs for HIV/AIDS and related opportunities infections in Nigeria. Policy Project Nigeria: Centre for Development and Population activities (CEDPA)

Population Council (2007). The Experience of Married Adolescent Girls in Northern Nigeria. Retrieved Jan 13, 2009 from http://www.avert.org

Ravallion, M., Chen, S., Sangraula, P. (2007). New Evidence on the Urbanization of Global Poverty.*Policy Research Working Paper* No. 4199. Washington, D.C.: World Bank. http://econ.worldbank.org/docsearch Research Institute Discussion Paper 00861 Washington, D.C.: International Food Policy Research Institute.

Sebastian, K., Oliver, M., Basant, S., Daniel, H., Michal. K., Stephen F. M. and Micheal, S. (2012). Socioeconomic status and health care utilisation in rural Zimbabwe findings from project accept (HPTN 043) Journal of *Public Health in Africa*, 3 (1) pp 46-51 doi:10.4081/jphia.2012.e13

Thom, R. (2009). Mental disorders in HIV-infected individuals attending various HIV treatment sites in South Africa. 4th South African AIDS Conference, Durban, 2009.

Udoh, I. A., Mantell, J. E., Sandfort, T. and Eighmy, M. A. (2009). Potential pathways to HIV /AIDS Transmission in the Niger Delta of Nigeria: Poverty, Migration and Commercial sex. *AIDS care,* 21 (5): 567-574 doi:10.1080/09540120802301840

Yekinni, O. T. and Ajayi, O. E. (2011). Palm oil Enterprises Contribution to Household Welfare in Irewole Local Government Area of Osun state. *Nigerian Journal of Rural Sociology,* 12 (1): 27-36

DETERMINANTS OF LIVELIHOOD STATUS OF RURAL FARMING HOUSEHOLDS IN KWARA STATE, NIGERIA

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ABSTRACT
This study assessed the livelihood status of rural farming households in Kwara State, Nigeria and identified the determinants of their livelihood status. A three-stage random sampling technique was used to select 160 households with data obtained through an interview schedule. Descriptive statistics and Multiple Regression Analysis were used for data analyses. Findings revealed that rural household heads were predominantly male (85.0%), middle-aged with mean age of 51.6 years and an average of 25 years farming experience. A little below average (43.8%) had no formal education while most (60%) were full time farmers. The mean annual income and farm size were ₦725,125 and 3.3 acres respectively. The households' mean score in food availability, housing condition, water facilities, health situation, sanitation conditions, participation in social activities and freedom in cash expenditure were 1.98, 1.18, 1.89, 1.88, 1.89, 1.58 and 1.96 respectively, while livelihood mean score was 7.7. Household heads' level of education ($\beta = 0.081$, $p<0.05$), primary occupation ($\beta = 0.281$, $p<0.01$), annual total income ($\beta = 0.001$, $p<0.05$), and frequency of extension contact ($\beta = -0.088$, $p<0.01$) were the determinants of household livelihood status. The study concluded that livelihood status in the study area was poor, with housing conditions having the lowest score. Also livelihood status was significantly influenced by some socioeconomic characteristics of the households. It is recommended that developmental efforts toward improved livelihoods in the study area should place emphasis on rural housing conditions.
Keywords: Determinants, Households**,** Livelihood, Poverty

INTRODUCTION

The rural areas in Nigeria are important not only because they are the base of agricultural production activities, but also because it is home to more than 70% of the country's population (Sallawu *et al.,* 2016). The communities in the rural areas are characterised by agrarian-related sources of livelihood. Rural areas in developing countries enhance economic growth via job creation, labour supply and provision of food and raw materials to other sectors of the economy. They are also major contributors to foreign exchange. In spite of this enormous importance, agricultural-based livelihood has a higher level of poverty than other occupational groups in rural Nigeria. Oni and Yusuf (2008), affirmed that poverty incidence in Nigeria is higher among the rural-folks whose sources of livelihood are mainly agricultural income.

Livelihood according to Israr *et al.,* (2014) is the capabilities, assets, i.e. stores, resources, claims, access and activities required for a means of living. Ekong, (2003) also viewed livelihood as a term generally used to describe the quantity of goods and services that sustains an individual and his family. It is determined by the social and economic position of an individual or the family, and the position could be high or low depending on the possession or non-possession of specific livelihood indicators adjudged as important in the society (Ovwigho, 2011). These livelihood indicators include food availability, housing condition, water sources, water availability, quality of water, health status, access to health facilities and household sanitation. The availability and access of rural farming households to these livelihood resources will help in achieving agricultural and rural development agenda in Nigeria (Nwaogwugwu and Matthews-Njoku, 2017). These resources serve as inputs in any livelihood activity and include human resources, financial resources, natural resources, social resources, physical resources (DFID, 2000).

In most rural communities in Nigeria, basic infrastructure, where they exist at all, are too inadequate for any meaningful development. For instance, rural communities often depend on shallow wells with untreated water. Rural dwellers, most of whom are farmers, work on the land from sunrise to sunset only to produce food for the teaming city population. The deteriorating physical assets in the rural areas have aggravated the incidence of poverty and stamped growth in human asset as well as social assets.

The thrust of the various rural development programmes in Nigeria is to improve the living conditions in the rural areas and curb the streaming rural-urban migration (Sule *et al.,* 2013). Despite the high number of rural development policies formulated at different times by successive governments and the enormous financial and material resources deployed, little or nothing is felt at the rural level. Majority of rural farmers in Nigeria are poor with poor asset bases that cannot adequately sustain them (Akpan *et al.*, 2016).

Food security is not the only measure to improve the livelihood of the rural populace; there is the need for a sustainable livelihood which is more central and reflects the ability to take hold of other issues like health situation, water facilities, sanitations and housing which guarantee an improved life. Understanding the livelihood systems as well as the constraints associated with the different livelihoods indicators will contribute

to potent planning, monitoring and evaluation of rural developmental programmes. The assessment of rural farming households by livelihood indicators will provide useful information for donor agencies and programme planners on the specific need of rural dwellers and where to channel programmes and funds towards. Determining the livelihood status of rural farming households will also help policy makers and agricultural administrators to address issues surrounding the wide gap between rural and urban livelihood status. It is also possible that some socioeconomic characteristics of rural households influence their livelihood status, hence the study will help extension workers and socio-economist in identifying these determinants of livelihood status and thus address them accordingly. It is against this background that the study:

1. assessed rural farming households by livelihood indicators;
2. determined the livelihood status of rural farming households; and
3. identified the determinants of the livelihood status of rural farming households.

METHODOLOGY

The study was carried out in Kwara State, Nigeria. Located in the North-central geopolitical zone of Nigeria, it lies between latitudes 7°45'N and 9°30'N and longitudes 2°30'E and 6°25'E, covering a total landmass of 32,500 Km^2 with a population of about 2.5 million people (National Population Commission, 2006). It shares an international boundary with the Republic of Benin. The state is grouped by the state's Agricultural Development Project (ADP) into four zones (A, B, C, and D). The grouping was done in consonance with the agro-ecological characteristics of the various parts of the state. Agriculture is the main source of the state's economy.

All rural farming households in Kwara State made up the study population. A three-stage random sampling technique was used to select respondents for the study. The first stage was the random selection of 50% of the four ADP zones in the state. The second stage was the random selection of 30% of the six (6) blocks in Zone B and nine (9) blocks in Zone C. In the third stage, 30% of households accross the 120 cells in the selected blocks were drawn following a proportionate sampling from the rural household listing obtained from the ADP. This process produced a total sample size of 162 used for the study. However, 160 copies of the questionnaires were analysable.

The livelihood status measure model that was used to determine the livelihood status of rural farming households in this study was developed by Shehili (2012) in his study on Improving Livelihood of Rural Women through Income Generating Activities in Bangladesh. However, the model was slightly modified to fit the study area. Seven (7) livelihood indicators namely, food availability, housing condition, water facilities, health situation, sanitation, participation in social activities, and freedom in cash expenditure were considered in calculating the Livelihood Status Score.

Table 2: Household Livelihood Status Indicators Measurement

S/N	Indicators	Measurement
1	Food Availability	Done on the basis of basic food accessibility for the family in a twelve-month calendar year. Scoring was two (2) for adequate, one (1) for inadequacy of food. The sum scores of twelve months was taken as the food availability status of a household. Score varied from 12 to 24. Twelve (12) indicated the lowest and 24 indicated the highest level of household food availability.
2	Household Condition	Six characteristics of houses were considered, namely roof (iron sheet, brick, straw), walls (tiled, painted, plastered, brick), floor (tiled, rugged, carpeted, cemented), kitchen position (inside, outside), furniture (very good, good, simple, very bad), and general impression (very good, good, simple, very bad). The score of the six characteristics of the household was sum up to obtain a household condition score. The possible score varied from six (6) to 21. The lowest possible score of 6 indicated a very poor housing condition while a highest possible score of 21 indicated a very good housing condition.
3	Water Facilities	The score for water facilities was calculated by summing scores of the three sub-dimensions namely; water sources, drinking water availability and quality of drinking water. Total number of water sources was four (4), the most available source will have a score of four (4) and least available source scored one (1). Therefore, the possible score for water sources varied from one (1) to four (4). The scoring of drinking water availability for each month was two (2) for adequate and one (1) for inadequacy of

S/N	Indicators	Measurement
		drinking water. The scores of twelve months obtained from each respondent was added to obtain a drinking water availability score which varied from 12 to 24. Quality of drinking water was measured based on four (4) items and the possible score varied from one (1) to four (4). Finally, the scores of three sub-dimensions of water facilities was summed which ranged from 14 to 32. The lowest possible score of 14 indicated a poor water condition while the highest possible score of 32 indicated a very good water condition
4	Health Situation	Measured by the summation of two sub-dimensions, namely health status; and the ability to get health treatment. Health status was measured on the basis of 5 items whose score varied from one (1) to five (5). The ability for household members to get treatment from different treatment providers available in the study area was determined. Total number of health treatment providers was five. Scoring for availability of health treatment providers was two (2) for frequently, one (1) for seldom and '0' for not at all. Health treatment ability was measured by summing scores of five items and the possible score varied from 0 to10. The scores of the two sub-dimensions of health situation was summed which ranged from 1 to 15. The lowest possible score of 1 indicated a poor health situation while the highest possible score of 15 indicated a very good health situation.
5	Sanitation	Measured by the summation of two sub-dimensions, namely possession of a toilet and toilet condition. For possession of toilet, data were collected on three items rated on a scale of 2, 1, and 0 for having own toilet, using other people's toilet, and having no access to a toilet, respectively. The possible score for toilet possession varied from 0 and 2. Toilet Condition refers to the physical condition of the toilet possessed by rural farming household. Roof, walls, floor and the toilet type was considered to measure toilet condition. The scores thus obtained was added together to yield the toilet condition score. After considering the physical condition of the toilet in line with the four (4) mentioned characteristics, the range of a possible toilet condition score varied from four (4) to (9); whereby 4 indicates 'very bad' and 9 indicates a 'very good' toilet condition. After summing the score of two sub-dimensions, the sanitation score varied from four (4) to 11. The lowest possible score of 4 indicated a poor household sanitation, while the highest possible score of 11 indicated a very good household sanitation.
6	Participation in social activities	Measured by calculating a 'social participation score' based on the participation in four selected social events. Scoring of participation was two (2) for regularly, one (1) for occasionally, and '0'for no participation. The scores of four social events was then added to calculate the total score of participation in social activities. Therefore, the participation in social activities score varied from 0 to 8. The lowest possible score of 0 indicated a no household participation in social activities, while the highest possible score of 8 indicated a regular household participation in social activities.
7	Freedom in Cash Expenditure	Refers to the freedom of a household head to spend money on various aspects of his family affairs. A 4-point Likert-type scale was used to define the freedom of cash expenditure where 4, 3, 2 and 1 indicate expenditure decision dependent on 'himself', 'wife', 'together', and 'other family members', respectively. Finally, the total score was obtained by summation of score of all eight aspects. Possible score varied from eight (8) to 32. The lowest possible score of 8 indicated a 'low freedom in cash expenditure', i.e., the respondent depends highly on other family members to take decisions, while the highest possible and a score of 32 indicated a 'high freedom in cash expenditure', i.e. the respondent (household head) takes all decisions by himself.

The total obtainable household livelihood score was derived by adding total actual scores on all the household indicators.

$OHLS=I_1+I_2+I_3+I_4+I_5+I_6+I_7$ ……...(1)

Where;

OHLS= Obtainable Household Livelihood Score

I_1= Food availability

I_2= Housing condition

I_3= Water facilities

I_4= Health Situation

I_5= Sanitation

I_6= Participation in social activities

I_7= Freedom in cash expenditure

Individual household livelihood scores were computed by dividing household obtained score by the obtainable score.

IHLS=HOLS/OHLS ……..(2)

Where;

IHLS= Individual Household Livelihood Score

HOLS= Household Obtained Livelihood Score

OHLS= Obtainable Household Livelihood Score

The mean household score was generated by dividing the total individual households' score by the number of household indicators (7).

MHLS=IHLS/n ……..…….(3)

Where;

MHLS= Mean Household Livelihood Score

IHLS= Individual Household Livelihood Score

n= Number of livelihood indicators

The instrument for data collection was a structured interview schedule. Descriptive statistics involving the use of frequency counts, percentages and means were used to analyse the socioeconomic characteristics and the livelihood indicators.

The Multiple Regression analysis (Ordinary Least Square) as used by Osondu (2015) was used to identify the determinants of rural household livelihood status as follow;

$Y= \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 +…..+ \beta_6X_6 + \beta_7D_1 + \beta_8D_2 + e$ ……. (4)

Where;

β_0 = intercept, β_1- β_8 = coefficients

Y= Household Livelihood Status

X_1 = age of the household head (in years)

X_2 = household size (number of people feeding from the same pot)

X_3 = highest level of education of the household head (4= tertiary, 3= secondary, 2= primary, 1= Quranic, 0= no formal education)

X_4= farm size (in acres)

X_5= average annual income (amount in ₦)

X_6= frequency of extension contact (number of contact in the immediate past 6 months period of the study)

D_1= Sex (1= male, 0= otherwise)

D_2= primary occupation (1= farming, 0= otherwise)

e= error term.

RESULTS AND DISCUSSION

Socioeconomic characteristics

Table 3 shows that the mean age of the household head was 51.6 years. Majority (85%) of the households heads were male, and the average household size was seven members while a little above average (56.2%) had formal education. The average farm size of rural farming households was 3.3 acres. The average number of years of farming experience was 24.9years. The average annual income was ₦728,125 (₦360=$1). From this result, the typical rural family with an average household size of 7, live on about $5 per day. Majority (91.3%) of the respondents were members of social groups/associations According to Omotesho *et al*., (2016), membership of social groups enhances social capital formation.

Table 3: Distribution of household heads by their socioeconomic characteristics

Variables	Frequency	Percentages	Mean	SD
Age (in years)				
≤ 40	13	8.1		
41-50	61	38.1	**51.6**	**10.6**
51-60	40	25.0		
61 and above	46	28.8		
Sex				
Male	136	85.0		
Female	24	15.0		
Household size				
<5	29	18.1		
5-9	110	68.8	**7.0**	**3.0**
≥10	21	13.1		
Level of education				
No formal education	70	43.8		
Formal Education	90	56.2		
Primary occupation				
Farming	96	60.0		

Variables	Frequency	Percentages	Mean	SD
Otherwise	64	40.0		
Farm size (acres)				
<3	53	33.1		
≥3	107	66.9	**3.3**	**1.4**
Farming experience (years)				
5-15	19	11.9		
16-30	85	53.1	**24.9**	**10.3**
31-45	52	32.5		
46 and above	4	2.5		
Annual income (₦)				
250,000-499,999	66	41.3		
500,000-999,999	80	50.0	**728,125**	
≥100,000,000	14	8.7		
Membership of social group				
Yes	146	91.3		
No	14	8.7		
Frequency of Extension contact (past 6months)	88	55.0	**2.7**	
<3	72	45.0		
≥3				

S.D= Standard Deviation, (₦360=$1)
Source: Field Survey, 2017

Rural farming households' livelihood indicators
Food availability

As shown in Table 4, food availability was measured by accessibility to basic food throughout the whole year for the family. Food availability was observed to be higher between June to September. This pattern of food availability tallies with the rainfall pattern, showing the lower levels of food availability during the dry season.

Table 4: Distribution of households by food availability

Month	Frequency	Percentage	Rank
January	49	30.9	9th
February	35	21.9	10th
March	32	20.0	11th
April	67	41.9	8th
May	97	60.6	7th
June	116	72.5	4th
July	117	73.1	3rd
August	126	78.8	2nd
September	127	79.4	1st
October	106	66.3	6th
November	114	71.3	5th
December	106	66.3	6th

Source: Field Survey, 2017

Households' housing condition

The result in Table 5 shows that majority (94.4%) of the households had iron sheet roofs, 70.6 percent had their walls plastered while 58.8 percent had cemented floors. The location of the kitchen for most (65.6%) of the households was outside. Only 7.5 percent of the households had very good furniture, and the general impression of the households was good for more than half (51.3%) of the households.

Table 5: Distribution of households by their housing condition

House item	Characteristics	Frequency	Percent
Roof	Iron sheet	151	94.4
	Brick	9	5.6
	Straw	0	0.0
Wall	Tiled	1	0.6
	Painted	29	18.1

House item	Characteristics	Frequency	Percent
	Plastered	113	70.6
	Brick	17	10.6
Floor	Tiled	8	5.0
	Rugged	7	4.4
	Carpeted	51	31.9
	Cemented	94	58.8
Kitchen position	Inside	55	34.4
	Outside	105	65.6
Furniture	Very good	12	7.5
	Good	89	55.6
	Simple	46	28.8
	Very bad	13	8.1
General impression	Very good	6	3.8
	Good	82	51.3
	Simple	72	45.0
	Very bad	0	0.0

Source: Field Survey, 2017

Water facilities

Table 6 shows the result of the distribution of households according to water facilities. Only 21.8 percent of the households had access to good quality drinking water. The heavy reliance on rainwater (96.9%) explains the shortage of water in the dry season months.

Table 6: Distribution of households by water facilities

Water characteristics	Frequency	Percentage
Water sources*		
Pipe-borne	35	21.8
Well	111	69.4
Rain	155	96.9
River	7	4.4
Perceived Quality of drinking water		
Very good	35	21.8
Fair	83	51.9
Bad	34	21.3
Very bad	08	5.0
Water Availability*		
January	45	28.1
February	23	14.4
March	21	13.1
April	87	54.4
May	140	87.5
June	148	92.5
July	144	90.0
August	116	72.5
September	114	71.3
October	119	74.4
November	119	74.4
December	121	75.6

* Multiple Responses
Source: Field Survey, 2017

Households' health status (self-assessment) and access to health facilities

Result in Table 7 revealed that the health status (self-assessment) of majority (84.4%) of the respondents was good. Only a few (15%) had short-term illnesses. However, 36.9 percent could get treatment from patent store frequently. Likewise, 46.9%, 18.1%, 61.3% and 20% frequently got treatment from pharmacy, self-treatment, government hospitals and private hospitals respectively.

Table 7: Distribution of households according to their health status (self-assessment) and access to facilities

	Frequency	Percentage
Status		
Good	135	84.4
Disabled	1	0.6
Short-term illness	24	15.0
Long term illness	0	0.0
Weak	0	0.0
Healthcare		
Patent Medicine Store		
Frequently	59	36.9
Seldom	90	56.3
Not at all	11	6.9
Pharmacy		
Frequently	75	46.9
Seldom	40	25.0
Not at all	45	28.1
Self-treatment		
Frequently	29	18.1
Seldom	50	31.3
Not at all	81	50.6
Government hospitals		
Frequently	98	61.3
Seldom	45	28.1
Not at all	17	10.6
Private hospitals		
Frequently	32	20.0
Seldom	68	42.5
Not at all	60	37.5

Source: Field Survey, 2017

Households' sanitation condition

Table 8 present the result of the distribution of the households based on sanitation. From the result presented in Table 8, majority of the households (85.6%) own toilet with 14.4 percent relied on other households' toilet for use. With respect to toilet condition, 86.3 percent had iron sheets, 96.3 percent was plastered, 93.8% had cemented floors, and most (64.4%) of the households had water system toilet type.

Table 8: Distribution of households according to sanitation conditions

House item	Characteristics	Frequency	Percent
Toilet possession	Own toilet	137	85.6
	Others toilet	23	14.4
	No access to toilet	0	0.0
Roof	Iron sheet	138	86.3
	Brick	20	12.5
Wall	Tiled	6	3.8
	Plastered	154	96.3
Floor	Tiled	10	6.3
	Cemented	150	93.8
Toilet type	Water system	103	64.4
	Pit	57	35.6

Source: Field Survey, 2017

Households' participation in social activities

Table 9 shows the distribution of households based on their participation in social activities. Participation in social activities is defined as the degree to which household head attend different social events. Result reveals that 91.3 percent of the household heads attended family programs regularly. Similarly, majority (80.6%) of the household heads regularly attended meetings arranged by the village community. Only 29.4 percent and 27.5 percent regularly participated in voluntary work and negotiation respectively.

Table 9: Distribution of households according to their participation in social activities

Social events	Patterns of participation		
	Regular	Occasionally	Not at all
Family programme	146(91.3)	12(7.5)	2(1.3)
Voluntary help (work with people to help victims during flood, fire, tornado, etc.)	47(29.4)	74(46.3)	39(24.4)
Negotiation (mediating quarrels among neighbours, relatives)	44(27.5)	94(58.8)	22(13.8)
Attending meetings arranged by the village community	129(80.6)	27(16.9)	4(2.5)

Source: Field Survey, 2017

Households' freedom in cash expenditure

Table 10 shows the distribution of respondents based the freedom of the household head to spend money on various aspects of family affairs. Majority of the household heads, 90.6%, 90.6%, 72.5%, 66.9% and 60.6% solely took decisions on daily expenditure, loan repayment, household repair, investments on land and child education respectively. However, few, 33.8%, 35% and 30.6% took sole decisions on loan acquisition and use, health and household assets.

Table 10: Distribution of households according to their freedom in cash expenditure

Subject for expenditure	Level of decision in cash expenditure			
	Himself	Wife	Together	Family members
Daily expenditure	145(90.6)	4(2.5)	11(6.9)	0(0)
Investment on land	107(66.9)	16(10)	17(10.6)	20(12.5)
Household repair	116(72.5)	10(6.2)	26(16.3)	8(5)
Child education	97(60.6)	14(8.8)	48(30)	1(0.6)
Health	56(35)	13(8.1)	89(55.6)	2(1.3)
Household assets	49(30.6)	18(11.3)	88(55)	2(1.3)
Take loan and use	54(33.8)	16(10)	88(55)	2(1.3)
Loan repayment	145(90.6)	0(0)	12(7.5)	3(1.9)

Source: Field Survey, 2017

Household livelihood status per indicator

Table 11 shows the summary of the households' mean score on each livelihood indicator. The table reveals the deplorable state of the households' condition of living. A mean score of 1.98 in the level of food availability is suggestive of food insecurity. Water facilities and sanitation, both with mean scores of 1.89 were also poor. Worse off was the case with the housing condition of the rural households with a mean score of 1.18. This result confirms the findings of Babatunde (2013) on the state of rural living conditions in Nigeria.

Table 11: Categorisation of households based on household livelihood indicators

S/N	Indicators	Low/Poor F (%)	Average/Moderate F (%)	High/Good F (%)	Mean Score
1	Food availability	5 (3.1)	154 (96.3)	1 (0.6)	1.98
2	Housing condition	132 (82.5)	27 (16.9)	1 (0.6)	1.18
3	Water facilities	39 (24.4)	99 (61.9)	22 (13.8)	1.89
4	Health situation	35 (21.9)	109 (68.1)	16 (10.0)	1.88
5	Sanitation	26 (16.3)	126 (78.8)	8 (5.0)	1.89
6	Participation in social activities	114 (71.3)	0 (0)	46 (28.8)	1.58
7	Freedom in cash expenditures	25 (15.6)	116 (72.5)	19 (11.9)	1.96

Source: Field Survey, 2017

Results presented in Table 12 shows the household livelihood status of the respondents. The overall obtainable mean score of household livelihood status was 20.40. For the purpose of this study, a benchmark of < 10 and > 10 was introduced to categorise the household livelihood status into two. They are low household status and high livelihood status. Results show that all of the household had a low household livelihood status. The mean livelihood score was 7.7. This result is a true representation of rural households in Nigeria as reported by Obayelu and Awoyemi (2010).

Table 12: Distribution of households based on livelihood status score

Livelihood status	Frequency	Percentage	Mean
Low (≤10)	160	100	**7.7**
High (>10)	0	0	
Minimum=6.79			
Maximum=9.71			

Source: Field Survey, 2017

Result of tested hypothesis

Table 13 shows the result of regression analysis to identify the determinants of rural farming households' livelihood status. Results show that level of education (β=0.081), primary occupation (β=0.281), total annual income (β=0.212), extension contact (β=-0.088) were the determinants of rural farming households livelihood status and explained 40% of the variations in livelihood status. The level of education, primary occupation and total annual income had positive regression coefficient with household livelihood status. This implies an increase in the respondents' level of education and annual income will increase their livelihood status. Similarly, primary occupation had a positive regression coefficient, indicating that households whose heads had farming as their primary occupation had better livelihood status. The frequency of extension contact had negative regression coefficient. However, the age of the household head, sex of the household head, household and farm sizes did not influence the livelihood status of rural farming households in the study area.

Table 13: Result of Regression Analysis of determinants of household livelihood status

Socioeconomic characteristics	**Unstandardised Coefficients**		**t-value**	**Sig.**
	Beta	**Std. Error**		
Constant	**7.831**	**0.268**	**29.228**	**0.000**
Age of the household head	-0.006	0.004	-1.515	0.132
Sex of the household head	0.050	0.096	0.524	0.601
Household size	-0.004	0.013	-0.297	0.767
Level of education	0.081**	0.034	2.396	0.018
Primary occupation	0.281***	0.091	3.100	0.002
Farm size	-0.010	0.030	-0.334	0.739
Annual total income	0.212**	0.000	2.429	0.016
Extension contact	-0.088***	0.040	-3.357	0.001

R^2=0.410, ** P< 0.05 *** P< 0.01

CONCLUSION AND RECOMMENDATIONS

The study concluded that the livelihood status of rural farming households in Kwara State, Nigeria, was poor and significantly influenced by the level of education, primary occupation, total annual income, and the frequency of extension contact. It recommends that;

1. Adult literacy programmes should be promoted in remote communities as a means of improving the educational standards of the inhabitants.
2. Rural development efforts by the government, donor agencies, and non-governmental organisations should focus on the improvement of rural housing conditions as part of the efforts to enhance rural livelihood in Nigeria.
3. Rural farming families should be given agricultural entrepreneurship training to enhance their income and hence livelihood status.

REFERENCES

Akpan, S. B., Edet, J. U. and Inimfon, V. P. (2016). Sustaining Small-Scale Farming: Evidence of Poverty and income Disparity among Rural Farming Households in South-South Region of Nigeria. *Path of Science: International Electronic Scientific Journal*. 2(9): 4.9 – 4.23.

Babatunde, R. (2013). On-Farm and Off-Farm Works: Complement or Substitute? Evidence from Rural Nigeria, *Paper Presented at the 4th International Conference of the African Association of Agricultural Economists*, September 22-25, 2013, Ham Mamet, Tunisia. "Retrieved from http://ideas.repec.org/p/ags/aaae13/160437.html "

Department for International Development (DFID), (2000). Sustainable Livelihoods Guidance Sheets. London, DFID Publications

Israr, M., Khan, H., Jan, D., and Ahmad, N. (2014). Livelihood Diversification: A Strategy for

Rural Income Enhancement. *Journal of Finance and Economics* 2(5), 194-198. DOI: 10.12691/jfe-2-5-10

National Population Commission (NPC) (2006). Nigerian Census Figures for States and Federal Capital Territory.

Nwaogwugwu, O. N., and Matthews-Njoku, E. C. (2017). Livelihood Resources Available to Rural Households in Southeast Nigeria: Implication for Agricultural and Rural Development in Nigeria. *Scientia Agriculturae* 17(1), 15-21. DOI: 10.15192/PSCP.SA.2017.1.1521

Obayelu, O. A., and Awoyemi, T. T. (2010). Spatial Dimension of Poverty in Rural Nigeria. *Journal of Development and Agricultural Economics* 2(6), 231-244 DOI: 10.5897/JDAE

Omotesho, K. F., Ogunlade, I., Muhammad-Lawal, A. and Kehinde, F. B. (2016). Determinant of Level of Participation of Farmers in Group Activities in Kwara State, Nigeria. *Journal of Agricultural, Faculty of Gaziosmanpasa University (JAFAG),* 33 (3): 21-27 DOI: 10.13002/jafag 887, "Retrieved from http://ziraatdergi.gop.edu.tr/"

Oni, O. A. and Yusuf, S. A. (2008). Expected poverty profile among rural households in Nigeria. *African Journal of Economic Policy.* 15(1), 139-162.

Osondu, C. K., (2015). The market performance and determinant of net returns to artisanal fish in Ndibe beach, Afikpo North Local government, Ebonyi state. Nigeria. *Agrosearch* 15(1): 1-28.

Ovwigho, B. O. (2011). Construction of a Socioeconomic Status Scale for Heads of Rural Farm Families in the North Agricultural Zone of Delta State, Nigeria. *Journal of Human Ecology* 33(2), 113-118.

Sallawu H., Tanko L., Coker A. A. A. and Sadiq M. S., (2016). Livelihood and Income Diversification Strategies among Rural Farm Households in Niger State, Nigeria. *Asian Journal of Agricultural Extension, Economics and Sociology* 11(4), 1-11*,* DOI: 10.9734/AJAEES/2016/26010.

Shehili, S. (2012). Improving Livelihood of Rural Women through Income Generating Activities in Bangladesh. Unpublished Ph. D Thesis, Division of Agricultural Economics, Humboldt University Berlin, Germany DOI 10.18452/16588 Retrieved from http://dx.doi.org/10.18452/16588

Sule, J. G., Alinno, F. C., and Ikwegbe, D. (2013). Rural Economic Development: Policy Implementation in Nigeria. *International Journal of Academic Research in Business and Social Sciences* 3(2). ISSN: 2222-6990

DETERMINANTS OF UTILISATION OF INSECTICIDE TREATED NET AMONG RURAL HOUSEHOLDS IN OYO STATE, NIGERIA

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ABSTRACT
Insecticide Treated Net (ITN) distribution is one of the Roll-Back Malaria interventions meant to prevent mosquito bite and reduce the incidence of malaria cases particularly among children and pregnant women. Despite high ITN ownership among rural households, many are still under the burden of malaria attack. The study therefore examined the determinants of utilisation of Insecticide Treated Net among rural households in Oyo State, Nigeria. The study used four-stage sampling procedure to select 195 respondents within households with at least one Insecticides Treated Net. Parameters assessed include respondents' socioeconomic characteristics, level of knowledge on malaria and ITN, information seeking behaviour towards the use of ITN, constraints to ITN utilisation and level of utilisation of ITN. Data were analysed using descriptive and inferential statistics at $\alpha_{0.05}$. Respondents' age was 43±10 years and 80.0% were married with household size of 6.0±1.0 persons. Close to half had secondary education (44.6%), more than half (50.8%) had low ITN knowledge and majority (70.8%) exhibited unfavourable information seeking behaviour towards the use of insecticide treated net. Frequent sweating, the feeling of choking and the smell of the nets were the main constraints limiting ITN utilisation. Utilisation of ITN was low (38.5%) among rural households. Respondents' sex (χ^2=38.48), educational status (r = 0.141) and information seeking behaviour (r=0.309) were significantly related to utilisation of ITN. Also, sex (β=0.18), information seeking behaviour (β=0.228) and constraints (β=0.611) were the major predictors of ITN utilisation in the study area. The utilisation of ITN was low in the study area. Deliberate efforts by relevant stakeholders should be directed toward product design that will elicit positive information seeking behaviour and utilisation.
Keyword: Insecticide Treated Net, Rural households, Information seeking behaviour, Malaria

INTRODUCTION

There are approximately 214 million cases of malaria worldwide in 2015 and an estimated 438,000 deaths. However, roughly 90 percent of all malaria deaths occur in Africa (Malaria fact sheet, 2015). Malaria accounts for 60 percent of outpatient visit and 30 percent of hospitalization among children less than five years of age in Nigeria (FMOH, 2007). Pregnant women and young children are especially vulnerable to malaria. The disease adversely influences birth outcomes and may lead to spontaneous abortions, pre-term labour, low birth weight, and stillbirth. In the case of young children, malaria has high rate of mortality and even when not fatal, may affect nutrition and growth (MIS, 2015). Pregnant women and children are of particular interest to programmes designed for reducing the burden of malaria. Vector control is the predominant mechanism to prevent and reduce malaria transmission. In general, two forms of vector control: Insecticide Treated Nets (ITNs) and indoor residual spraying are effective in a wide range of circumstances (WHO, 2010).

Government, non-governmental organisation as well as international organisations have made several efforts to combat malaria, which has claimed more lives than HIV/AIDS. These efforts range from financial aid, to the rolling out of numerous anti-malaria campaigns, which includes the distribution of ITNs. The aim is to create awareness, sensitize people to the alarming deaths recorded from malaria and on the other hand, make ITN accessible to households, either through free distribution or through sale at affordable prices. Expectedly, with the massive distribution of ITNs in Nigeria, access has increased although the extent to which this would improve utilisation is unclear (Augustine *et al*, 2012). Of the 677 pregnant women who owned bed nets out of the 2,348 sampled, only one-quarter (25.7%) of the net owners used bed nets the night before the survey (Augustine *et al*, 2012). The 2008 Nigerian demographic and Health Survey also revealed that ITN utilisation rate is below 10% and as such, making ITN utilisation in Nigeria to remain consistently low (NHDS, 2009).

Southwestern Nigeria is the region with the highest prevalence of malaria especially among children below the age of five (Nigeria malaria fact sheet, 2016).According to the MIS (2015) survey, the Southwestern ranked lowest in the utilisation of ITNs in Nigeria despite having the highest prevalence rate. Specifically, the Southwestern comprises 22.7 % of those who slept under a mosquito net the previous night and 21.1% of those who slept under ITN the previous night.

Despite the huge amount of money invested in controlling the scourge of malaria in Nigeria, the Nigeria Institute of Medical Research (NIMR) stated that not less than 51 million Nigerians, equivalent to 30 percent of the population, tested positive to the malaria parasite in 2015 (Vanguard, 2016). It is obvious therefore; that there is a gap that in terms of how much has been spent in the acquisition of ITNs, the distribution of these ITNs to households and the utilisation of the ITNs by the household. Therefore, this study examines the

determinants of utilisation of ITN in South Western Nigeria.

The broad objective of the study was to investigate the determinants to the utilisation of ITN in Oyo state, Nigeria. The specific objectives of the study were to:

1. determine the socioeconomic characteristics of the respondents.
2. determine the respondents' level of knowledge on malaria and ITN.
3. ascertain the respondents' source of information on ITN utilisation.
4. ascertain respondents' information seeking behaviour towards the use of ITN.
5. investigate the constraints to ITN utilisation among the respondents.
6. determine the level of utilisation of ITN among the respondents.

The hypotheses of the study stated in the null form are as follows:

$H_0$1: There is no significant relationship between the respondents' socioeconomic characteristics and the utilisation of ITN.

$H_0$2: There is no significant relationship between respondents' knowledge of Malaria and the utilisation of ITN.

$H_0$3: There is no significant relationship between respondents' information seeking behaviour towards the use of ITN and ITN utilisation.

METHODOLOGY

This study was carried out in Oyo State, Nigeria. The region has the highest prevalence of malaria (MIS, 2015; Malaria fact sheet, 2015). All households that had obtained at least one insecticide treated net in rural and urban communities of Oyo state constituted the study population. The study used four-stage sampling procedure. Randomly, 10% of the Local Government Areas (LGAs) and 30% of the wards in the sampled LGAs were selected. Thereafter, random selection of four rural communities in each selected ward was conducted and systematic sampling method was used to select 195 respondents that were interviewed.

Measurement of variables was done as follows;

i. *Socioeconomic characteristics:* parameters operationalised were age, sex, religion, marital status, educational level, household size, estimated household income and number of children under the age of five, which were measured at the nominal and interval levels of measurement.

ii. *Respondents' level of knowledge on malaria*: respondents reacted to 17 knowledge items on malaria and ITN utilisation. The correct answer was scored 1, while the wrong answer was scored 0 point. The score of each respondent and the mean score of all respondents were obtained. Scores below the mean and above the mean were categorised as low level of knowledge and high level of knowledge respectively. The knowledge questions cover areas such as vectors of malaria, sanitation and hygiene, active periods of the mosquitoes, ITN and the hanging of net.

iii. *Sources of information:* respondents were asked to indicate the sources of their information on ITN utilisation for malaria prevention. A three point Likert-type scale of always = 2, occasionally = 1 and never = 0 was employed for 13 items with the highest score of 26 and a minimum score of 0. The sources of information were categorised as major source and minor source using the mean score as the benchmark. .

iv. *Constraints to the utilisation of ITN:* Respondents identified constraints to ITN utilisation from a set of constraint items. The scores obtained were used to categorise the constraints into major and minor constraints according to the distribution of scores below and above the mean.

v. *Information seeking behaviour:* This was elicited through 15 statements relating to their behaviour using most times, sometimes and never with the score 2, 1, and 0, respectively. The scores and the mean were computed to categorise them as favourable and unfavourable information seeking behaviour, according to the distribution of scores below and above the mean.

vi. *Utilisation of ITN:* Respondents were requested to answer 21 questions in order to determine their usage of ITN. Always, sometimes and never were assigned 2, 1 and 0, respectively. The score of each respondent and the mean scores were obtained. Scores below the mean and above the mean were categorised as low level of utilisation and high level of utilisation respectively.

vii. Contribution of selected independent variables to ITN utilisation: Multiple linear regression analysis was used and presented as follows:

$Y=a + \beta X_1 \ldots \beta_{10} X_{10}$ where

Y= Utilisation of ITN
X1= Age
X2= sex
X3= household size
X4= number of children under 5
X5= educational status
X6= knowledge
X7= awareness
X8= source of information
X9= information seeking behaviour
X10= constraints

RESULTS AND DISCUSSION

Socioeconomic characteristics

As presented in Table 1, the age group of the respondents with the highest proportion was 41-50 years old (34.8%) with the mean age being 42.53 years. This suggests that most of the respondents are getting old and tending towards aged work force. Ages less than 30 years (12.3%) and 31-40 years (21.7%) were sparsely distributed among the respondents. More than half (56.4%) were male, Islam practitioners (51.3%), less than half had secondary education (44.6%) and 30.8% were engaged in farming as primary occupation. The Table further reveals that majority of the respondents (80%) were married, with a mean household size of 5.71±2.09, implying fairly large family that include children under-five and pregnant women, who are the most vulnerable groups to malaria attack.

Table 1: Distribution of respondents by socioeconomic characteristics

Variable	Categories	Frequency	Percentage	Mean
Age (years)	Less than 30 years	24	12.3	42.53±9.52
	31-40 years	45	21.7	
	41-50 years	72	34.8	
	51-60 years	60	29.0	
	61-70 years	18	8.7	
Sex	Male	110	56.4	
	Female	85	43.6	
Marital status	Single	35	17.9	
	Married	156	80.0	
	Divorced	1	.5	
	Separated	3	1.5	
Household size	Less than 5	104	53.3	5.71±2.09
	6-10	89	45.6	
	11-15	1	0.5	
	16-20	1	0.5	
Number of children under 5	less than 2	186	95.4	0.83±0.99
	3-5	8	4.1	
	6 and above	1	.5	
Education	No formal education	6	3.1	1.88±0.79
	Primary education	58	29.7	
	Secondary education	87	44.6	
	Tertiary education	44	22.6	
Religion	Christianity	93	47.7	1.53±0.52
	Islam	100	51.3	
	Traditional	2	1.0	
Primary Occupation	Farming	60	30.8	3.23±2.25
	Teaching	19	9.7	
	Trading	51	26.2	
	Tailoring	12	6.2	
	Civil servant	35	17.9	
	Photography	6	3.1	
	Unemployed	12	6.2	

Source: Field survey, 2018

Knowledge of respondents towards ITN and Malaria

Regarding knowledge of malaria and ITN as shown in Table 2a, 94.9% opined that mosquito thrives and breeds in stagnant water, while 49.7% of the respondents indicated that mosquito was not the only vector of malaria. In addition, respondents exhibited uncertain knowledge on the active periods of malaria. More than half 55.9% believed mosquitoes were not active in the afternoon, 36.4% believed that mosquitoes were more active in the dry season; however, 25.1% claimed that they do not know. The result is consistent with Fuge, Ayanto, and Gurmamo (2015) that only 15.6 % of the mothers associated mosquitoes with malaria and majority of them (65.6 %) submitted that it was transmitted through poor personal hygiene. Singh, Musa, Singh and Ebere (2014) reported that knowledge of the role of mosquitoes in malaria transmission was (11.8%) and knowledge of the cause of malaria was low among the study population (9.6%). While comprehensive knowledge about malaria prevention measures was high (90%), it did not reflect in practice (16%).

Overall, as presented in Table 2b, the knowledge of ITN utilisation as a measure for malaria prevention was low (50.8%) in the study area. This could be because of weak malaria partnership forum and weak implementation of a comprehensive policy on malaria, diagnosis and treatment, as among the major constraints to the health sector and control of malaria (Muganga, 2011)

Table 2a: Distribution of respondents by knowledge of ITN utilisation for malaria prevention

Areas of knowledge	True		False		I don't know		Mean
	F	%	F	%	F	%	
Malaria is caused by mosquito bites	189	96.9	5	2.6	1	0.5	1.94
Other insects such as flies, cockroaches, spiders etc. can spread malaria	85	43.6	103	52.8	7	3.6	1.09
Mosquitoes are the only vectors (carriers) of malaria	92	47.2	97	49.7	6	3.1	0.97
Mosquitoes survive in stagnant water	185	94.9	5	2.6	5	2.6	1.92
A clean environment can reduce the risk of malaria	85	43.6	62	31.8	48	24.6	0.88
Malaria can lead to death	172	88.2	21	10.8	2	1.0	1.77
Malaria affects only children	46	23.6	146	74.9	3	1.5	1.51
A pregnant woman cannot have malaria	55	28.2	135	69.2	5	2.6	1.41
Sleeping under insecticide treated nets helps reduce the risk of having malaria	187	95.9	7	3.6	1	0.5	1.92
Using insecticide treated nets as window covering can prevent malaria	100	51.3	83	42.6	12	6.2	0.91
Symptoms of malaria includes high body temperatures, fevers and head ache	183	93.8	10	5.1	2	1.0	1.89
Stomach pain, frequent stooling, back pain and tooth ache are other symptoms of malaria	79	40.5	102	52.3	14	7.2	1.12
Mosquitoes are very active in the afternoon	73	37.4	109	55.9	13	6.7	1.18
Mosquitoes are more active in the dry season	75	38.5	71	36.4	49	25.1	0.98
We can prevent malaria by using treated nets	177	90.8	12	6.2	6	3.1	0.15
Malaria cannot be prevented by keeping our surroundings clean	37	19.0	153	78.5	5	2.6	1.59
Spraying the house with insecticide is as effective as using treated nets	158	81.0	31	15.9	6	3.1	1.65

Source: Field survey, 2018

Table 2b: Categorisation of respondents by knowledge of ITN utilisation for malaria Prevention

Knowledge	Frequency	%	Min	Max	SD	Mean score
Low (12-22.92)	99	50.8	12.00	32.00	4.16	22.92
High (22.93-32.0)	96	49.2				
Total	**195**	**100**				

Source: Field survey, 2018

Source of information on ITN utilisation for malaria prevention among respondents

Table 3 shows that the respondents' main sources of information were radio (84%), doctors (81.5%) and nearby chemist (pharmaceutical stores) (64.6%). Yahaya (1995, 2002) who reported that radio is the most potent source of information for farmers corroborates this finding. Ajayi (2003), cited in Olajide (2011) also found that radio was the most popular source of information in South-West Nigeria. The use of radio as the principal source of information could be influenced by financial considerations. Table 3 also reveals that drug vendors were important source of medical information. This is probably due to distance to the nearest health facility or pre-existing rapport with drug vendors.

Table 3: Distribution of respondents by sources of Information on ITN utilisation for malaria prevention among respondents

Source of Information	Always		Occasionally		Never		Mean	Rank
	F	%	F	%	F	%		
Libraries	36	18.5	75	38.5	84	43.1	0.75	**12**
Radio	165	84.6	26	13.3	4	2.1	1.83	**1**
Television	111	56.9	35	17.9	49	25.1	1.32	**5**
Associations/clubs/unions	66	33.8	80	41.0	49	25.1	1.09	**8**

Source of Information	Always		Occasionally		Never		Mean	Rank
	F	%	F	%	F	%		
Church/mosque	74	37.9	77	39.5	44	22.6	1.15	**6**
Friends and relatives	78	40.0	104	53.3	13	6.7	1.33	**4**
Newspapers, magazines, bulletins	67	34.4	91	46.7	37	19.0	1.15	**6**
LGA office	38	19.5	83	42.6	74	37.9	0.82	**10**
Internet/social media	68	34.9	64	32.8	63	32.3	1.03	**9**
Nearby chemist	126	64.6	61	31.3	8	4.1	1.61	**3**
Doctors	159	81.5	31	15.9	5	2.6	1.79	**2**
Chief's palace	29	14.9	93	47.7	73	37.4	0.77	**11**
Non-governmental organisations.	30	15.4	21	10.8	144	73.8	0.42	**13**

Source: Field survey, 2018

Constraints to the utilisation of ITN

Table 4 shows that increased sweating (61.5%), choking feeling (60.5%) and odour from the net (33.8%), were severe constraints to the utilisation of ITNs. This corroborates the findings of Yakob and Yan (2009)who found that 52.2 % of their study respondents indicated that the major problem with the usage of ITN was heat and the feeling of suffocation. The tiny holes on the nets coupled with architectural or ventilation issues regarding the building or neighbourhood were possibly responsible for these effects. Saareson (2012) also learnt that most respondents in their study blamed sweating and disruption of sexual activity as reason for non-use of ITN. However, 35.9% of their study respondents considered the size of the net as rather small for the whole family to sleep under.

Table 4: Constraints to the utilisation of ITN

Factors affecting the use of ITN	Severe constraint		Mild constraint		Not a constraint		Mean	Rank
	F	%	F	%	F	%		
Cost of ITN is high	45	23.1	66	33.8	84	43.1	0.80	17th
Belief in ITN as a preventive method	40	20.5	82	42.1	73	37.4	0.83	16th
Sleeping under an ITN could be choking	118	60.5	60	30.8	17	8.7	1.52	2nd
Increased distance to distribution centre	42	21.5	126	64.6	27	13.8	1.08	10th
Difficulty to access ITN	32	16.4	136	69.7	27	13.8	1.03	11th
Mosquitoes have developed resistance to ITN	49	25.1	114	58.5	32	16.4	1.09	9th
Bought ITN is better than the free ITN	29	14.9	110	56.4	56	28.7	0.86	14th
Sleeping under an ITN makes me sweat a lot.	120	61.5	65	33.3	10	5.1	1.56	1st
Not enough room or space to hang ITN	61	31.3	110	56.4	24	12.3	1.19	5th
I feel itchy when I sleep under an ITN	56	28.7	105	53.8	34	17.4	1.11	7th
Low knowledge of how to use ITN	28	14.4	124	63.6	43	22.1	0.92	13th
It is burdensome to hang ITN	35	17.9	129	66.2	31	15.9	1.02	12th
Mosquitoes still bite due to large holes of ITN	64	32.8	87	44.6	44	22.6	1.10	8th
ITN is too small for the family to sleep under	70	35.9	99	50.8	26	13.3	1.23	4th
ITN has an offensive smell	66	33.8	113	57.9	16	8.2	1.26	3rd
The use of ITN is an outdated practice	62	31.8	43	22.1	90	46.2	0.86	14th
ITNs are expensive to maintain.	17	8.7	44	22.6	134	68.7	0.40	18th
My children complain of discomfort when sleeping under ITN	69	35.4	89	45.6	37	19.0	1.16	6th

Source: Field survey, 2018

Information seeking behaviour of respondents

Respondents' information seeking behaviour in Table 5a reveals that information on the sanitation and hygiene of the environment ranked 1st, while information on malaria drugs ranked 2nd. According to the World Health Organisation (WHO, 2010), vector control is crucial to reducing the scourge of malaria. Indeed, vector control begins from sanitation of the environment to clearing of breeding grounds of mosquitoes. Thus, while environmental sanitation was the first ranked preferred information seeking behaviour, malaria drugs which is curative rather than preventive, was the second ranked preferred behaviour. This could be attributed to the number of respondents (74%) that occasionally fell sick to malaria (Table 5a). The results also revealed that 54.9% of the respondents and 49.7% preferred information on new technological discovery for combating malaria and information on the usage of nets, respectively.

Table 5b shows that respondents largely (70.8%) had unfavourable information seeking behaviour towards the use of insecticide treated nets. This might be due to the preference for other mosquito control methods or perhaps, due to widespread perception that everyone falls sick to malaria at some point.

Table 5a: Information seeking behaviour towards the use of ITN

Information needs	Always		Occasionally		Never		Mean	
	F	%	F	%	F	%		Rank
Insecticide treated nets	91	46.7	94	48.2	10	5.1	1.42	6th
Where to get ITN	86	44.1	97	49.7	12	6.2	1.38	7th
The cost of ITN	26	13.3	71	36.4	98	50.3	0.63	15th
Sanitation and hygiene of your environment	160	82.1	28	14.4	7	3.6	1.78	1st
Cheaper or better chemicals to treat nets	72	36.9	100	51.3	23	11.8	1.25	9th
Malaria drugs	156	80.0	32	16.4	7	3.6	1.76	2nd
Malaria prevention	150	76.9	42	21.5	3	1.5	1.75	3rd
How to assist any pregnant relatives prevent malaria	51	26.2	123	63.1	21	10.8	1.15	10th
How to hang ITN	45	23.1	111	56.9	39	20.0	1.03	12th
The latest technological discovery in combating malaria	107	54.9	76	39.0	12	6.2	1.49	4th
The distribution of ITN	46	23.6	128	65.6	21	10.8	1.13	11th
Information for usage of ITN	97	49.7	88	45.1	10	5.1	1.45	5th
Mend damaged ITN	43	22.1	73	37.4	79	40.5	0.82	13th
Preference of ITN to other malaria preventive measure	100	51.3	64	32.8	31	15.9	1.35	8th
Side effect of ITN usage.	58	29.7	35	17.9	102	52.3	0.77	14th

Source: Field survey, 2018

Table 5b: Categorisation of the Information seeking behaviour towards the use of ITN

Level of awareness	Frequency	%	Min	Max	SD	Mean score
Unfavourable (8-19.17)	138	70.8	8.00	30.00	4.03	19.17
Favourable (19.18-30.00)	57	29.2				
Total	195	100				

Source: Field survey, 2018

Utilisation of ITN

Table 6a reveals that substantive number (62.1%) of children and pregnant wife or relative (67.2%) slept under ITN. Curiously, a staggering 74.4% of the respondents occasionally fell sick of malaria. Although mosquitoes are more active at late evenings or nights, mosquito bites might occur during the day or early evenings, thereby exposing the respondents to malaria. The Table further revealed that about 60% of respondents combined the use of ITN with other mosquito control methods such as the use of residual chemical spray, mosquito repellent creams and traditional plants with scent that repel mosquitoes. Similarly, low mosquito activity and high night time temperatures among others, tended to reduce ITN use.

The general low or inconsistent use (38.5%) of ITN among respondents, evident from Table 6b, perhaps explain the high number of respondents that occasionally fell sick of malaria. This low usage agrees with the result of Komomo, Egena, and Irene (2016) who found that utilisation of ITNs among their study respondents was 40.68% which is also lower than the 60% benchmark recommended by the Roll Back Malaria Programme. Other possible reasons for high malaria prevalence included poor environmental sanitation and exposure to mosquito bites during evening sit-outs with family, relations and friends prior to going to bed. Indeed, those averse to ITNs may use other mosquito control methods. Olasehinde, Ojurongbe, Akinjogunla, Egwari, and Adeyeba (2015) reported that insecticides (24.0%), mosquito repellent cream (2.7%), and window/door nets (42.3%) were other mosquito control methods employed by their study respondents.

Table 6a: Distribution of respondents by the utilisation of ITN

Utilisation of ITN	Always		Rarely		Never		Mean
	F	%	F	%	F	%	
I enjoy sleeping under an ITN every day	69	35.4	117	60.0	9	4.6	1.31
My children sleep under an ITN everyday	121	62.1	65	33.3	9	4.6	1.57
I ensure that my pregnant women or relation sleep under an ITN	131	67.2	57	29.2	7	3.6	1.64

Utilisation of ITN	Always		Rarely		Never		Mean
	F	%	F	%	F	%	
Newborn children and children under 5 years of age, sleep under an ITN every day.	127	65.1	61	31.3	7	3.6	1.62
I hang my ITN every day	40	20.5	123	63.1	32	16.4	1.04
I wash my nets when I feel it is dirty	31	15.9	148	75.9	16	8.2	1.08
How many times do you remove the nets from the hanger?	95	48.7	71	36.4	29	14.9	1.34
I check my ITN regularly for tear	100	51.3	85	43.6	10	5.1	1.46
I mend my net as soon as I see a tear or big opening	36	18.5	107	54.9	52	26.7	0.92
How often do you sleep outside the net?	46	23.6	101	51.8	48	24.6	0.99
My net usually falls from the hanger when I sleep.	22	11.3	130	66.7	43	22.1	0.89
ITN has reduced my falling sick of malaria	38	19.5	145	74.4	12	6.2	1.13
I regularly replace my ITN	34	17.4	117	60.0	44	22.6	0.95
I prefer to sleep under ITN than use other mosquito control methods.	31	15.9	156	80.0	8	4.1	1.12
I ensure that my net is in my bag whenever I am to travel	35	17.9	151	77.4	9	4.6	1.13
I try to fold and secure my net after use	93	47.7	90	46.2	12	6.2	1.42
How often does your net tear?	38	19.5	85	43.6	72	36.9	0.83
I consult a health worker or doctor whenever I need help with my net.	90	46.2	91	46.7	14	7.2	1.39
ITN should be distributed by government during periods when mosquitoes are more abundant	135	69.2	51	26.2	9	4.6	1.65
How often do your children fall ill of malaria despite sleeping under ITN	38	19.5	129	66.2	28	14.4	1.05
I combine the use of ITN and other mosquito control methods	117	60.0	58	29.7	20	10.3	1.50

Source: Field survey, 2018

Table 6b: Categorisation of respondents by the utilisation of ITN

Utilisation of ITN	Frequency	Percent	Min	Max	SD	Mean score
Low (0-26.05)	120	61.5	0.00	42.00	5.15	**26.05**
High (26.06-42.0)	75	38.5				
Total	195	100				

Source: Field survey, 2018

Analysis of the relationship between age, household size, educational status, sex, knowledge and utilisation of ITN

Table 7 revealed that sex (χ^2 = 6.0818) and educational status (r=-1.41) were significantly related to utilisation of ITN, while age (r=0.105) has no significant relationship. The significant relationship of sex and education with utilisation explains why women and children constitute a high percentage of those that use treated nets owing to their susceptibility to malaria as authenticated by Mudenyo and Nobuyuki, (2010)and Fettene *et al*., (2009). Utilisation of ITN is influenced by the users' level of education as substantiated by Adebayo, Akinyemi and Cadmus (2013) who found significant relationship between educational status and use of ITN. It is suggestive therefore that ITN utilisation is achievable among households if women are sensitised and mobilised irrespective of their age difference.

Table 7 further shows no significant relationship between the level of knowledge (p=0.429) of the respondents and the use of ITN. This agrees with Ovadje (2014) who reported that the level of malaria knowledge had no significant relationship with adherence to ITN use. However, the study revealed that the main predictor of ITN use was ownership rather than knowledge (Ovadje and Nriagu, 2016).

Table 7: Analysis of the relationship between age, household size, educational status, sex, knowledge and utilisation of ITN

Variable	r-value	χ^2-value	df	p-value	CC-value
Sex	-	6.0818	1	0.014*	0.174
Age	0.105	-	-	0.144	-
Household size	0.032	-	-	0.654	-
Educational status	-141	-	-	0.050*	-
Knowledge	0.057	-	-	0.429	-

*=Significant at p≤ 0.05
Source: Field survey, 2018

Correlation analysis between information seeking behaviour of respondents and the use of ITN

Table 8 reveals that there is a significant relationship between the information seeking behaviour of respondents and the use of ITN. The desire to seek information on ITNs utilisation and disposition to use the acquired information will go a long way to attain the objective of roll back malaria campaign. This information includes manuals inserted in the ITN packet showing systematic guide for installing the hanging nets, instructions for use and directions for obtaining nets for babies etc. Scaling up awareness campaign on the benefits of ITN utilisation during antenatal could promote information seeking behaviour among malaria-infected households. Idowu, Sam-Wobo, Oluwole and Adediran (2011)confirmed a significant relationship between awareness level of respondents and ITN use in Ogun state. However, Musa, Salaudeen and Jimoh, (2009)found no significant relationship between awareness and ITN use among respondents in their study conducted in Northern Nigeria.

Table 8: Correlation analysis between information seeking behaviour of respondents and the use of ITN

Variable	N	r-value	p-value
Information seeking behaviour and Utilisation	195	0.309	0.000*

*=significant at p≤ 0.05
Source: Field survey, 2018

Contribution of selected independent variables to ITN utilisation

Table 9 reveals that sex (β=0.180), number of children under 5 years (β=0.152), knowledge (β=0.146), awareness (β= -0.172), information seeking behaviour (β=0.228), source of information (β=-0.352) and constraints (β=0.611, p=0.000) were significantly related to ITN utilisation. However, sex (β=0.18), information seeking behaviour (β=0.228) and constraints (β=0.611) were the major predictors of ITN utilisation in the study area. This is consistent with Yakob and Yan (2009) and Saareson (2012) who both opined that ITN utilisation is limited in some ways by a number of factors. Also, Mudenyo and Nobuyuki (2010) and Fettene *et al.* (2009)authenticated that the use of ITN is germane at all stages of life. Overall, the independent variables predicted 62% of the variation in the dependent variables ($R^{2=}$ 0.629, adjusted R^2=0.363).

Table 9: Contribution of selected independent variables to the utilisation of ITN

Variable	Standardized error	β-value	T	Sig-value
(Constant)	3.446		4.804	0.000
Age	0.035	-0.085	-1.331	0.185
Sex	0.682	0.180	2.751	0.007
household size	0.161	0.112	1.709	0.089
number of children under 5	0.336	0.152	2.357	0.020
educational status	0.437	-0.063	-0.948	0.344
Knowledge	0.080	0.146	2.266	0.025
Awareness	0.251	-0.172	-2.762	0.006
Source	0.094	-0.352	-4.350	0.000
Information seeking behaviour	0.097	0.228	3.002	0.003
Constraints	0.064	0.611	8.034	0.000

$R^{2=}$ 0.629, adjusted R^2=0.363
*=significant at P≤ 0.05
Source: Field survey, 2018

CONCLUSION AND RECOMMENDATIONS

The utilisation of ITN is generally low in the study area. Low utilisation was attributed to increased sweating, choking feeling and unpleasant odour produced by ITNs. Despite low ITN utilisation, respondents exhibit favourable information seeking behaviour towards the use of ITN. However, sex, information seeking behaviour and constraints were the major predictors of ITN utilisation in the study area. Manufacturers of ITN need to pay cognate attention to the shortcomings identified in subsequent models and designs. Government and non-governmental organisations should scale up information campaign on the benefits of ITN utilisation, active seasons of mosquitoes, comparative advantage of ITN over chemical sprays and mosquito repellents, methods of hanging the nets and folding them after use, etc.

REFERENCES

Adebayo, A. M., Akinyemi, O. O., and Cadmus, E.O. (2013). Ownership and utilisation of insecticide-treated mosquito nets among caregivers of under-five children and pregnant women in a rural community in Southwest Nigeria. *Journal of Preventive Medicine and Hygiene.Vol.*55 (2): 58–64

Ajayi, M. T. (2003). Analysis of mass media use for agricultural information by farmers in Egbeda Local Government Area of Oyo State, Nigeria. Journal of Extension Systems, 19(2), 45–55.

Fact Sheet: World Malaria Report (2016). http://www.who.int/malaria/media/world-malaria-report-2016/en/. Accessed 12 November 2017

Fettene, M., Balkew, M. and Gimblet, C. (2009). Utilisation, retention and bio-efficacy studies of PermaNet® in selected villages in Buie and Fentalie districts of Ethiopia.*Malaria Journal*, 8:114.

Fuge, T. G., Ayanto, S. Y. and Gurmamo, F. L. (2015). Assessment of knowledge, attitude and practice about malaria and ITNs utilisation among pregnant women in Shashogo District, Southern Ethiopia. *Malaria Journal*, 14(235):1-9

FMOH (2007).*Integrated Material, New Born and Child Health Strategy*. Abuja, Nigeria: Federal Ministry of Health.

Idowu, O. A., Sam-Wobo, S. O., Oluwole, A. S. and Adediran, A. S. (2011). Awareness, possession and use of Insecticide Treated Nets (ITNs) for prevention of malaria in children under five in Abeokuta, *Journal of Pediatrics and Child Health* 47:117-121.

Komomo, E. A., Egena, R., Irene, C., Ayorinde, A. O. and Agada, P. O. (2016). Assessment of the utilisation of Insecticide Treated Nets (ITNs) in Calabar Metropolis, Cross River State, Nigeria. Vol 26: 196-205

Ovadje, L. (2014). Adherence to the use of insecticide-treated bed nets by Nigerian children, a dissertation submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy (Environmental Health Sciences) in the University of Michigan. Pp 1-221

Ovadje, L. and Nriagu, J. (2016). Multi-dimensional knowledge of malaria among Nigerian caregivers: implications for insecticide-treated net use by children. *Malaria Journal 15*:516:1-11

Malaria fact sheet (2015). http://www.who.int/malaria/media/world-malaria-report-2015/en/. Accessed on December 20 2017

Malaria's Impact Worldwide (MIS), (2015). https:// www.cdc.gov/malaria/malaria_worldwide/ impact.html. Accessed December 13 2017.

Mudenyo, M. O. and Nobuyuki, H. (2010). Factors influencing utilisation of insecticide treated nets and prevalence of malaria among children under five years. *East African Medical Journal* Vol. 87 No. 12: 509-512.

Muganga, G. (2011) Malaria control for rural areas in Uganda: localizing the interventions. *Malaria World Journal, Vol. 2, No. 2: 1-10*

Olajide, B. R. (2011). Assessment of farmers' access to agricultural information on selected food crops in Iddo district of Oyo State, Nigeria. *Journal of Agricultural and Food Information* 12:3-4, 354-363

Olasehinde, G. I., Ojurongbe, D. O., Akinjogunla, O. J., Egwari, L. O. and Adeyeba, A. O. (2015). Prevalence of malaria and predisposing factors to antimalarial drug resistance in Southwestern Nigeria. *Research Journal of Parasitology Vol. 10 (3): 92-101*.

Musa, O. I., Salaudeen, G. A. and Jimoh, R. (2009). Awareness and use of Insecticide Treated Nets among women attending ante-natal clinic in a Northern state of Nigeria. *Journal of the Pakistan Medical Association*. Vol. 59(6):354-8.

Saareson, F. Z. (2012). Factors associated with use and non-use of mosquito nets for children less than 5 years of age in the Mfantseman Municipality Ghana. Master's Thesis Public Health School of Medicine Faculty of Health Sciences University of Eastern Finland.Pp 1-40.

Singh, R., Musa, J., Singh, S. and Ebere, U. V. (2014). Knowledge, attitude and practices on malaria among the rural communities

in Aliero, Northern Nigeria. *J Family Med Prim Care* 3(1): 39-44.

Vanguard (3 May 2016). The Nigeria Institute of Medical Research (NIMR) – 51m Nigerians tested positive to malaria in 2015 https://www.vanguardngr.com/2016/05/51m-nigerians-tested-positive-malaria-2015-nimr/. Retrieved 19 July 2018

WHO (2010). Roadmap to achieve RBM Target. Update on Nigeria LLIN campaigns. Retrieved 30 April, 2017 from http://www.nationalplanningcycles.org/sites/default/files/country_docs/Nigeria/nigeria_draft_malaria_stra tegic_plan_2009-2013.pdf

Yahaya, M. K. (1995). Determination of agricultural information needs and media use pattern of women farmers in North-Central Nigeria (Unpublished doctoral dissertation). University of Ibadan, Ibadan, Nigeria.

Yahaya, M. K. (2002). Gender and communication variables in agricultural information dissemination in two agro-ecological zones of Nigeria. Ibadan, Nigeria: Corporate Graphics.

Yakob, L. and Yan, G. (2009). Modelling the effects of integrating larval habitat source reduction and insecticide treated nets for malaria control. *PLoS ONE*, 4 (9):1-9