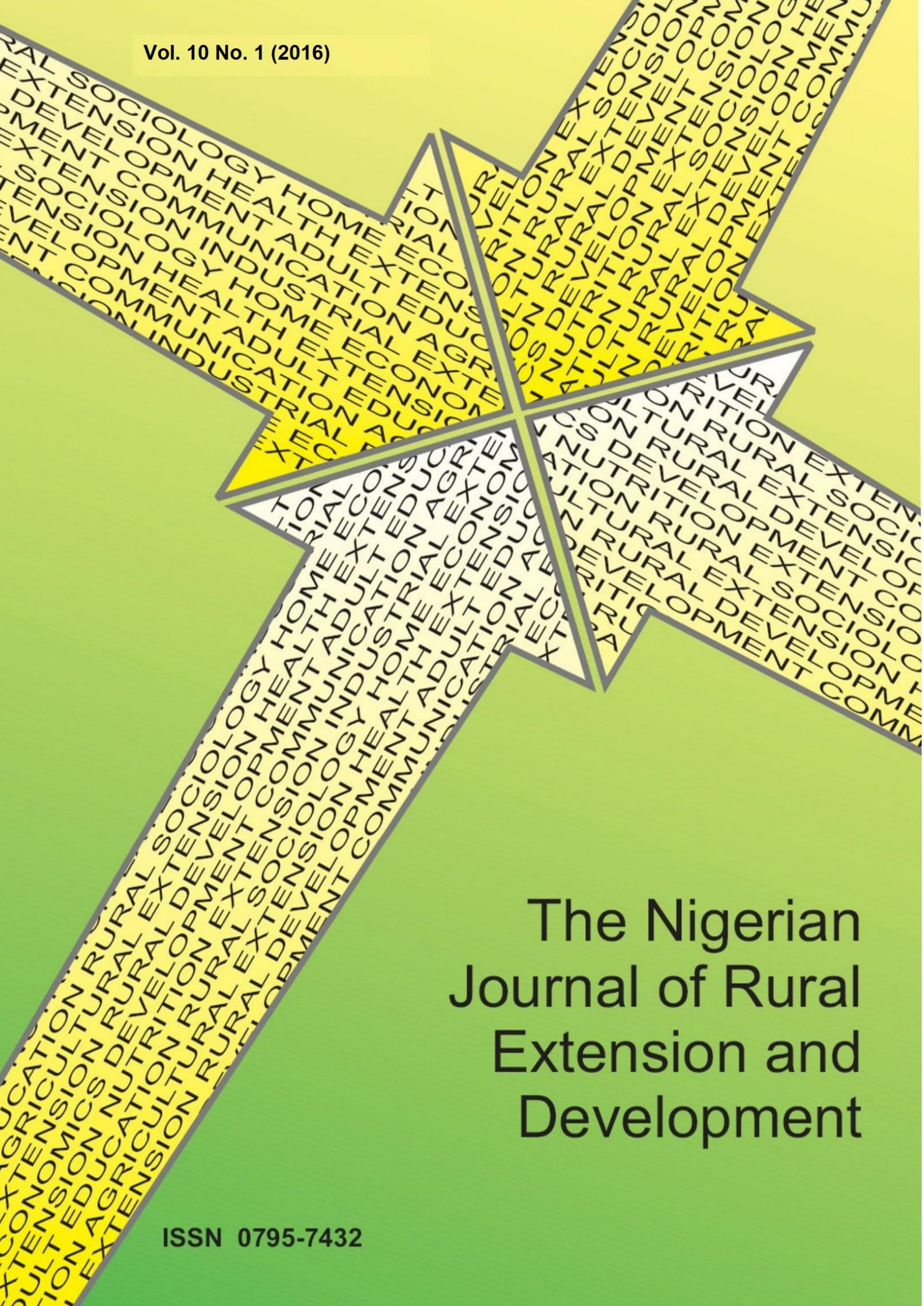


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The Nigerian Journal of Rural Extension and Development (NJRED), a referred journal, is an annual publication of the Department of Agricultural Extension and Rural Development, University of Ibadan, Nigeria. The journal is intended to encourage systematic and continuous publication of practical ideas and empirical research work in the area of Rural Extension and Development as it relates to Rural Development, Women in Development. Agriculture and Extension Education, Rural Sociology, Livelihood, Mass and Extension Communication, Health and Nutrition Extension, Home Economics, Adult Education and Multi-disciplinary Rural Extension issues.

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Village economic development solution: An innovative strategy for ameliorating rural poverty

Faseyi, S. A. and Ajala, A. O.

Department of Agricultural Economics and Extension, Landmark University, Omu-Aran, Kwara State, Nigeria

Corresponding author: ajala.abiodun@lmu.edu.ng, +2347068617924

ABSTRACT

The paper examines the phenomenon of endemic rural poverty in Nigeria, and the unfortunate perception that urbanization and urban growth have become the main drivers of poverty reduction to the neglect of the rural areas. The paper begins by examining the slow progress in poverty reduction in rural areas which is consistent with slow growth in agriculture. The incidence of rural-urban migration; especially that of the youth, with its serious implications for peasant farming and open unemployment in the urban areas was also addressed. The paper goes on to look at employing an innovative strategy, the Village Economic Development Solution (VEDS) which is designed to stimulate the desire by the rich, as 'Anchor Personalities' to give back to the rural areas (villages) where they come from in the first instance through the funding of Anchor Economic Activities (Projects) that can leverage rural living. The paper concludes by recommending partnerships among the tiers of government to create enabling environment for the implementation of the innovation.

Keyword: Rural poverty, Anchor personalities, Economic solution, Rural economic activities

INTRODUCTION

The poverty-hunger battle has been part of the human society from time immemorial. The dilemma has often been, just like the egg and the chicken, which one comes first. Research papers are now awash with the cyclical nature of the two incidents which can, at the same time be a cause and an effect of each other in a vicious cycle, where hunger causes poverty and thus hunger in a sequential manner. Various studies Armatya (1990) and Shawn (2008) have been definite on this poverty-hunger nexus and have therefore urged nations suffering from food problems to look first into solving the poverty challenge. Armatya (1990) was in fact emphatic of the fact that "except in times of wars or major conflicts, the first cause of hunger is poverty".

The nexus is better understood when hunger as a concept is properly construed. Hunger is said to exist when an individual or groups of individuals cannot produce enough food to meet their nutritional or energy requirement for optimum living, or cannot afford to buy it. The implication of this is that hunger could result from either the supply side (non-availability of food) or the demand side (inability to have enough income to buy the available food). Most of the food riots which have been reported in Haiti, Egypt, Cote D'Voire, Senegal, Congo DR and other parts of the world are usually related to affordability issues. According to Copeland (2000), "access to food and other resources is not a matter of availability, but rather of ability to pay. When the

citizens cannot afford to feed themselves and their families, they can quickly become 'militants'. Some commentators have even said that this can be in a matter of days! The underlining slogan of such riots is "We are seeing food on the shelves but are not able to buy them". In economies where food is regarded as a 'Human Rights' issue, as truly it should be, this is a call for public action. Following this approach, it may be reasonably suggested that policy to solve the problem of poverty should first be pursued as part of an overall goal of solving the hunger challenge. The fact is, 'the poor are hungry and their hunger traps them in poverty and they require help, to take or lift them out of poverty'.

On the other hand, a school of thought claims that hunger is a more fundamental challenge and that its elimination is crucial to poverty eradication. This school of thought maintains that availability of food in quantity and quality required for healthy living is a necessary or a first order condition for poverty eradication. The understanding is probably built on the common saying in the Yorubaland of Nigeria that "*bi onje ba ti kuro ninu ise, ise buse*", that is "food as a critical element in the poverty-hunger equation must first be eliminated as part of the practical solution to the problem of poverty". This will seem to be built on a fallacy of composition: that there is an own production which the hungry can freely access, and or the absence of a market economy as it was in the 19th century when primordial relationship was strong and communities were committed to sharing their food than allow some individuals to starve

(Ravallion, 2014). It is of course instructive not to carry this notion too far because it presupposes only a necessary condition, just having anything to eat, with its capacity to aggravate ‘hidden hunger’ rather than the sufficient condition that requires access and choices by the individual to an adequate diet containing all necessary micronutrients that are required as a sufficient condition for healthy living.

The above caveats notwithstanding, the reality of our days will definitely falter the assertion of a ready-made food for the hungry. When the chips are down, availability of food can only be a necessary but not a sufficient condition for the hungry person. The sufficient condition is that the hungry should possess the ability to pay for the food, as inability presupposes poverty of some sort which will effectively prevent food access. According to Copeland (2000), hunger is an effect of poverty, and poverty is largely a political issue which should as such be addressed.

In essence therefore, solving the problem of extreme poverty and hunger may not be as simple as it appears. It requires a network of solutions involving a multi-disciplinary strategy and a public action or political will that can strengthen agricultural development and a food production technique, especially the smallholder, or family farm production system, and an empowerment or social safety net strategy that can jointly address the challenges of poverty and hunger on a sustainable basis. This has of course remained one of the challenges of our time.

Understanding extreme poverty and hunger

Extreme poverty, as defined by the United Nations in 1995 is “a condition characterised by severe deprivation of basic human needs, including food, clothing, safe drinking water, sanitation facilities, health, shelter, education and information. Extreme poverty therefore depends not only on income but also on access to services. When an individual cannot access, use or derive satisfaction from basic human

needs, he is said to be in extreme poverty. Until recently, and using the money-metric measure of poverty or the Human Poverty Index (HPI), a person will be deemed to be in extreme poverty if he lives on less than \$1.25 a day. At the current exchange rate of the Naira to the US Dollar, this will be for anybody in Nigeria living on less than about N310/day. Using this parameter, Ravallion (2014), had estimated that about 1.4 billion people in the developing world live on \$1.25 a day (extreme poverty line) or below. Another astonishing fact, according to him is that 75% of the number are women, children and men living in the rural areas, and are mostly farm families on small holder farms in the villages. These in his views are among the poorest of the poor which should not be left behind in any strategy to ending poverty. It may, for instance require the “raising of the consumption floor” or better still the application of the ‘tiered approach’ that considers the inclusion of certain non-cash and tax-based benefits in poverty measurement, Shawn (2008) with a view to increasing the proportion of the ‘ultra-poor’ above the poverty line.

In essence, just like development, poverty is multidimensional. The Multidimensional Poverty Index (MPI) was developed and used by the World Bank in 2010 (Sabina, et. al., 2010) to complement the monetary measure which has been in use. The MPI considers the overlapping deprivations suffered by people at the same time. The MPI identifies deprivations across education, health and living standards which are equally treated and enlarged under the Human Development Index (HDI) to include: life expectancy at birth, mean number of years of schooling as proxy for knowledge, and Per Capita Gross National Income as a proxy for standard of living to determine the number of people who are multidimensional poor and the number of deprivations with which poor households typically contend with. The dynamics of deprivation captured in the Multidimensional Poverty model can be better understood as presented in Box 1 on the measurement or continuum of deprivation.

Box 1: Measurement of Deprivation

Deprivation	Mild Deprivation	Moderate Deprivation	Severe Deprivation	Extreme Deprivation
Food	Bland diet of poor nutritional value	Going hungry on occasion	Malnutrition	Starvation
Safe Drinking Water	Not having enough water on occasion due to lack of money	No access to water in dwelling but communal piped water available within 200 metres of dwelling or less that 15 minute walk away	Long walk to water source which is more than 200 m away or longer than 15 minute walk. Unsafe drinking water	No access to water

Deprivation	Mild Deprivation	Moderate Deprivation	Severe Deprivation	Extreme Deprivation
Sanitation facilities	Having to share facility with other households	Sanitation facilities outside dwelling	No sanitation facilities in or near dwelling	No access to sanitation facilities
Health	Occasional lack of access to medical care due to insufficient money	Inadequate medical care	No immunisation against disease. Only limited non-professional medical care available when sick	No medical care
Shelter	Dwelling in poor home with leaking roof, unkempt floor. More than 1 person per room	Few facilities in dwelling. Structural problems. More than 3 people per room	No facilities in house. Non-permanent structure, no privacy, no flooring, more than 5 people per room	Roofless – no shelter
Education	Inadequate teaching due to lack of resources	Unable to attend secondary but can attend primary education	Child is 7 or older and has received no primary or secondary education	Prevented from learning due to persecution and prejudice
Information	Cannot afford newspaper or books	No television but can afford radio	No access to radio, television or books or newspaper	Prevented from gaining access to information by government
Basic Social Services	Health and education facilities available but occasionally but of low standard	Inadequate health and education facilities e.g. less than 1 hour travel	Limited health and education facilities e.g. a day’s travel away	No access to health or education services

Source: NAPEP (2006) ‘Poverty Eradication Report of the President’

Adopting the MPI approach, almost 1.5 billion people in 91 countries covered by the MPI – more than a third of their population- live in multidimensional poverty – that is, with at least 33 per cent of the indicators reflecting acute deprivation in health, education and standard of living. This exceeds the estimated 1.2 billion people in those countries who live on \$1.25 a day or less. Also, close to 800 million people are vulnerable and could fall back into poverty if setbacks or random shocks occur – financial, natural or otherwise.

Table 1 compares the percentage of the population living in poverty as calculated by the Human Poverty Index (HPI) and by Multidimensional Poverty Index (MPI) as at 2010. As indicated on the table, the percentage of the population in poverty, using the MPI measure is often higher than that of HPI in many of the countries considered except Tanzania, Vietnam, China, and Uzbekistan where some elements of transfers or Social Safety Nets (SSN) are in operation.

Table 1: Population Living in Poverty as % Using MPI and HPI Measures

Country	MPI	HPI	Country	MPI	HPI
Ethiopia	85	40	Indonesia	20	6
Sierra Leone	80	45	Peru	20	6
Tanzania	62	85*	Vietnam	15	20*
Cambodia	61	40	China	10	15*
Nigeria	62	45	Brazil	10	5
India	48	41	Egypt	6	2
Pakistan	45	21	Uzbekistan	2	62
Bolivia	29	20			

Source: Oxford Poverty and Human Development Initiative (OPHI, 2010)

NOTE * HPI is higher than the MPI because in these countries governments provide some form of cushioning for food, housing and education for citizens. Otherwise, the HPI is always lower than the MPI

Some benefits of using the Multidimensional Poverty Index (MPI) are apparent. It can help the effective allocation of resources to target those with the greatest intensity of poverty, and as such, a veritable instrument for assessing the impact of the African Union Agenda 2063 which has become the basis for the Sustainable Development Goals (SDGs) which is a follow-up to the Millennium Development Goals (MDGs) that ended in 2015. In the same vein, MPI can be adapted to the national level using indicators and weights that make sense for the region or country, much as it is effective for national poverty eradication programmes as it offers the opportunity to study changes overtime.

Understanding the Sustainable Development Goals (SDGs)

The Sustainable Development Goals (SDGs) is part of the post-2015 process which is building on the achievements of the Millennium Development Goals (MDGs) whose tenure expired in 2015. The SDGs indeed recognize the urgent need to eradicate poverty in all its forms including extreme poverty which is found to be the greatest global challenge and an indispensable requirement for sustainable development. The SDGs further appreciate the need for 'universal peace in larger freedom'. World leaders within the framework of the SDGs, expects to accomplish this goal by 2030. Fortunately the African leaders have bought into this vision and have domesticated the strategy to achieve the goal through the instrumentality of the Comprehensive Africa Agricultural Development Programme (CAADP) as contained in Box 2

The sustainable development goals as detailed above are part of an attempt by African leaders to achieve their vision of halting the incidence of multidimensional poverty in Africa by the year 2025. It is gratifying that the African leaders have adopted the instrumentality of the Comprehensive Africa Agricultural Development Programme (CAADP), an agricultural strategy to achieve the sustainable development goals. This is as it should be when it is realised that rural poverty remains endemic and has remained the bane of development in Africa.

The Nigerian government as a signatory to the Sustainable Development Goals has been making efforts to achieve the goal of halting multidimensional scourge of poverty by 2025. This is as it should be when it is realized that the country is faced with a dense concentration of disadvantage circumstances which Horowitz (2000) identified within the Deprivation, Exclusion and Vulnerability

(DEV) Framework that has been swamping the country' development. There is no area where this framework has manifested itself than in the rural areas where rural poverty continues to stare everyone right in the face. The rural sector remains marginalized and vulnerable to any random economic shocks. Of the 178 million Nigerians (NPC, 2014) about 94 million or 50.8% live in the rural areas. Out of this number, about 50 million constituting about 53% of the rural dwellers are near subsistence living and often go short of food particularly in the pre-harvest periods. Rural infrastructure in Nigeria is low and has in fact been neglected. Investments in health, education, and water supply have been focused largely in the cities. The trend has always been for the rural dwellers to migrate to the urban centres as the only veritable option available to evade the scourge of poverty and hunger and to have access to services such as schools, health facilities and safe drinking water.

Quite unfortunately, the urban sector is not prepared to receive such migrants, leading to the creation of urban slums which have now become the most common feature of the country with its attendant social vices. This has further worsened the poverty and hunger situation in a country where the active population who are farmers have had to relocate and become part of those buying foods in the market. With such level of contradictions, various strategies and innovations have been developed and introduced aimed at overcoming the poverty and hunger challenges in a country that is deemed to be rich given its status as an oil producing economy.

For instance, the 'Poverty Eradication Report of the President' (2006) which was prepared by the National Poverty Eradication Programme (NAPEP) is full of chronology of such interventions. The most prominent of these are the Village Economic Development Solution (VEDS), and the Conditional Cash Transfer Programme (COPE) which are aimed at supporting the poorest of the poor and providing support services that could aid the poor to step out of poverty. This paper delves into the implementation of the Village Economic Development Solution (VEDS), a village level innovation that leverages on the public and private sector initiatives to provide a sustainable platform for sustainable reduction of poverty and hunger in the rural areas.

The village economic development solution (VEDS)

The village is a physical manifestation of rural living. As it is in many parts of Africa, and most especially,

Nigeria, villages are better perceived as isolated centres of population with little or no connection with the urban areas. The most feasible feature of a village is the lack of all social amenities that could support private initiatives for optimum result. A typical village is usually devoid of physical and social infrastructure that could encourage economic activities which are needed for improved living standards of those who are living there. In a village for instance, market days are clearly marked and any days in-between are periods when nothing could be bought or sold! The market days, usually in the interval of 5 or 9 days, simply provides the opportunity for rural communities who are within the same 'spatial arbitrage' to exchange their local produce.

The issue of urban based businessmen's interest in patronizing the rural or village markets have caught the attention of economists and other commentators. According to George and King (1971), this avails the businessmen the opportunity to buy cheap farm products which are then disposed at exorbitant prices at the urban centres. The common explanation in the literature is that these middlemen have added value (space utility) as they move the products across space from the rural to the urban areas. Whichever way it is perceived, this is yet another strategy to impoverish the farmers who are made to sell their products at relatively low prices much as they have no other channel to dispose their farm products, except to create avenue for spoilage. This has a lot of implications for the rural dwellers who are usually denied an appropriate reward for their efforts which goes further to make rural living rather arduous and discouraging.

The village economic development solution is designed to make rural living very interesting by creating an environment that is more business friendly and attractive to those who otherwise would not have wished to stay there. It is to break the 'enclave mentality' usually ascribed to the village that is now opened up for business and other economic activities which can attract infrastructure that are believed to be only meant for the urban centres. It is a community-based programme aimed at making the rural dwellers themselves part of the development paradigm through increased agricultural production activities, promotion of grassroots savings and investment in villages or rural communities nationwide. The VES is as such a community-based poverty eradication instrument which when appropriately utilised can reduce the incidence of rural poverty and thereby affecting the general poverty level in a positive way.

The concept of the village trust fund

The Village Trust Fund (VTF) is a vital component of the Village Economic Development Solutions Programme. It is a community-based poverty eradication instrument for promoting grassroots savings and investment in communities nation-wide. The Village Trust Fund is essentially an instrument to pool funds for investment in profitable activities. The proceeds from the investment are used for village socioeconomic development activities e.g. housing, provision of potable water supply such as boreholes, sanitation, (public toilets), and community participation in the Capital Market among others.

The Trust Fund scheme involves contribution of fund by relevant stakeholders within and outside the community. The fund is for investment in profitable ventures that yield profit for the trust fund. The Seed Capital is a start-up sum which may be a loan or a grant given to the community to kick start the Village Trust Fund. It also encompasses Community participation that involves community members' active participation in profitable activities in their community with loans obtained from Seed Capital so as to increase the pool of funds.

The objectives of the village trust fund (VTF)

The Village Trust Fund Scheme (VTF) is a necessary complement of the Village Economic Development Solution (VEDs). As an innovation for development, the VTF provides the opportunity to raise the needed funds and the strategy to mobilise community engagement and participation which are critical to the overall success of the VEDs. For effectiveness, the VTF works through partnerships of the Anchor Personality, the Community Development Associations (CDAs) and others who are willing and interested in the programme. It is also required that there should be on-going anchor projects within the community which, in the views of the community members are essential to meeting their immediate needs.

An "Anchor Personality" within the concept of Village Economic Development Solution" (VEDs) is someone usually of financial means who have consistently developed the will to render assistance to his immediate community with a view to making positive changes in rural communities. Such anchor personalities may offer resources to leverage the community-based funding of some anchor or poverty reduction projects, or moves on his personal initiative to fund such projects that can lift the people out of poverty.

As to what motivates anchor personalities to emerge and offer to be part of poverty eradication efforts, there have been various opinions. To many, Anchor Personalities are those who attempt to win peoples' interest to support them to achieve their political ambitions. Of course, at the coming of any election, there has always been the emergence of many 'philanthropists' who come forward to make contributions to the socioeconomic development of rural communities with a hope of securing electoral support. This kind of people can however be identified as they fizzle into the thin air as soon as elections are over regardless of the outcome.

This notwithstanding, there are many other anchor personalities who joyfully carry out such gestures through their genuine concern to be a stakeholder in improving the living conditions of the rural dwellers. Such personality may even do it out of the vision of establishing projects that will ameliorate the sufferings of the rural dwellers in terms of provision of amenities.

The effectiveness of the role of the anchor personalities is however hinged on some factors. The most important of these factors is the existence of development based associations and the willingness of the government (whether federal, state or local) to contribute to rural development. This is a partnership arrangement that works which must be encouraged as part of an overall effort to ensure the success of Village Economic Development Solution as an innovation to ameliorate rural or village –level poverty in Nigeria.

Many examples now exist on how this innovation has worked for village level development in recent years. Most of them are in agricultural projects or activities bordering on production, processing, storage and marketing, the so called agricultural value chain. They have been found to be successful in ameliorating the incidence of rural poverty in remotest villages. An example is that of Chi Farms at Ajanla village along Ibadan-Lagos expressway providing employment, capacity building, extension services, electricity, school, hospital, water, scholarship for the villagers.

SUMMARY AND CONCLUSION

This paper is a contribution to knowledge on innovations to solve the problem of rural poverty in Nigeria. The Village Economic Development Solution (VEDS) is built on a partnership arrangement among the key stakeholders including the village or the Community Development Association, the Anchor Personalities (APs) and the

Government who has the primary responsibility of providing rural infrastructure. It is an innovation that has worked and requires strengthening for greater achievement. It is recommended that there should be partnerships among the tiers of government to create enabling environment for the implementation of the innovation.

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Impact of habitat change on physico-chemical characteristics of Awba dam tourism centre reservoir, University of Ibadan, Southwest Nigeria

Ojo, S. O.

Department of Wildlife and Ecotourism Management, University of Ibadan, Ibadan, Nigeria

ABSTRACT

Reservoirs are natural or artificial lakes that provide habitat for several species of wildlife as well as spots for tourist attraction, Awba dam inclusive. Hence, an assessment of the effects of dredging on the physico-chemical characteristics of Awba dam water and avian composition within the dam was done during the wet and dry seasons of 2013-2014. Physico-chemical parameters such as transparency, total dissolved solids [TDS] dissolved oxygen [DO] were investigated. Bird survey carried out using line transect method (Bibby *et al.*, 2002), birds heard and seen were recorded morning (6:00-10.30hrs) and evening (16:00-18.30hrs). Data obtained were analysed using descriptive statistics and ANOVA at $P < 0.05$. Values of physicochemical parameters of the dam observed ranged as follows: water temperature, 24-26°C, transparency 0.0-0.3m, TDS 143.2-151.5mg/L, conductivity, 289.2-391.5µmhos/cm respectively. The mean rainfall for 2013-2015 was 1550mm, while mean air temperature was at 22-23°C respectively. Zn was (-0.641), Cu was (0.788) while Fe was (0.797) respectively. A total of 18 species of birds comprising of 11 families and 6 orders were recorded during this survey. These are seven (7) carnivores (38.8%), three (3) frugivores (16.6%), five (5) granivores (27.7%), two (2) insectivores (11.1%), and one (1) nectarinivores (5.55%) respectively. The impact of the dredging has taken a heavy toll on the physico-chemical parameters as well as on the flora and fauna species diversity. Environmental Impact Assessment (EIA) is highly necessary if such massive habitat change is required in the future to forestall species loss.

Keywords: Awba dam, Dredging, Physico-chemical parameters, Species loss.

INTRODUCTION

Reservoirs are very large natural or artificial lakes that provide habitat for several species of wildlife (Dinar *et al.*, 1995). They are constructed for domestic use especially where large natural lakes are sparse and unsuitable for human exploitation. The location and topography of such dams can sometimes require a mechanical dredging to enable them maintain their depth as well as their volume capacity. Over the past few decades, research has been conducted on aspects of the ecology of Awba reservoir e.g. trace metal levels (Mombeshora *et al.*, 1981, 1982), reproductive biology of the fish (Omotosho, 1985), food and feeding relationships (Ugwumba and Adebisi, 1992). Presently, there is an on-going major construction and face-lift in Awba dam in order to develop the place into an ecotourism site. This massive construction work brought about the destruction of the fragile vegetation around the reservoir, as well as loss of localized mammal, reptilian and avian species found around the site. The outright dredging of the main basin of the dam as brought about a deterioration in water quality of the reservoir due to effluent discharge and eutrophication (Oduwole, 1990).

This paper assessed the effects of dredging on the present physico-chemical characteristics of the water, trace metal levels, as well as avian composition

within the dam site. This is important because the perceived irreversible damages might have happened to the water quality as well as severe flora and fauna loss considering its initial ecotourism potentials for activities like sport fishing, birding as so on.

METHODOLOGY

Description of the study area

The dam is located (as shown in Figure 1) in the southern area of the university of Ibadan campus (Akin-Oriola, 2003). It lies between the latitude N 07 26 544 to 560 and longitude E 003 53 177 to 236. It is situated at an altitude of about 185 meters above sea level. It was created by damming the Awba stream in April 1964 with the sole aim of storing water for domestic consumption, laboratory use and table fish culture. It is also used for hydrobiology and fisheries research purposes. The area of the dam occupied by water varies with seasons and in accordance with the rainfall regime. The water is still with occasional multidirectional current which is moderate and due to the effect of the wind. Turbidity is minimal and the water is entropic (Hassan 1974). The Reservoir has a surface area of 6 ha. According to Ugwumba (1990), the Reservoir is 8.3 m high, 110 m long with a crest of 12.2 m high. It has a maximum depth of 5.5 m and a maximum length of 700 m (Akin-Oriola, 2003). It can hold about 230 million

litres of water (Omosho, 1981). The mean daily air temperature is 24.6°C. Surface water samples were collected monthly from the reservoir on a seasonal basis. The physicochemical parameters determined were pH, conductivity, total dissolved solids dissolved oxygen alkalinity and salinity. Temperature and transparency were measured *in situ*. Air and surface water temperature was determined using a centigrade thermometer of range 10-110°C and results were expressed in degree Celsius (°C). The hydrogen ion concentration (pH) was determined in the laboratory using simple titration techniques. Salinity, TDS and conductivity were measured using EXtech meter Model ExStik Ec400. Transparency was measured using a secchi disc. Dissolved oxygen concentration was determined using the Azide modification of the Iodometric method as reported by Greenberg *et al* (1998). Alkalinity was measured with LaMotte Freshwater Aquaculture Test Kit Model AQ-2. The results were expressed as mg/L. Trace metals were analysed according to methods in APHA (Anonymous, 1985) using a Phillips Pye-unicam Sp 9 atomic absorption spectrophotometer

Accessibility

The dam is accessible all year round. The *Barth* road leading from *Queen Idia/ Abdulsalam Hall* leads the new stadium and the junction to right leads to the to the dam. Also the dam can be accessed through *Ekwuno* and *Imo* crescent. The roads are paved and averagely maintained. There are Taxi cabs plying the route and most often times a visitor can take a drop at an affordable cost.

Drainage and Topography

The Awba stream flows through the university via the *Emmanuel College* area along a steadily depressed gradient. It then flows through the *University Fish Farm* onward through the zoological gardens. It later flows behind the faculty of science; the point where the lake begins from. The stream later exits the university, forming a tributary of the *Eleyele* Lake.



Plate 1: Awba dam before reconstruction

Source: Field survey (Reconnaissance), 2013

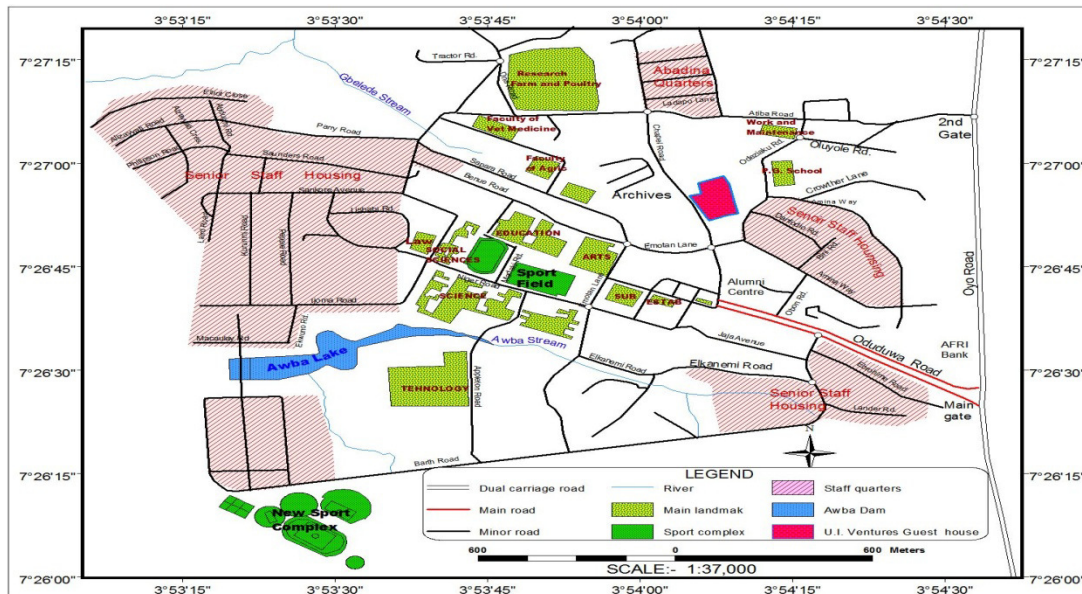


Fig 1: The Map of the University of Ibadan campus showing the Awba dam

Results and discussion

Table 1: The Mean Standard Error and Range of Physicochemical Parameters of Awba Dam Reservoir

Parameters	Mean ± S.E	Range
Dissolved oxygen (mg/L)	1.02±0.360	0.7-0.8
Alkalinity (mg CaCO ₃ /L)	1.26±0.4230	0.8-1.90
Conductivity (µmhos/cm)	347.53±36.90	290.65-391.7
Total dissolved solid 9mg/L)	156.56±5.61	143.7-157.5
Salinity (ppt)	0.10±0.0001	0.11-0.18
pH	7.97±0.390	7.3-8.5
Air temperature (°C)	22.95±0.68	22-23.7
Water temperature (°C)	25.14±1.00	24-26.5
Transparency (m)	2.70±0.659	0.2-0.5

Source: Field survey 2013-2014

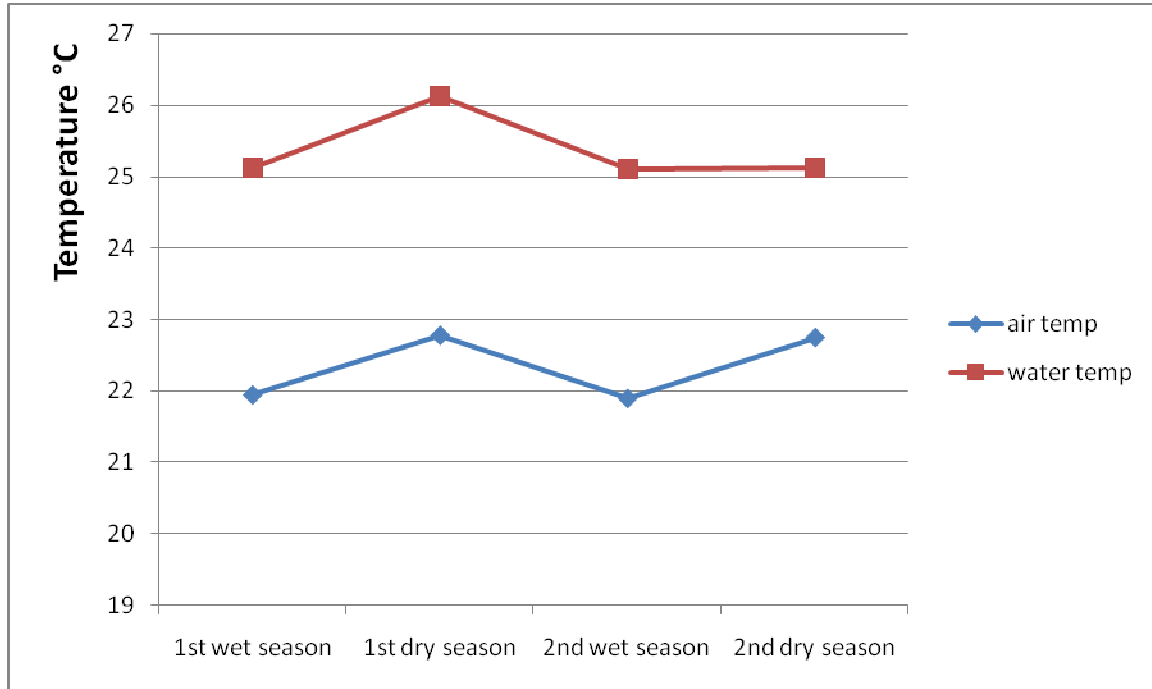


Figure 2: Seasonal variation of temperature

Source: Field survey 2013-2014

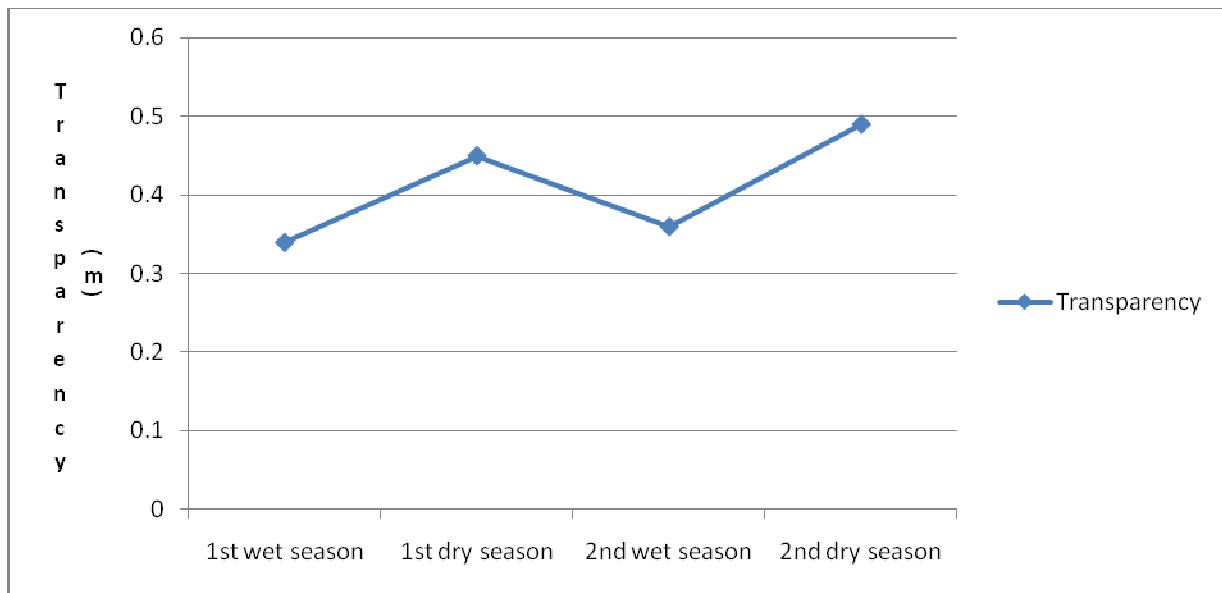


Figure 3: Seasonal variation of transparency (m)

Source: Field Survey 2013-2014

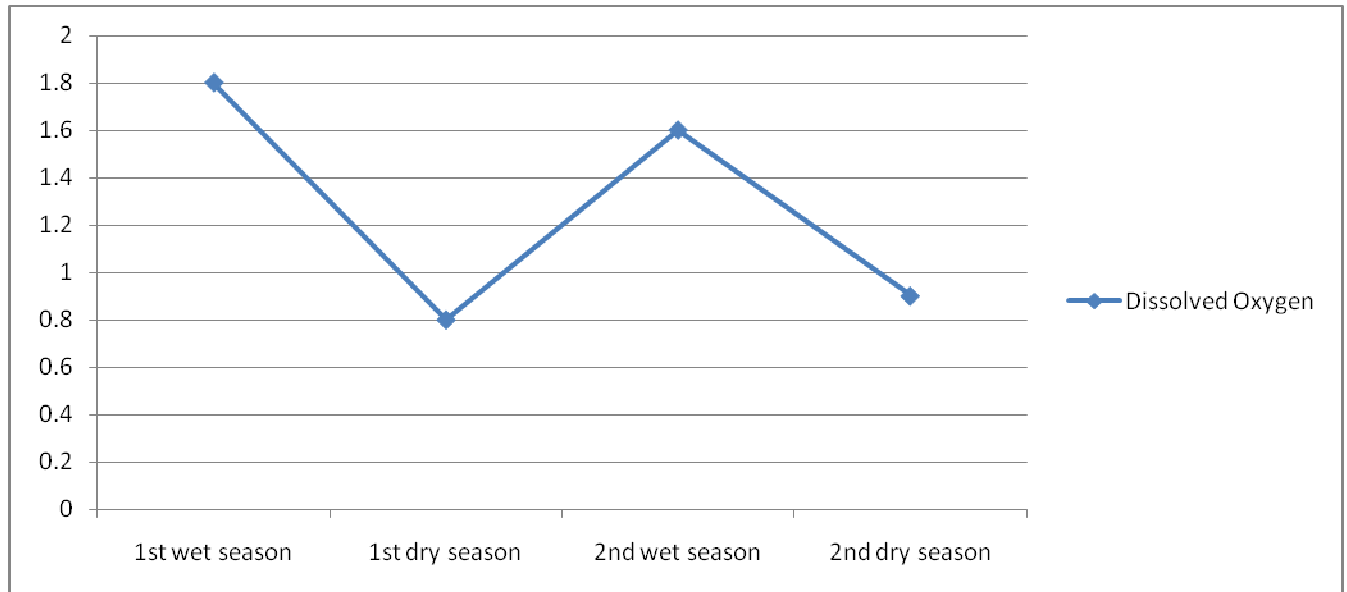


Figure 4: Seasonal variation of Dissolved Oxygen (mg/L)

Source: Field Survey 2013-2014

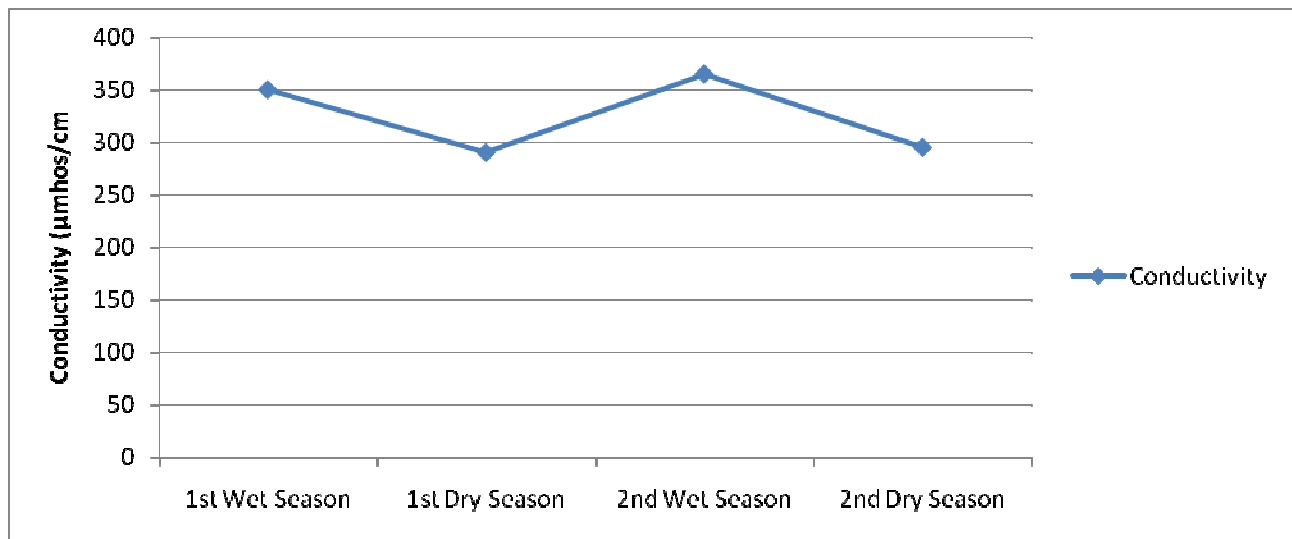


Figure 5: Seasonal variation of Conductivity (µmhos/cm)

Source: Field Survey 2013-2014

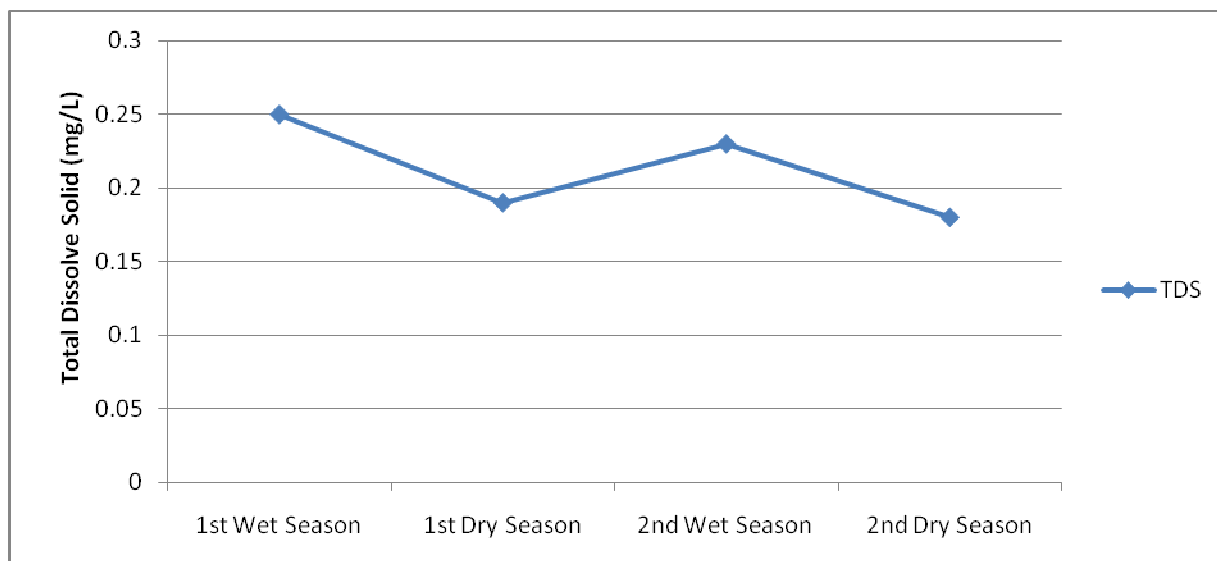


Figure 6: Seasonal variation of Total Dissolved Solid (mg/L)

Source: Field Survey 2013-2014

Table 2: Correlation co-efficient (r) matrix for the physico-chemical parameters during the study period

	DO	Alkalinity	Conductivity	TDS	pH	Air	Water
DO							
Alkalinity	0.859						
Conductivity	-0.081	0.138					
TDS	0.805	0.819	-0.278				
pH	-0.283	-0.093	0.916	-0.536			
Air	-0.572	-0.471	0.814	-0.684*	0.884		
Water	-0.757	-0.738	0.556	-0.912	0.748	0.911	
Transparency	-0.441	-0.495	0.269	-0.731	0.453	0.465	0.614*

Source: Field survey 2013-2014

Table 3: Trace metal components in Awba reservoir

Parameter	Component 1	Component 2	Component 3
Zinc	-0.641	0.204	0.272
Copper	0.788	-0.037	0.212
Iron	0.797	-0.291	-0.249
% contribution	44.5	35.6	19.9

Source: Field survey 2013-2014

Avian species

A total of 18 species of birds comprising of 11 families and 6 orders were recorded during this

survey; 7 carnivores (38.8%), 3 frugivores (16.6%), 5 granivores (27.7%), 2 insectivores (11.1%) and 1 nectarinivores (5.55%)

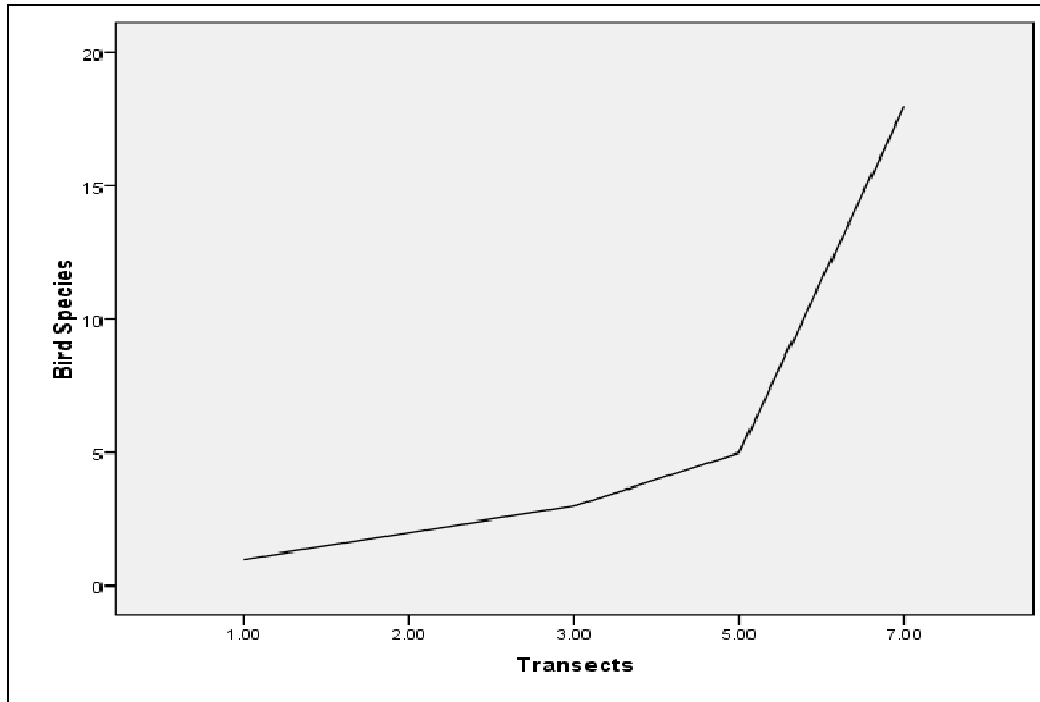


Fig. 3: Species effort curve

Source: Field Survey 2013-2014

Table 1 shows the mean, standard error and range of physicochemical parameters of Awba Dam measured during the study period. Figure 2 to 3 shows the seasonal variation of the measured physicochemical parameters for the study period. The lowest mean air and water temperatures were recorded in the 1st wet season while the highest mean temperature was in the 2nd dry season. Transparency was highest in the 1st dry season and lowest in the 2nd wet season. Dissolved oxygen was lowest in the 1st dry season and highest in the 2nd wet season. The highest alkalinity level was recorded during the 1st dry season. The lowest TDS value was recorded during the 2nd dry season while the highest was during the 1st wet season. The salinity value of 0.1ppt (parts per thousand) was obtained during the study period and this value remained constant with a small increase to 0.19 during the 2nd wet season.

Parameters showed that the reservoir has a PH range of 7.6 – 7.8 at room temperature.

The temperature is between 35C – 35.8C while the alkalinity ranged between 76.5 – 93.5mg/l. The total dissolved solid was also 2.0 – 4.0mg/l.

Correlation co-efficient (r) values for physicochemical parameters are presented in table 4.2. Air temperature correlated negatively with TDS ($r = -0.684$; $p < 0.05$) while transparency correlated significantly with water temperature ($r = 0.614$; $p < 0.05$).

The impact of the dredging has taken a heavy toll on the physicochemical parameters as well as on the flora and fauna specie diversity. More than sixty (60%) of the species are lost due to the noise of bulldozer and other heavy equipments. The diversity of niches available in the dry seasons is low, compared to the wet seasons. Awba dam environs hold a significant number of bird species, the swampy part of the dam area holds the highest number of bird species richness than other parts. Although more than fifty (50%) of the tree cover of the banks of the dam have been felled due to the dredging and mass reconstruction for the place for tourism development, Proper management of ground cover and tree cover will have an effect on bird species and if the former are replanted and maintained. This will in turn create research ground. Selective felling of trees, planting of indigenous trees to replace felled trees or bare spaces is strongly recommended. The assessment of Environmental

Impact Assessment(EIA) is highly necessary if such massive habitat change is of requirement later in the future to forstall species loss. That is why collaborative work is needed to be carried out between departments involved in the management of Awba dam. Proper training in Ornithology will also help in improving bird identification, ecotourism and provide better opportunity to compare long term data.

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Fish species and forms consumed in both water and non-water bodies of Oyo State, Nigeria

¹Abiona, A. O. *, ¹Tosan Fregene, ²Omonona, B. T.

¹Department of Aquaculture and Fisheries Management University of Ibadan, Ibadan, Nigeria

²Department of Agricultural Economics, University of Ibadan, Ibadan, Nigeria

*Corresponding Author Email: yinkbim@yahoo.com

ABSTRACT

Few documented studies on fish demand at the household level exist; despite the high nutritive value of fish protein and its significance to human health. This study was therefore carried out to determine types and forms of fish consumed by rural households in Oyo State, Nigeria. Multi-stage sampling procedure was used to select study's respondents. Thirty percent of the Local Government Areas were randomly selected and resulting ten LGAs were stratified based on the presence of Water Bodies (WB). Twenty villages were selected from each stratum giving 40 villages. Finally, 125 household members were each selected proportionate to size from the forty villages in water body and non-water body strata. Interview schedule was used to obtain information on respondents' socio-economic characteristics, fish species and forms consumed. Data were analyzed using descriptive statistics. Respondents were aged 55 ± 7.66 years with household size of 6.0 ± 2.2 people. The Respondents were mostly males (84.4%) and 75.2% had secondary school certificate. *Scomber* species (Marine) (23.7%), *Clarias gariepinus* (Cultured) (17.1%) and *Heterotis niloticus* (Captured Freshwater Fish) (20.3%) were the most consumed during the rainy season; while in the dry season, cray fish dried (10.4%), *Clarias gariepinus* (27.5%) and *Heterotis niloticus* (12.5%) were the most consumed. Frozen fish is mostly preferred in all seasons with (100.00%) recorded for *Pseudolithus*, *Sardinella* and *Ethmalosa species*; *Clarias gariepinus* was preferred smoked (14.1% in wet season / 25.2% dry season). Households' demand for fish in Oyo State varies in proportions of fish species, forms, and quantity but frozen marine fish was mostly demanded.

Keywords: Fish forms, Water and non-water body, Captured *Heterotis niloticus*, Cultured *Clarias gariepinus*

INTRODUCTION

Fish plays a vital role in feeding the world population and contributes significantly to dietary protein intake. Fish and fishery products represent a very valuable source of protein and essential micronutrients for balanced nutrition and good health (Bene and Heck, 2005). Globally, fish provides about 3.0 billion people with almost 20 percent of their intake of animal protein, and 4.3 billion people with about 15 percent of such protein. Differences among developed and developing countries are apparent in the contribution of fish to animal protein intake. Despite the relatively lower levels of fish consumption in developing countries, the share contributed by fish was significant at about 19.2 percent, and for Low Income Food Deposit Countries (LIFDCs) it was 24.0 percent (FAO, 2012).

Nigeria's fishery subsector is important and contributes four per cent to the country's Gross Domestic Product. Nigerians are high fish consumers with a total current deficit of 1.9 million metric tonnes per year, but was producing about 800,000 metric tonnes locally (Punch, 2014). This makes Nigeria the highest importer of fish and fishery products in Africa. The composition of the imports is

largely mackerels, sardines, hakes, herrings and croakers caught off the coasts of the Eastern Central Atlantic countries of Senegal and Mauritania and from the North Sea. High cost of available inputs has served as a disincentive to aspiring small-scale producers, dissuading many from creating a stable demand for the inputs. On the other hand, high costs of inputs have resulted in high priced products, which have restrained the sector's growth opportunities despite a burgeoning demand for fish. It is therefore no surprise that imports of frozen fish have increased by almost 20% per annum to meet demand at a price consumers seem willing to pay; domestic farmed fresh fish are retailed at prices as much as 100% to 120% higher than imported frozen fish, while domestic captured fish are priced far higher, by almost 325%. Consequently, import of frozen fish is nearly as large as domestic production (Punch, 2014).

Fish can be consumed in the fresh, frozen fried, smoked and sun-dried forms in accordance with the preference or taste of the consumer. The mix of these various forms of fish in household diets varies from country to country or from tribe to tribe. In Nigeria, fish appears to be more widely consumed in the smoked-dried, fresh and frozen forms. It is also commonly asserted in Nigeria that the dried form is

more widely consumed than the fresh form (Mafimisebi, 2012). Also, there is an avalanche of conflicting reports as to which, between water and non-water body rural households, consume more fish (Omotesho and Mohammed, 2010).

The problem of malnutrition is still wide spread in Nigeria affecting vulnerable groups. These include infants, pre-school children, pregnant and nursing mothers and adults particularly from low income households (Amao *et al.*, 2006). However, there has been no empirical research finding that has compared fish consumption in rural households based on water and non-water bodies and seasons (dry and rainy) of Oyo State. This was the motivation for this study, which compared the consumption of fish forms and the species to accurately determine rural households' demand for fish in Oyo State.

The following question was addressed;

- i. What are the consumption patterns of various types of fish in rural households' water and non-water bodies in Oyo State?

METHODOLOGY

Study area, sampling procedure and data collection

The study was conducted in Oyo State, Nigeria. Multi-stage sampling procedure was used to select sample for the study. The first stage involved selection of 30% of the ADP Local Government Areas (LGAs). The villages in the resulting ten LGAs were stratified based on the presence or absent of water body or non – water body and 20 villages were

selected from each stratum giving 40 villages - sampling proportionate to size, 125 households each from water body and non-water body strata respectively were selected to give a total of (250 household heads) interviewed. Descriptive statistics was employed to analyse the fish species and forms consumed in both water and non-water body of Oyo State.

RESULTS AND DISCUSSION

Types of fish species consumed by households within the water body

The water body households as shown in Table 1 established the fact that, marine fish species mostly consumed during the rainy season were: *Scomber Sp.* (23.7%), *Caranx spp.* (16.8%) and *Merluccius Sp.* (14.1%) while the least consumed fish were *Silversmelt-Argentina Silus* (2.4%), *Pseudotolithus sp.* (2.4%) and *Ethmalosa Fimbriata* (2.4%). Data on mostly consumed fish in the dry season were *Panulirus spp.* (10.4%), *Scomber sp.* (7.5%) and *Caranx spp.* (5.6%). The consumption of marine fish species showed varieties exist for consumption. This agrees with (Verbeke and Vackier, 2005), who opined availability of fish consumption in marine water body. It could also be an indication that as the income increased, better and expensive foods such as animal protein, in particular fish, would be consumed but as the percentage of income decreases, less will be purchased. This confirms Engels law which states that, 'the proportion of income spent on food declines as income increases'. *Clarias gariepinus* were good. Hence, there were greater supplies of fish in the dry season compared to rainy season.

Table 1. Distribution of Fish Species Consumed by (Water body Households)

Fish Species	Rainy Season		Dry Season	
	Frequency	%	Frequency	%
Capture Marine Shell Fish				
<i>Penaeusnotialis</i> (Shrimps-dry)	0.0	0.0	0.0	0.8
<i>Panulirus spp.</i> (Crayfish-dry)	35	9.3	39	10.4
<i>Marine Distance Fish</i>	89	23.7	28	7.5
<i>Scomber sp. (Mackerel)</i>				
<i>Silversmelt-Argentina silus</i> (Express)	09	2.4	07	1.9
<i>Caranx spp.</i> (Horse Mackerel)	63	16.8	21	5.6
<i>Merluccius sp.</i> (Hake)	53	14.1	17	4.5
<i>Pseudotolithus sp.</i> (Croakers)	09	2.4	06	1.6
<i>Sardinella aurita</i> (Sardine)	18	4.8	06	1.6
<i>Ethmalosa fimbriata</i> (Bonga)	09	2.4	03	0.8
<i>Sardinell aelba</i> (Sardine)	0.0	0.0	01	0.3
Culture Fish				
<i>Clarias gariepinus</i> (African mud fish)	64	17.1	103	27.5
<i>Oreochromis niloticus.</i> (Tilapia)	0.0	0.0	03	0.8

Fish Species	Rainy Season		Dry Season	
	Frequency	%	Frequency	%
<i>Cyprinus carpio</i> (Common carp)	9	0.0	0.0	0.0
Capture Freshwater Fish Species				
<i>Heterotis niloticus</i> (African bony fish)	76	20.3	47	12.5
<i>Channa obscura</i> (Snake head)	29	7.4	13	3.5
<i>Gymnarchus niloticus</i> (Trunk fish)	0.0	0.0	08	2.1
<i>Chrysichthys nigrodigitatus</i> (Silver cat fish)	44	11.7	21	5.6
<i>Alestes macrolepidotus</i> (Silverside fish)	16	4.3	10	2.7
<i>Hydrocynus vittatus</i> (African tiger fish)	25	6.7	11	2.9
<i>Ctenopoma kingsleyae</i> (Two sport climbing per)	0.0	0.0	0.0	0.0
<i>Malapterurus electricus</i> (Electric fish)	09	2.4	22	5.9
<i>Synodontis nigrita</i> . (Upside down catfish)	53	14.1	37	9.9
<i>Marcusenius ihuysi</i> (Trunk fish)	0.0	0.0	0.0	0.0
<i>Mormyrops deliciousus</i> (Elephant snout fish)	38	10.1	15	4.0
<i>Mormyrus rume</i> (Elephant snout fish)	0.0	0.0	0.0	0.0
<i>Hyperpiscus bebe</i> (Trunk fish)	0.0	0.0	0.0	0.0
<i>Hemichromis bimaculatus</i> (Banded jewel fish)	36	9.6	15	4.0
<i>Plematochromis guentheri</i> (Guentha mouth)	0.0	0.0	0.0	0.0
<i>Hepsetus odoe</i> (African river pike)	09	2.4	17	4.5
<i>Lates niloticus</i> (Nile perch)	0.0	0.0	0.0	0.0
<i>Auchenoglarus occidentalis</i> (Catfish)	09	2.4	03	0.8

Source: Field Survey, 2009

Types of fish species consumed by non-water body households

Table 2 shows the types of fish species consumed by the households in the non-water body communities during the rainy and the dry seasons, among the three classes of fish species, namely: marine, cultured and captured fish species. The marine frozen fish species consumed by households during the rainy season included dried *Panulirus spp.* (Cray fish) (20.0%), *Scomber sp.* (17.6%), *Merluccius sp.* (10.4%) and *Sardinella aurita* (9.6%). The least consumed fish were dry *Penaeus notialis* (2.4%) and *Sardinella elba* (2.4%).

The dry season on the other hand, had dry *Panulirus spp.* (16.7%) and *Scomber sp.* (9.9%) as mostly consumed while others were *Caranx spp.* (8.3%) and *Silversmelt-Argentina silus* (6.9%). However, *Penaeus notialis* were the least consumed. There seems to be a similarity in the consumption pattern of marine fish species in both seasons. This could also be attributed to habit, palatability, availability, taste and purchase intentions for fish. This agrees with Honkannen *et al.*, 2005 who opined that habit has been found to be a strong predictor of purchase intention for fish. Data on consumption of cultured fish shows 28.5% consumed *Clarias gariepinus* during the rainy season compared to 19.1% that consumed it in the dry season. This in effect indicated that cultured fish species were unaffected or

had no influence on rain or dry season as they were available throughout the seasons. The mostly consumed captured fresh water fish species in the rainy season were *Heterotis niloticus* (23.5%), *Synodontis nigrita* (21.1%), *Alestes macrolepidotus* (18.1%) and *Mormyrops deliciousus* (13.9%) while *Gymnarchus niloticus* (2.4%), *Malapterurus electricus* (2.4%) and *Hepsetus odoe* (2.4%) were the least consumed with similar consumption pattern.

Most consumed captured fresh water fish species in the dry season were *Synodontis nigrita* (8.3%), *Heterotis niloticus* (7.8%), *Alestes macrolepidotus* (7.3%) and *Mormyrus deliciousus* (4.6%). However, *Hemichromis bimaculatus* (0.5%) were the least consumed.

The fish consumption pattern in both the rainy and dry seasons of captured fish indicated similar pattern in the fishes that are highly consumed. However, the observed difference between the fish consumed in the different seasons by types, showed that the most widely distributed fish species consumed in the non-water body were the deep frozen landings of distant water vessels, the marine fish species; which consist of *Scomber sp.*, *Silversmelt-Argentina silus*, *Caranx spp.*, *Merluccius sp.*, *Sardinella aurita* and *Sardinella elba*. This confirmed studies by Kumar and Dey, (2004) that disparities in the fish consumption pattern exist widely across the income groups and location of the households. This could be due to availability as

opposed to seasonality of the captured fresh water fish species in the water body. This also agrees with the studies of Scholderer and Grunert, (2001) that

fish consumption has been found to be positively related to the available fish.

Table 2: Distribution of Fish Species Consumed by Non-Water body Households

Fish Species	Rainy Season		Dry Season	
	Frequency	%	Frequency	%
Capture Marine Shell Fish				
<i>Penaeus notialis</i> (Shrimps-dry)	09	2.4	02	0.5
<i>Panulirus spp.</i> (Crayfish-dry)	75	20.0	62	16.7
Marine Distance Fish				
<i>Scomber sp.</i> (Mackerel)	66	17.6	37	9.9
<i>Silversmelt-Argentina silus</i> (Express)	27	7.2	26	6.9
<i>Caranx spp.</i> (Horse Mackerel)	18	4.8	31	8.3
<i>Merluccius sp.</i> (Hake)	39	10.4	24	6.5
<i>Pseudolithus sp.</i> (Croakers)	0.0	0.0	06	1.6
<i>Sardinella aurita</i> (Sardine)	36	9.6	21	5.7
<i>Ethmalosa fimbriata</i> (Bonga)	0.0	0.0	03	0.8
<i>Sardinella elba</i> (Sardine)	09	2.4	19	5.1
Culture Fish				
<i>Clarias gariepinus</i> (African mud fish)	107	28.5	71	19.1
<i>Oreochromis niloticus.</i> (Tilapia)	0.0	0.0	02	0.5
Capture Freshwater Fish Species				
<i>Heterotis niloticus</i> (African bony fish)	88	23.5	29	7.8
<i>Channa obscura</i> (Snake head)	17	4.5	06	1.6
<i>Gymnarchus niloticus</i> (Trunk fish)	90	2.4	03	0.8
<i>Chrysichthys nigrodigitatus</i> (Silver cat fish)	31	8.3	12	3.2
<i>Alestes macrolepidotus</i> (Silverside fish)	68	18.1	27	7.3
<i>Hydrocynus vittatus</i> (African tiger fish)	23	6.1	09	2.4
<i>Ctenopoma kingsleyae</i> (Two sport climbing perch)	0.0	0.0	0.0	0.0
<i>Malapterurus electricus</i> (Electric fish)	09	2.4	03	0.8
<i>Synodontis nigrita.</i> (Upside down catfish)	79	21.1	31	8.3
<i>Marcusenius ihuysi</i> (Trunk fish)	0.0	0.0	0.0	0.0
<i>Mormyrops deliciousus</i> (Elephant snout fish)	52	13.9	17	4.6
<i>Mormyrus rume</i> (Elephant snout fish)	0.0	0.0	0.0	0.0
<i>Hyperpiscus bebe</i> (Trunk fish)	0.0	0.0	0.0	0.0
<i>Hemichromis bimaculatus</i> (Banded jewel fish)	10	2.7	02	0.5
<i>Hepsetus odoe</i> (African river pike)	09	2.4	03	0.8

Source: Field Survey, 2009

Processed fish forms and seasons by households in water body communities

The percentage of fish consumption by processed fish forms and season in the water body households in Table 3 show that fresh fish, smoked fish, frozen fish, sun-dried and fried fish were the processed fish forms consumed. It is of importance to note that, the consumption of these value forms depend on what is available at the time of purchase. However, this depends on factors such as price, availability, accessibility, taste, perceived freshness, habit, environmental differences like water body and non-water body areas. This confirms with what Eagly and

Chaiken (1993) described as attitude towards fish consumption. The above scenario is also consistent with the findings of Rortveit and Olsen (2009) who reported similar occurrence where attitude towards fish consumption was described as the extent to which people like and dislike eating fish, gain pleasure /displeasure from eating fish and feel satisfied / dissatisfied after eating fish.

The marine fish species under the rainy season indicated that *Scomber sp.* (10.1%) and *Caranx spp.* (14.3%) were consumed by the households as smoked fish. Frozen fish consumed by the households were:- *Scomber sp.* (89.8%) *Silversmelt-*

Argentina silus (100%), *Caranx spp.* (85.7%) and *Merluccius sp.* (64.4%). and *Pseudotolithus sp.*, *Sardinella aurita*, *Ethmalosa fimbriata* all representing (100%). Sun-dried were consumed as dried *Panulirus spp.* (100%) and *Merluccius sp.* (33.9%).

The marine fish species consumed during the dry season indicates that dried *Penaeus notialis* (50.0%) and *Silversmelt-Argentina silus* (28.6%) were consumed by the households as fresh. *Scomber sp.* was consumed as smoked and also, *Scomber* (89.3%) and *Silversmelt-Argentina silus* (71.4%) were consumed as frozen while *Penaeus notialis* (50.0%) and *Panulirus spp.* (100.0%) were consumed as sun-dried. From the above, there seems to be a similarity in the processed fish forms of marine fish species consumed in the rainy season, due to their availability at all seasons. The cultured fish species in the rainy season clearly revealed that *Clarias gariepinus* (14.1%) were consumed as smoked fish during the season, but the same *Clarias gariepinus* (74.8%) and *Oreochromis niloticus* (100%) were consumed as fresh fish in the dry season.

The captured fresh water fish species during the rainy season, established the fact that fish species were all consumed as fresh fish: *Heterotis niloticus* (52.6%), *Channa obscura* (79.3%), *Chrysichthys nigrodigitatus* (100%), *Alestes macrolepidotus* (100%), *Hydrocynus nigrita* (94.3%), *Mormyrops deliciosus* (100%), *Hemichromis bimaculatus*

(100%), *Hepsetus odoe* (100%) and *Auchenoglarus occidentalis* (100%). The smoked capture fish species which were consumed among the households were *Heterotis niloticus* (47.4%), *Channa obscura* (21.0%) and *Synodontis nigrita* (5.6%).

The captured fresh water fish species in the dry season reflects a similar consumption pattern with that of the rainy season based on seasonality, availability, abundance, taste, habit and perceived freshness. This agrees with Olsen (2004) that freshness may be a key determinant of quality evaluation. Captured fresh water fish species consumed fresh among the water - body households were:- *Heterotis niloticus* (73.9%), *Channa obscura* (69.2%), *Gymnarchus niloticus* (87.5%), and *Chrysichthys nigrodigitatus* (95.3%).

The smoked fish demanded by the households included *Heterotis niloticus* (26.1%), *Channa obscura* (30.8%), *Gymnarchus niloticus* (12.5%), *Chrysichthys nigrodigitatus* (4.7%) and *Synodontis nigrita* (5.6%). The processed fish forms comes about as a result of high spoilage rate of fish caused by micro-organisms and have to be preserved into other forms to extend the shelf life of the products. This agrees with a research carried out by Eyo (2001) that, fish in small scale are generally sun-dried, smoked or frozen by individual fisher men or fish monger to prevent spoilage. However, very high percentage of the households consume their fish as fresh, smoked or frozen, while very few consumed dried-fish.

Table 3: Distribution of households by processed fish forms and seasons in water body

Fish Species	Rainy Season					Dry Season				
	Fresh	Smoke	Frozen	Sun Dried	Fried	Fresh	Smoke	Frozen	Sun Dried	Fried
Capture Marine Shell Fish										
<i>Penaeus notialis</i>	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	50.0	0.0
<i>Panulirus spp.</i>	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0
Marine distance Fish										
<i>Scomber sp.</i>	0.0	10.1	89.8	0.0	0.0	0.0	10.7	89.3	0.0	0.0
<i>Silversmelt Argentina silus</i>	0.0	0.0	100.0	0.0	0.0	28.6	0.0	71.4	0.0	0.0
<i>Caranx spp.</i>	0.0	14.3	85.7	0.0	0.0	0.0	14.3	85.7	0.0	0.0
<i>Merluccius sp.</i>	0.0	0.0	66.4	33.9	0.0	0.0	5.8	58.8	35.2	0.0
<i>Pseudotolithus sp.</i>	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
<i>Sardinella aurita</i>	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
<i>Ethmalosa fimbriata</i>	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
<i>Sardinella elba</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
Culture Fish										
<i>Clarias gariepinus</i>	85.9	14.1	0.0	0.0	0.0	74.8	25.2	0.0	0.0	0.0
<i>Oreochromis niloticus.</i>	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Capture Fresh Water										
<i>Heterotis niloticus</i>	52.6	47.4	0.0	0.0	0.0	73.9	26.1	0.0	0.0	0.0

Fish Species	Rainy Season					Dry Season				
	Fresh	Smoke	Frozen	Sun Dried	Fried	Fresh	Smoke	Frozen	Sun Dried	Fried
<i>Channa obscura</i>	79.3	21.0	0.0	0.0	0.0	69.2	30.8	0.0	0.0	0.0
<i>Gymnarchus niloticus</i>	0.0	0.0	0.0	0.0	0.0	87.5	12.5	0.0	0.0	0.0
<i>Chrysichthys nigrodigitatus</i>	100.0	0.0	0.0	0.0	0.0	95.3	4.7	0.0	0.0	0.0
<i>Alestes macrolepidotus</i>	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Hydrocynus vittatus</i>	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Nile Perch</i>	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Synodontis nigrita</i>	94.3	5.6	0.0	0.0	0.0	94.4	5.6	0.0	0.0	0.0
<i>Mormyrops deliciousus</i>	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Hemichromis bimaculatus</i>	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Hepsetus odoe</i>	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Auchenoglarus occidentalis</i>	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0

Source: Field Survey, (2009)

Processed fish forms and season in non – water body communities

The distribution of processed fish form and season in the non-water body households were as shown in (Table 4). The processed fish forms consumed included fresh, smoked, frozen, sun-dried and fried fish so as to prevent spoilage. The marine fish species consumed during the rainy season, shows that *Sardinella elba* (100%) was consumed smoked, while *Scomber sp.* (100%), *Silversmelt-Argentina silus* (100%), *Caranx spp.* (100%) *Merluccius spp.* (53.8%) and *Sardinella aurita* (100%) were all consumed as frozen fish species. On the other hand, the fish consumed by the households in the dry season: - were *Silversmelt-Argentina silus* (3.8%), *Caranx spp.* (9.7%), *Merluccius sp.* (4.2%), *Pseudolithus sp.* (16.7%) and *Sardinella elba* (33.3%) and were all consumed as smoked fish.

Consumed frozen fish by households were: *Scomber sp.* (100%) *Silversmelt-Argentina silus* (96.2%), *Caranx spp.* (90.3%), *Merluccius sp.* (66.7%), *Pseudolithus sp.* were all consumed as sun-dried. The fish consumed by households in both rainy and dry season showS similar pattern because almost the same types of fish species were consumed. This means the fish species depended on availability and accessibility of the product, hence uniformity of demand by households. This could also be attributed to availability and purchase intensions for fish. This agrees with Honkannen *et al.*, (2005) who opined that habit has been found to be a strong predictor of purchase intension for fish. The cultured fish species demand by the households during the rainy season however indicated that *Clarias gariepinus* (41.1%)

were consumed fresh while *Clarias gariepinus* (58.8%) were also consumed as smoked fish. Similarly, the consumption in the dry season reveals that *Clarias gariepinus* (25.5%), (72.1%) and (1.4%) were consumed as fresh, smoked and frozen fish respectively, but *Oreochromis niloticus* (100%) was consumed as smoked fish. This clearly showed that *Clarias gariepinus* were abundant and available to the households in both seasons.

The captured fish species consumed by the households during the rainy season in the non-water body established the following levels of consumption: *Heterotis niloticus* (100%), *Chrysichthys* (100%), *Aletes macrolepidotus* (91.2%), *Hydrocynus vittatus* (100%), *Lates niloticus* (100%). The following fishes were also consumed by the households as smoked fish: *Channa obscura* (64.7%), *Gymnarchus nitoticus* (100%), *Alestes macrolepidotus* (8.8%) and *Synodontis nigrita* (15.2%).

The distribution of households by fish form during the dry season showed the following fresh fish consumption: *Heterotis niloticus* (100%), *Chrysichthys nigrodigitatus* (100%), *Alestes macrolepidotus* (100%), *Hydrocynus vittatus* (100%), and *Hepsetus odoe* (100%). The smoked fish consumed by the households includes: *Heterotis niloticus* (6.9%), *Channa obscura* (66.7%) and *Synodontis nigrita* (16.7%). However, the result of households by processed fish forms and season under the captured fish exhibits a uniform level of consumption which may be due to availability and abundance hence same level of consumption.

Table 4: Distribution of Households by Processed Fish Forms and Seasons in non-water body

Fish Species	Rainy Season					Dry Season				
	Fresh	Smoke	Frozen	Sun Dried	Fried	Fresh	Smoke	Frozen	Sun Dried	Fried
Capture Marine Shell Fish										
<i>Penaeus notialis</i>	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0
<i>Panulirus spp.</i>	0.0	0.0	0.0	88.0	0.0	0.0	0.0	0.0	92.5	0.0
Marine Distance Fish										
<i>Scomber sp.</i>	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
<i>Silversmelt Argentina silus</i>	0.0	0.0	100.0	0.0	0.0	0.0	3.8	96.2	0.0	0.0
<i>Caranx spp.</i>	0.0	0.0	100.0	0.0	0.0	0.0	9.7	90.3	0.0	0.0
<i>Merluccius sp.</i>	0.0	0.0	53.8	46.2	0.0	0.0	4.2	66.7	29.2	0.0
<i>Pseudolithus sp.</i>	0.0	0.0	0.0	0.0	0.0	0.0	16.7	83.3	0.0	0.0
<i>Sardinella aurita</i>	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
<i>Ethmalosa fimbriata</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
<i>Sardinella elba</i>	0.0	100.0	0.0	0.0	0.0	0.0	33.3	66.7	0.0	0.0
Culture Fish										
<i>Clarias gariepinus</i>	41.1	58.8	0.0	0.0	0.0	22.5	76.1	1.4	0.0	0.0
<i>Oreochromis niloticus.</i>	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Capture Fresh Water Fish										
<i>Heterotis niloticus</i>	100.0	0.0	0.0	0.0	0.0	93.1	6.9	0.0	0.0	0.0
<i>Channa obscura</i>	35.3	64.7	0.0	0.0	0.0	33.3	66.7	0.0	0.0	0.0
<i>Gymnarchus niloticus</i>	0.0	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Chrysichthys nigrodigitatus</i>	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Alestes macrolepidotus</i>	91.2	8.8	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Hydrocynus vittatus</i>	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Nile Perch</i>	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Synodontis nigrita</i>	84.8	15.2	0.0	0.0	0.0	83.3	16.7	0.0	0.0	0.0
<i>Mormyrops deliciosus</i>	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Hemichromis bimaculatus</i>	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Hepsetus odoe</i>	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Auchenoglarus occidentalis</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Field Survey, (2009)

CONCLUSION AND RECOMMENDATION

This study examined rural households demand for fish species, forms and quantities in water body and non-water body in Oyo State. The types of fish species consumed by households within the water body shows: - *Scomber spp.* (89.0%), *Merluccius sp.* (53.0%), *Caranx spp.* (63.0%), *Clarias gariepinus* (64%), *Heterotis niloticus* (76%), and *Chrysichthys nigrodigitatus* (44%) and *Synodontis nigrita* (53%). *Silversmelt – Argentina silus* (09%), *Pseudolithus sp.* (09%), *Ethmalosa fimbriata* (09%), *Cyprinus carpio* (09%), *Malapterurus electricus* (09%), *Hepsetus odoe* (09%), *Auchenoglarus occidentalis* (09%), *Hemichromis bimaculatus* (36%), *Hydrocynus vittatus* (25%), *Mormyrus deliciosus* (38%).

The type of fish species consumed by non-water body households on the other hand reveals: - dried *Panulirus sp.* (75%), *Scomber spp.* (66%), *Silversmelt – Argentina silus* (97%), *Heterotis niloticus.* (88%), *Gymnarchus niloticus* (90%), *Alestes macrolepidotus* (68%), *Synodontis nigrita* (79%), *Channa obscura* (17%), *Chrysichthys nigrodigitatus* (31%), *Hydrocynus vittatus* (23%), *Malapterurus electricus* (09%), *Mormyrops deliciosus* (52%), *Hemichromis bimaculatus* (10%), *Hepsetus odoe* (09%). *Merluccius spp.* (39%) *Sardinella aurita* (36%). The types of fish consumed by both water body and non – water bodies shows similar pattern, while the marine distance frozen fish in both bodies shows the widest distribution.

The processed fish forms in rainy seasons by

households in water body communities reveals:-
 Fresh Fish: *Clarias gariepinus*, *Heterotis niloticus*, *Channa obscura*, *Chrysichthys nigrodigitatus*, *Alestes macrolepidotus*, *Hydrocynus vittatus*, *Malapterurus electricus*, *Synodontis snigrita*.
 Smoked Fish: *Scomber spp.*, *Caranx spp.*, *Clarias gariepinus*, *Heterotis niloticus*, *Channa obscura* and *Synodontis nigrita*.
 Frozen Fish: *Scomber spp.*, *Silversmelt –Agentina silus*, *Caranx spp.*, *Merluccius spp.*, *Pseudolithus elongatus*, *Sardinella aurita* and *Ethmalosa Fimbriata*.
 Sun Dried: *Panulirus spp.* and *Merluccius spp.*

The processed fish forms in dry season shows:- Fresh Fish: *Clarias griepinus*, *Oreochromis niloticus*, *Heterotis niloticus*, *Channa obscura*, *Gymnarchus niloticus*, *Chrysichthys nigrodigitatus*, *Alestes macrolepidotus*, *Malapterurus electricus*, *Synodontis spp.*, *Mormyrops deliciousus*, *Hemichromis bimaculatus*, *Hepsetus odoe*, *Auchenoglarus occidentalis*.
 Smoke Fish: *Scomber spp.*, *Caranx spp.*, *Merluccius spp.*, *Clarias gariepinus*, *Heterotis niloticus*, *Channa obscura*, *Gymnarchus niloticus*, *Chrysichthys nigrodigitatus* and *Synodontis spp.*
 Frozen Fish: *Scomber spp.*, *Caranx spp.*, *Merluccius spp.*, *Silversmelt – Agentina silus*, *Pseudolithus*, *Sardinella aurita / Elba*, and *Ethmalosa fimbriata*.
 Sundried Fish: *Merluccius spp.*

However, the fish forms in the non-water body are not quite different from the water body because they show uniform pattern of consumption which may be due to availability, accessibility and proximity of the communities. The processed fish forms comes about as a result of high fish spoilage rate of fish and have to be preserved by frozen, smoke and sun dried to extend the shelf life

Based on the findings of the study, the following recommendations are made:

- To increase the protein intake of Oyo State, there is need to promote greater investment in aquaculture and improve artisanal, inland and marine fisheries
- Efforts should be made to encourage the local fish farmers through incentives and also discourage importation of distance frozen fish to boost local production.
- The fish farmers should be granted loans/subsidies to enable them purchase modern equipment in order to increase supply.
- The government and all stakeholders should encourage the production of fish in its entirety through the exploitation of the vast water resources available in Oyo State.

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Work-family conflict and career women home chores demand: Experience from two higher institutions in Ogun State, Nigeria

Otufale, G. A. and Aina, A. S.

Department of Agricultural Education, Tai Solarin College of Education, Omu-Ijebu, Ogun State, Nigeria

Correspondence E-mail: ainaabiona@yahoo.com, +2348052458428

ABSTRACT

The study examined work-family conflict among career women from two higher institutions in Ogun state, Nigeria. Respondents (52) were drawn from Federal College of Education (FCE) and Federal University of Agriculture, Abeokuta (FUNAAB) through a simple random sampling technique. Structured questionnaire was used to elicit information on respondents' personal characteristics, conflicts that arise from the work-family conflict, work/home chore demands experienced by the respondents and coping strategies adopted to reduce the stressors. Data were subjected to frequency counts, percentages, means and one sample t-test. Results reveal that 34.0% and 37.7% of the respondents were between 31 and 50 years, had at least NCE/OND qualifications (90.5%), married (94.3%) with mean household size of 4 persons. Respondents' lack of sufficient time to do home chores after work (mean = 3.06) and strenuous nature of daily workload (3.46) were work-family conflicts identified by the respondents. Coping strategies employed by the career women include planning ahead of daily tasks and workloads (mean = 2.78) and giving priority to most important tasks and workloads (mean = 2.64). There was a significant difference between the work-family conflict ($t = 25.23, p < 0.01$) and work/home chore demand ($t = 20.76, p < 0.01$) among career women in FCE and FUNAAB. The study concludes that conflict exists between career women's work and home chore demands. It therefore recommended that career women should find a way to balance the conflict between work demand and home chores.

Keywords: Work-family conflict, Career women, Home chores demand

INTRODUCTION

Work-family conflict generally refers to the extent to which work and family-related responsibilities interfere with each other and is typically defined as "a type of inter-role conflict that occurs as a result of incompatible role pressures from the work and family domains" (Greenhaus & Beutell, 1985). According to Frone, Yardley, & Markel (1997), work-family conflict is posited to be bidirectional, such that work can interfere with family (work-to-family conflict) and family can interfere with work (family-to-work conflict), and evidence suggests that work-to-family and family-to-work conflict are distinct but reciprocally related (Byron, 2005; Mesmer-Magnus and Viswesvaran, 2005).

Women's participation in the workforce has been increasing all around the world (Adler and Izraeli, 1994) and has led to changes in the roles of women and men in society. According to the Expansionist Theory (Barnett and Hyde, 2001), gender-roles are expanding: women are more active in professional work life, whereas men are more active in family life. As the consequence of this trend, maintaining a balance between work and family responsibilities has become a challenge for working class. The problem of work-family conflict has been extensively

reported in literature, and has been dominated by research conducted mainly on white-collar managerial and non-managerial employees working in private sector organisations (Eby *et al.*, 2002).

Women are expected traditionally to be homemakers to take care of their husbands, children and other members of the family within the confines of the household while the men are expected to be the breadwinners of the family; they are required to make adequate provisions for their family. Women are more likely than men to be engaged with household chores, to be self-employed or to work in small unregulated businesses, and are less likely to be members of trade unions. However, with economic downturns and social exigencies women are assuming new roles as mothers as well as an employee in the world of work. In some cases, women are the head of the households as single parent. Women's contribution to the household economy is greatest among female heads of household, and their proportion has increased since the 1970's (Valls *et al.* nd). These new roles of women come with responsibilities of being employees and taking care of the household chores. It also involves alternating their time and schedule between their work schedule and domestic chores. Much of the recent expansion of the female paid

labour force has taken place among married women with children, who fit their hours around their children's needs and their domestic responsibilities, often leaving little time for themselves (Morris, 1990; UN, 1991).

This scenario can be understood with a woman coming home after long hours at work and next port of call is the kitchen. Data from the African and Asian regions indicate that on average, women work at least 12 hours longer each week than men (UN, 1991). This involves a lot of stress and health implications/hazards to women's well-being. The conditions under which women perform their domestic work, and the relations of dependency and inequality that often underline it, can all limit women's potential for positive mental and physical health. Women may also be responsible for the production of food and other item to meet their family's needs, as well as carrying out a variety of economic activities to earn extra income. Even when they take on paid work, most women retain responsibility for domestic labour (Valls *et al.* nd).

The challenges of marrying work and family life are part of everyday reality for the majority of Nigerian working families. Although, these are dependent on income, occupation, stage in life, they also cut across all socioeconomic levels and are felt directly by both women and men.

Work-family balance is an important issue particularly in a society characterised with conflicting roles and obligations for women like Nigeria. Hence, women engaging in traditionally "male" fields (academics) often find it difficult to integrate harmoniously work and family duties (Aluko, 2009). Generally, in Nigeria the issues enumerated above are further compounded by the cultural values and societal expectations of men and women. Work relations are often governed by patriarchal systems of socialisation and cultural practices (Mordi, *et al.*, 2010).

As result of the trend above the following research questions were generated;

1. What are the personal characteristics of the respondents?
2. What are the conflicts that arise from the work-family conflict among the respondents?
3. What are the work/home chore demands experienced by the respondents?

4. What are the coping strategies adopted to reduce the stressors?

METHODOLOGY

The study was carried out in two federal higher institutions in Ogun state, Nigeria namely Federal College of Education Abeokuta and Federal University of Agriculture, Abeokuta. Ogun state has one of the highest concentrations of higher institutions in Nigeria. It also has its fair share of public institutions, parastals and establishments. The state is noted for Agricultural activities. Simple random techniques was used to select 28 women staff and 24 women staff at FCE and FUNAAB, respectively making a total of 52 respondents.

A structured questionnaire was used to elicit information on on respondents' personal characteristics, conflicts that arise from the work-family conflict, work/home chore demands experienced by the respondents and coping strategies adopted to reduce the stressors after it was content and faced validated by professionals. Also a reliability test was conducted using ten respondents from Tai Solarin College of Education, Omu-Ijebu, Ogun State that were not included in the study sample. Work-family conflict was measured using with a 16-item scale using a Likert type scale of strongly agree (5), agree (4), slightly agree (3), disagree (2) and strongly disagree (1). Data were analyzed using frequency counts, percentages, means and one sample t-test

RESULTS AND DISCUSSION

Personal characteristics of the respondents

The socioeconomic characteristics of the respondents are presented in Table 1. Findings reveal that respondents' age was 47.0 ± 7.66 years. Most of the respondents (37.7%) belonged to the age range of between 41 and 50 years while 34.0% were in the age range of 30 and 40 years. Tenure of the respondents were 9 ± 5.91 years.

Majority of the respondents (73.6%) had spent less than or up to 10 years in the employment of their organisations. This shows that most of them are in the junior cadre in their respective organisations and they are likely to experience the pressure of work-family conflict and career women home chores demand. As regards education status of the respondents, 26.4% were NCE/OND holders, which is equally buttressed by the inference on the tenure above. Majority (94.3%) of the respondents were married. Most of the respondents (64.2%) had 4-6

persons in their households. The mean income of the respondents was ₦68, 644, while the range shows

that majority (64.2%) earned less than or up to ₦50,000 per month.

Table 1: Distribution of respondents by their personal characteristics

Variables	Frequency	Percentage	Mean
Age (Years)			
Less than 30	10	18.9	41.0±7.66
31-40	18	34.0	
41-50	20	37.7	
51 and above	5	9.4	
Tenure			
Less than or equal 10years	39	73.6	9±5.91 years
11-20 years	13	24.5	
21 years	1	1.9	
Education Status			
SSEC	3	5.7	₦68, 644
GRADE 11	2	3.8	
NCE/OND	14	26.4	
HND	13	24.5	
BSc	12	22.6	
Post Graduate Diploma	2	3.8	
M.Sc	3	5.7	
M.Phil	2	3.8	
PhD	2	3.8	
Marital Status			
Married	50	94.3	4±1.49 persons
Widowed	2	3.8	
Separated	1	1.9	
Household Size (person)			
Less than or equal to 3	15	28.3	₦68, 644
4-6	34	64.2	
7 and Above	4	7.5	
Income (₦)			
Less than or equal to 50,000	34	64.2	₦68, 644
51,000-100,000	12	22.6	
101,000-150,000	6	11.3	
Above 150,000	1	1.9	
Do you stay with your spouse			
Yes	47	88.7	₦68, 644
Do you have a house maid			
Yes	7	13.2	₦68, 644
No	46	86.8	

The implications of the socioeconomic trend above is that challenges of managing work and family life are part of everyday reality for the majority of Nigerian working families and are linked with income, occupation, stage in life, and cut across all socioeconomic levels, felt directly by both women and men.

Work-family conflict of respondents

The work-family conflict of the respondents is presented in Table 2. Findings reveal that the

respondents’ lack of sufficient time to undertake home chores after work (mean = 3.06) ranked first among the work-family conflicts. Work was also reported to prevent the respondents from spending sufficient time with family and friends (mean = 3.04), and does not allow the respondents to feel relaxed (mean = 2.96). The implications of these findings are that work does not give them sufficient time to spend with their family and friends, prevents them from relaxing and doing home chores. These may be as a result of pressure emanating from meeting with

demands of nature of work environment; in this case academic environment. This corroborates the view of Finkel and Olswang (1996) that there are several characteristic aspects of employment in academia that impact on work and family roles. For instance, academics facing review for promotion are expected to demonstrate high levels of competence in cutting edge research and publishing the outcomes in high

impact factor journals A lot of time is spent in this aspect coupled with the multitude of job responsibilities that must be managed on a daily basis which range from being a teacher, adviser, editor, consultant to being a committee member etc. Such multiple responsibilities that do not overlap create a sense of dissonance (Holton and Sonnet, 1996).

Table 2: Work-family conflict

Work-Family Conflict	SA	A	S	D	SD	Mean
My work prevents me from spending sufficient quality time with my family	11(20.8)	7 (13.2)	10(18.9)	16 (30.2)	8 (15.1)	2.94
There is no time left at the end of the day to do the things I'd like at home	11(20.8)	9 (17.0)	9 (17.0)	18 (34.0)	5 (9.4)	3.06
My work takes up time that I'd like to spend with my family/friends	9 (17.0)	11(20.8)	11(20.8)	15 (28.3)	6 (11.3)	3.04
I am often distracted by thoughts about work while spending time with my family	7 (13.2)	5 (9.4)	8 (15.1)	20 (37.7)	13 (24.5)	2.49
My work demands often interferes with my responsibilities at home	7 (13.2)	5 (9.4)	9 (17.0)	25 (47.2)	7 (13.2)	2.62
My work obligations make it difficult for me to feel relaxed at home	11 (2.8)	9 (17.0)	7 (13.2)	19 (35.8)	7 (13.2)	2.96
I work so hard that I do not have the energy to engage in leisure activities with my family/friends	6 (11.3)	5 (9.4)	13(24.5)	21 (39.6)	8 (15.1)	2.62
I often complete work tasks outside of work hours	8 (15.1)	7 (13.2)	12(22.6)	21 (39.6)	5 (9.4)	2.85
My family misses out because of my work commitments	6 (11.3)	7 (13.2)	7 (13.2)	22 (41.5)	10 (18.9)	2.56
My work performance suffers because of my personal and family commitment	8 (15.1)	3 (5.7)	9 (17.0)	21 (39.6)	12 (22.6)	2.51
When work and family commitments clash I usually fulfil work commitments first	6 (11.3)	12(22.6)	17(32.1)	9 (17.0)	8 (15.1)	2.98
At the end of the day I am too tired to enjoy spending time with my family	7 (13.2)	3 (5.7)	11(20.8)	25 (47.2)	5 (9.4)	2.65
I often arrive at work late or in bad mood because of something that has happened at home	5 (9.4)	3 (5.7)	7 (13.2)	16 (30.2)	21 (39.6)	2.13
My family commitments stop me from spending as much time at work as I would like	5 (9.4)	6 (11.3)	8 (15.1)	15 (28.3)	18 (34.0)	2.33
My family has a negative impact on my day to day work duties	3 (5.7)	5 (9.4)	4 (7.5)	15 (28.3)	22 (41.5)	2.02
If I could relax more at home I wouldn't be as stressed and irritable at work	10(18.9)	11(20.8)	9 (17.0)	11 (20.8)	10 (18.9)	3.00

Work demand

The home chores demand of the respondents is presented in Table 3. Findings reveal that the

strenuous nature of daily workload ranked first among the home chores demand of the respondents with a mean value of 3.46. This is followed by the respondents' responsibility for family upkeep (mean

= 2.85). Others included the fact that the respondents had no choice but to continue with daily workload (mean = 2.79) and tiredness after the day’s activities (mean = 2.69).

Table 3: Work demand

Home Chores Demand	SA	A	S	D	SD	Mean	S.D
The daily workload is too strenuous most of the time	13 (24.5)	14(26.4)	9 (17.0)	11(20.8)	3 (5.7)	3.46	1.26
I am always late to the office because the household chores consume lot of time	5 (9.4)	7 (13.2)	7 (13.2)	17(32.1)	15(28.30)	2.41	1.31
My partner does not assist with the household chores	2 (3.8)	9 (17.0)	12(22.6)	17(32.1)	12 (22.6)	2.46	1.14
I am saddled with a lot of responsibility at my workplace	4 (7.5)	9 (17.0)	10(18.9)	19(35.8)	9 (17.0)	2.61	1.20
I have back pain and other health issues as a result of daily workload	5 (9.4)	6 (11.3)	13(24.5)	18(34.0)	10(18.9)	2.58	1.21
I find it very difficult to concentrate at workplace as a result of the daily home chores activities	3 (5.7)	3 (5.7)	8 (15.1)	21(39.6)	16(30.2)	2.14	1.11
My boss always complain on my work output	3 (5.7)	3 (5.7)	4 (7.5)	22(41.5)	19(35.8)	2.00	1.11
I feel I should leave my work for the home chores activities because I cannot cope.	2 (3.8)	4 (7.5)	6 (11.3)	15(28.3)	24(45.3)	1.92	1.12
I have no choice, I must continue with the daily workload.	5 (9.4)	15(28.3)	6 (11.3)	16(30.2)	10(18.9)	2.79	1.31
I am responsible for the upkeep of my family.	7 (13.2)	11(20.8)	12(22.6)	11(20.8)	11(20.8)	2.85	1.34
I am always tired at the end of the day activities.	7 (13.2)	6 (11.3)	13(24.5)	14(26.4)	11(20.8)	2.69	1.31

Coping strategies adopted by respondents to reduce the stressors

To minimize the stressors of work -family conflict, the respondents adopted some coping strategies. Table 4 reveals that the most frequently used coping strategies are planning ahead of daily tasks and workloads (mean = 2.78), giving priority to most important tasks and workloads (mean = 2.64), putting extra efforts on the home chores to be in tandem with their job design (mean = 2.56) and showing more affection to partners in order to give helping hands (mean = 2.39).

This implies that various coping strategies are employed to ameliorate work-family conflict and major one being planning ahead of daily tasks and workloads, with these strategies in place, the effect of stress received from work may not be significantly felt on family and home activities. For instance, with the findings of Arisi-Nwugbala (2016) and Adesinaola (2012) that spouses should concede greater support (involvement) in women ‘domestic obligation as well as emotional support from the husband is a crucial factor for marital conflict and peace. Husband-wife relationship that is devoid of husband emotional supports attracts conflict, stress and could disintegrate the entire family.

Table 4: Coping strategies

Coping Strategies	Often	Rarely	Never	Mean	S.D
I plan my time ahead against any tasks/workloads	42 (79.2)	7 (13.2)	2 (3.8)	2.78	0.50
I give priority to the most important tasks/workloads	34 (64.2)	14 (26.4)	2 (3.8)	2.64	0.56
I encourage my partners to assist me	24 (45.3)	19 (35.8)	7 (13.2)	2.37	0.74
I employ the services of housemaid to assist me	11 (20.8)	8 (15.1)	31 (58.5)	1.60	0.83
I put extra efforts on the home chores to be in tandem with my job design	31 (58.5)	13 (24.5)	5 (9.4)	2.56	0.70
I show more affection to my partner in order to give helping	26 (49.1)	16 (30.2)	7 (13.2)	2.39	0.73

Coping Strategies	Often	Rarely	Never	Mean	S.D
hand I encourage my older children to be involved in the unpaid activities.	19 (35.8)	20 (37.7)	11 (20.8)	2.16	0.76

Difference of work-family conflict between career women at FCE and FUNAAB

Table 5 shows a significant difference in the work-family conflict experienced between the career

women at FCE and FUNAAB ($t = 8.913, p < 0.01$). This implies that what contribute to the work-family conflict experienced by the career women in FUNAAB is quite different from that of their counterparts in FCE.

Table 5: Test of significant difference of work-family conflict between career women at FCE and FUNAAB

Variable	N	Mean	Std. Deviation	Std Error	T	Sig.	Decision
FCE	28	35.50	8.913	1.684	25.23	0.00	Significant
FUNAAB	24	42.63	12.789				

Test of difference of work/home chore demand between career women at FCE and FUNAAB

Table 6 reveals that there was a significant difference between the work/home chore demand of career

women at FCE and FUNAAB ($t = 7.835, p < 0.01$). This means that FUNAAB career women and their counterparts in FCE had different involvement with regard to work/home chore demand.

Table 6: Test of significant difference of work/home chore demand between career women at FCE and FUNAAB

Variable	N	Mean	Std. Deviation	Std Error	T	Sig.	Decision
FCE	28	30.75	7.835	1.481	20.76	0.00	Significant
FUNAAB	24	42.63	6.630				

CONCLUSIONS AND RECOMMENDATIONS

The study concludes that conflict exists between career women's work and home chore demands. It therefore recommended that career women should find a way to balance the conflict between work demand and home chores.

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Constraints to palm oil processing among farm families in selected farm settlements of Osun State

¹Adelakun, O. J., ²Soyebo, K. O. and ¹Lawal, B. O.

¹South West Farming Systems Research and Extension Programme, Institute of Agricultural Research and Training, Moor Plantation, Ibadan, Oyo State, Nigeria

²Department of Family, Nutrition and Consumer Sciences, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria

Corresponding author: E-mail: adelakunolubunmi@yahoo.com, 08061613227

ABSTRACT

The study investigated constraints to palm oil processing among farm families in selected farm settlements of Osun State. Data were obtained from 150 respondents using interview schedule but only 130 were suitable for analysis. The data were analysed using descriptive and inferential statistics. Majority of the respondents were females (75.4%), married (83.1%) and engaged in part time farming activities (70.0%). More than half (58.5%) had between 11 and 20 years of farming experience while 62.0% earned between ₦101, 000 and ₦200, 000 per /season. All the farmers were involved in oil palm cultivation. Most of the farmers (100%) sourced labour and processing materials from open market, Agricultural Development Programme. Majority of the processors (96.2%) adopted manual operated milling machine as method of palm oil processing. The study recommends the need for adequate extension service to farmers and creation of enabling environment for easy access to credit to procure necessary processing equipment.

Keywords: Palm oil processing, Farm settlements, Extension service, farm families.

INTRODUCTION

Palm oil is a resource capable of satisfying human needs; it is a commodity that farm families have or can process to reach their goals or add values to their lives. Palm oil is an extraction from oil palm. Oil palm (*Elaeis guineensis*) is an ancient tropical tree plant from the West African tropical rain forest region. It is still being cultivated here and across the tropics. Oil palm is a versatile tree crop in the tropics with almost all parts of the tree being useful and of economic value (FAO, 2012). The principal product of oil palm is the palm fruit, which is processed to obtain four major commercial products. These include palm oil, palm kernel oil, palm kernel cake, and biofuel. The extraction of palm oil and kernels can be done by employing non-mechanical traditional method and mechanised/automated method.

Processing oil palm fruits for edible oil has been practiced in Africa for thousands of years, and the oil produced, highly coloured and flavoured, is an essential ingredient in much of the traditional West African cuisine. Until 1934, Nigeria had been the world's largest producer. Both small and large scale producers participated in the industry, but as of 2011, Nigeria was the third largest producer, with approximately 2.3 million hectares (5.7×10^6 acres) under cultivation (Ayodele, T. 2011). The traditional

processing is simple, but tedious and inefficient (FAO, 2012). Palm oil is rich in carotenoids, (pigments found in plants and animals) from which it derives its deep red colour, and the major component of its glycerides is the saturated fatty acid palmitic acid; hence it is a viscous semi-solid, even at tropical ambience, and a solid fat in temperate climates (FAO, 2012). Palm oil can be graded into three major categories based on the quantity of free fatty acids (FFA) present in the oil, the three major grades are soft oil which has low free fatty acid, hard oil which has high free fatty acid and special oil which has very low free fatty acid (Iwena, 2012). Worldwide palm oil is used for soap making, metal plating, tin-plating, in cuisine and biofuel. Although palm oil is applied to wounds for its supposed antimicrobial effects, research does not confirm its effectiveness Ekwenye, and Ijeoma, (2005).

Production of palm oil generates employment opportunities, social services and alleviate poverty, Norwana, and Kunjappan (2011); (Ismail, 2012). The organic waste matter that is produced when processing oil palm, including oil palm shells and oil palm fruit bunches can also be used to produce energy. This waste material can be converted into pellets that can be used as a biofuel (Choong, 2012).

For many decades prior to post-colonial era, civil war and discovery of oil, Nigeria was a leading producer and exporter of oil palm. Soyebó, Farinde, and Dionco-Adetayo, (2005). However there has been a noticeable decline in Nigeria's oil palm production. Meanwhile, Nigeria is trying and executing ways to reclaim his leading possession as the world's largest producer of oil palm that it has lost to Malaysia and Indonesia. Effort has been made by government to establish farm settlements with mandate of producing palm oil on a large scale. Though over the years, an appreciable impact of these efforts is being noticed from government, for example, creation of nine (9) farm settlements in Osun State. Farm settlements are agricultural research and extension service centres that were set up in most part of the country in the 1960s to boost food production on large scale, enhance food security and improve livelihood of rural farmers. There are however constraints to palm oil (a product of oil palm) production that need to be reduced to minimal or eliminated for production, sustainability of palm oil on a large scale and for achieving the aims and objectives of establishing farm settlements in the study area.

Hence, this study aimed at ascertain the constraints to palm oil processing in the selected farm settlements of Osun State, Nigeria. The specific objectives were to:

- i. Investigate the sources of inputs by processors,
- ii. Identify the various methods of palm oil processing used by respondents, quantity of palm oil produced, and times of extension visitation and
- iii. Ascertain the relationship between constraints experienced by palm oil processors and selected socio economic characteristics of the processors in the study area.

It was also hypothesized that there is no significant relationship between the socioeconomic characteristics of palm oil processors and the constraints to palm oil processing.

METHODOLOGY

Study area

The study was carried out in selected farm settlements of Osun State. Osun State has nine farm settlements which are: Ago-Owu, Mokore, Esa-Oke, Iwo, Oyere, Ila-Orangun, Igbaye, Orolu and Olupona. Climatically, Osun State lies within the tropics and has two distinct seasons, the dry and rainy seasons:

The rainy season begins in mid-march to October, and dry season is within November to mid-march. The rainfall pattern is bi-modal, with peaks in June/July and September. Atmospheric temperature varies from 22⁰C to around 35⁰C; the hottest period of the year commonly is February, while the coldest is usually June/July along with the short period of harmattan, commonly in December. The prevailing wind direction is south-westerly; relative humidity is commonly high throughout the year with an average of 76% Relative Humidity during the rainy season and slightly lower during the dry season.

Study design

The study design is exploratory and population of the study comprises of all registered and non-registered oil palm processors in all the selected farm settlements. A two-stage sampling method was used to select sample for the study. The first stage comprised of random selection of three (3) farm settlements from the nine farm settlements in the state. The second stage comprised of random selection of 50 producers from each of the selected farm settlements giving a total of 150 producers for the study.

The data instrument used was interview schedule on socioeconomic characteristics of palm oil processors, where processors source for inputs, labour, and information, extension visitation, quantity of palm oil produced and the constraints faced by respondents on palm oil production in the study area.

However, of the 150 copies of interview schedule that were administered, only 130 questionnaires which represent about 86.7% response rate were suitable for analysis. Interview schedule with close ended questions were used to obtain information from respondents. Information were obtained on the socioeconomic characteristics of the respondents, sources of information on farm inputs, methods of processing palm oil, extension agents visitation, quantity of palm oil produced and constraints experienced in palm oil production.

Measurement of variables

Constraints to palm oil production is the dependent variable and were measured by requesting processors to respond to a list of constraints according to their level of severity on a 4-point scale. Scores of 4 (very severe), 3 (severe), 2 (less severe), and 1(not severe) were allotted.

Quantity of palm oil produced is independent variable and this was measured by requesting farmers

to indicate the quantity of palm oil produced which were later converted to litres (20litres represent 1keg). The other selected independent variables are age, sex, years of schooling, number of children, farming experience (years), size of farmland (acres) mainly for oil palm plantation, sources of processing inputs, number of times extension agent(s) visited the study area (weekly, fortnightly, monthly or yearly) and Income/season.

Data collected were analysed with the use of simple descriptive statistics such as frequency counts, means, standard deviation and percentages. Pearson moment correlation was used to determine the significance of the relationship between the dependent and the selected independent variables.

RESULTS AND DISCUSSION

Socioeconomic characteristics of the respondents

Table 1 shows that most farmers (98.4 %) were between 31 and 60 years of age while 0.8% of the respondents was above 61 years old, this is in agreement with findings of Soyebó, Farinde, and Dionco-Adetayo, (2005), that observed that majority of farmers are in their active age (31-60). This implies that farmers between the ages of 31 and 60 years were more engaged in farming, than farmers of

the rest age groups. Seventy-five percent of the respondents were women while men constituted approximately 25 % of the sample. This disagrees with other findings that established that men are the major stakeholder in palm oil production Onoh, Peter Onoh C.A. (2012). This shows that more women were involved in palm oil production than men (especially in the area of processing). Table 1 further shows that 58.5 % had between 11 and 20 years of farming experience while 21.3% had between 21 and 30 years of farming experience. Only 1.6 % had between 31 and 40 years of farming experience, although farming experience goes along with age, but agriculture especially in the area of palm oil production needs youth's involvement because it is energy driven sector. Results also show that 60.2% of the farmers earned income of between ₦101, 000 and ₦200, 000 per season from palm oil production, 33.4% of the farmers had income of up to ₦100, 000 per season, while 1.6% earned between ₦300, 000 and N400, 000 from palm oil production per season. These trends show that income has a great positive influence on palm oil production, probably because of the yield and net margin, which improve the livelihood of farmers, increase productivity, regenerate national economy, sustain it and also prompt other stakeholders to invest in palm oil production.

Table 1: Distribution of respondents according to demographic characteristics

Age (Years)	Percentages
Up to 30	0.8
31-40	16.9
41-50	60.8
51-60	20.8
>60	0.8
Sex	
Male	24.6
Female	75.4
Farming experience	
≤10	18.6
11-20	58.5
21-30	21.3
31-40	1.6
Years of schooling)	
0-6	57.7
7-12	35.4
13-18	6.9
Income	
≤100,000	33.4
101,000-200,000	60.2
201,000-300,000	4.8
301,000-400,000	1.6
Farm size (Acres)	
≤5	36.1

Age (Years)	Percentages
6-10	10
11-15	19.9
16-20	16.9
≥21	17.1
Extension agent visitation	
Weekly	0
Monthly	0
Fortnightly	27.7
Yearly	72.3

*Source: Field survey, 2014

Majority (36.1%) of the respondents had up to five acres of oil palm plantation while 20% had between 11 and 15 acres of plantation. Only 10% had between 6 and 10 acres of plantation. This further confirmed that size of land is one of the limitations of palm oil production by farmers in the study area and this is in agreement with Onoh and Peter Onoh (2012), that ascertained that it is a common knowledge that oil palm production requires large expanse of land for a profitable production, it also confirms the research done by Enwelu, Nwanegbo, Onoh Peter and Ifejika (2013), which opines that land tenure system and current land policy hinder increase of oil palm/palm oil production and this may have a negative effect on the quantity of palm oil being produced by processors.

Also, about 73% of the respondents indicated that extension agents visited them yearly while 27% indicated fortnightly visitation by extension agents. The implication of this is that, lack of frequent extension contact could have negative effect on the productive capacity of processors. Olagunju,

Table 2: Sources of inputs

Source of inputs*	Type of Input	Percentage
Open market	Hired labour, processing materials	100
ADP	Seedlings, Digester	80.0
Household	Labour	77.7
Produce merchant	Seeds	57.7
Other Processors	Labour	33.1

*Multiple responses

Source: Field survey, 2014

Method of processing oil palm fruits and quantity of palm oil produced

The data in Table 3 show that 96.2 percent of the farmers made use of manual milling machine (digester), while 3.8 percent made use of traditional methods which involved pounding of palm fruits as a way of releasing the palm oil from the fruits and so on. None of the respondents made use of

Oguniyi, Babatunde, Fakayode, and Dekunle (2013), established that extension service has contributory effects on the production capacity of processors. None of the respondents was involved in active cooperative society.

Sources of inputs

Results in Table 2 show that all (100%) respondents sourced hired labour and processing materials (baskets, tarpaulin, broom, drum and firewood) from open market while 80.0% sourced seedlings and digester from Agricultural Development Programme. About 78% sourced labour from family/household members. Also, 57.7% of the respondents sourced seeds from produce merchant who are sale representatives in the settlement. Only 33.1% of the respondents indicated that they obtained labour from other processors and 21.5% got theirs from the open market. This shows that majority of the respondents sourced processing inputs from the open market. They only rely on the ADP for seeds and digester machine.

mechanized/automated machine. This is probably because most farmers in the settlement could not afford it and did not have access to it, as a result of lack of funds and government support. Automated machine however reduces stress and drudgery, eliminates wastages of resources (both material and non-material) associated with palm oil processing. This is because the machine has all the unit of operations for processing palm oil fruits from

sterilization of the palm oil fruits to the purification of the palm oil extracted. The findings is in consonance with previous studies by Unamma, Onwudike, Uwaegbute, Edoaga and Nwosu (2004), which show that majority of processors still make use the laborious, time consuming and unhygienic method of palm oil processing and this makes production inefficient and tedious especially for women. More than one third (42.3%) of respondents produced between 20 and 29 litres of palm oil in a season, while 24.6% produced between 30 and 39 litres of palm oil. Only 4.6% of respondents produced more than 49 litres of palm oil. The low quantity of palm oil produced by respondents is a reflection of their low access to quality information, extension agents, improved processing materials and non-access to mechanised processing methods.

Table 3: Distribution of respondents according to processing methods adopted

Processing methods	Percentage
Manual operated	96.2
Traditional method	3.8
Mechanised/Automated	0.0
Quantity of palm oil produced	
0-9	3.1
10-19	21.5
20-29	42.3
30-39	24.6
40-49	3.8
>49	4.6

*Source: Field survey, 2014

Constraints mean ranking

Table 4: Distribution of respondents according to the constraints faced in palm oil production

Constraints	Mean	Standard deviation	Rank
Lack of funds	1.83	1.2	5
Climatic condition	1.33	0.9	7
Inadequate information	2.14	1.2	2
Non-access to modern equipment	1.31	0.8	8
Lack of improved processing materials	2.07	1.1	3
Marketing (middle men)	1.93	1.2	4
Problem of land	1.01	0.1	9
Low extension visitation	3.51	0.6	1
Adulterated seedlings	1.70	1.1	6

*Multiple responses *Field survey, 2014

CONCLUSIONS AND RECOMMENDATIONS

It was established in this study that the majority of the palm oil processors are females and all fall into the active age group, and this implies that women has the great significance in palm oil production, the

Table 4 shows the mean ranking of constraints faced in palm oil production. Low extension visitation (3.51), Inadequate information (2.14), lack of improved processing materials (2.07), marketing (1.93), lack of fund (1.84) were the major production constraints being faced in palm oil production. The constraints have a chain link to each other and the effect of these constraints would be low quantity of palm oil production, consequently the farmers would generate revenue that may be less than the cost of labour. Low extension visitation leads to lack of information which also links to lack of improved processing materials and so on. Extension services have positive effects in reducing poverty status of rural palm oil processors. Its positivity denotes that the higher the number of extension visitations/ contacts with processors, the more productive the processor are and this is not far-fetched from the fact that the more the advice, information, and knowledge received and gained by processors through extension agent the higher the productivity and increase in betterment of processors ways of living. Extension services bridge the gap between output attainable with existing technologies and those actually realized by the farmers at large. The inadequate land can be connected with the land tenure system of tenancy right through leasing and rent which hinder production expansion and that of inheritance which leads to fragmentation of holding. The problem of lack of fund was also as a result of lack of access to credit facilities. Respondents relied mainly on personal savings which was too meagre to effectively finance the business and without credit facilities, the palm oil business may not expand.

major constraints to palm oil production are low extension visitation, inadequate information, lack of mechanised/automated processing equipment, marketing (middle men problems) and lack of funds which have chain link to each other. Based on the findings, the following recommendations were made:

Government and all stakeholders involved in agriculture should work out the talks on agriculture and provide proper financial motivation of extension workers and the farm settlements, improve efficiency in palm oil processing and capacity to use the most modern processing techniques, all these will combine to boost production, regenerate, enhance and sustain the nation's economy. Respondents in the study area should come together to form cooperatives to enable them access and share useful information. Such associations will also help them pool resources that will enhance acquisition of mechanised processing equipment and farmlands for increase in quantity of palm oil produced and its better efficiency. Financial institutions should make funds available to palm oil processors, this will enable them to procure modern palm oil milling equipment, the cost of the processing equipment should also be subsidized by the government. Training workshops should be organised by relevant stakeholders for processors on best practices and management (storage inclusive) of palm oil to boost the production capacity of processors in the farm settlements.

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Perception of climate change effects on forest-dependent rural livelihoods in Ondo State, Nigeria

Azeez, I. O., S. O. Jimoh and A. B. Adeniyi

Department of Forest Resources Management, University of Ibadan, Nigeria

E-mail address: ismail.azeez@mail.ui.edu.ng

ABSTRACT

Rural population is the highest in developing countries with pathetic living condition and lack of resources to cope with ecological perturbations apart from not having social opportunities to cushion the impacts of extreme events. This paper reports the impacts of climate change on the livelihoods of forest dependent rural populations in Ondo State, a forest rich southwestern part of Nigeria, with the view to identifying possible adaptation strategies. Stratified multistage simple random sampling was used in selecting respondents for the study. The state was stratified into Local Government Areas (LGAs) and Four (4). Odigbo, Akure North, Owo and Idanre were randomly selected. In each of the LGAs selected, one forest reserve each (Oluwa, Ala, Owo and Idanre, respectively) was selected. Three rural communities surrounding each of the forest reserve were then selected as study site while 30 households were randomly selected for interview. Primary data were collected from the selected households in the selected communities using a set of structured and open-ended questionnaire. Data were analysed using descriptive and inferential statistics at $\alpha_{0.05}$. Generally, more (62.2%) respondents noticed changes in rainfall pattern, which led to flooding in 2014, while 37.2% noticed increase temperature, which led to the drought of 2007. On availability of forest resources, majority (78.6%) of the respondents noticed changes in the availability of *Mansonia*, while 12.0%, 8.0%, 5.5% and 4.7% attested to changes in the availability of *Terminalia superba*, *Gmelina*, *Tectona grandis* (Teak) and *Obeche*, respectively. Similarly, 78.0% of the respondents noticed changes in availability of firewood, while changes in the availability of seeds, fruits and mushrooms were attested to by 15.0%, 4.7%, and 1.4% of the respondents, respectively. Identified impacts of climate change by the respondents included among others reduction in agricultural production, flooding, increased livestock death and shortage of food. Suggested mechanisms for coping with climate change adversities included changing of the planting date, practice of agroforestry, planting of trees and early harvesting regime. Climate change was found to impact agricultural and rural land use in the study area. Therefore, the adoption of agroforestry practices as rural land use is recommended in Ondo State as an adaptation measure against climate change.

Keywords: Climate change impact, Forest-based livelihood, Rural income, Adaptation to climate change

INTRODUCTION

Climate change is used to describe a systematic change in the key dimensions of climate –including average temperature, wind and rainfall patterns over a longer period of time (Paavola, 2008). Climate can change over a period of time ranging from months to thousands or millions of years, however, the classical time period was put at 30 years by Paavola (2008). Climate change was observed by Chomitz *et. al.* (2006) as an important threat to global environmental, social and economic activities. The Intergovernmental Panel on Climate Change (IPCC, 2007a) considered climate change to be one of the major threats to sustainable development because of its effects on health, infrastructure, agriculture and food security, and forest ecosystem. Parmesan and Yohe (2003), Parmesan (2007) and Somorin (2010) reposed climate change has having significant impacts on the forests provision of vital ecosystem services and on the well-being of people living in

forest areas. About 60 million local communities around the globe are estimated to depend on forests (World Bank, 2008).

Livelihoods are the sum of ways in which people make a living. In most communities in low- income countries, poor families balance a set of food and income earning activities using forest products (Carney, 1998). Thus, rural poor people tend to suffer more than others when extreme events like floods, tropical storms and land slides occur. This happens for three reasons: first, the rural poor live in areas and shelters that are more susceptible to these extreme events; second, they do not have the resources to cope with these events; and third, the poor in developing countries cannot depend on social opportunities like safety nets to cushion the impacts of extreme events (Sen, 1999).

Therefore, the forest is vital to man's existence because of the many ecological and economic

functions it performs. It assists in the global cycling of water, oxygen, carbon and nitrogen and lend stability to hydrological system. It ensures a regular supply of fresh water, prevents flood, soil erosion and siltation of river beds down stream. It also assists in improving air quality, stabilizes global climate condition and protects the soil (Sharma *et al.* 1992). It supplies many products in form of wood (basic material for construction, furniture, paper etc.) and non wood items (extractions, bark, dye, fibre, gum, incense, latexes, oils, resins, waxes, shellac, tanning compounds), food, bush meat, flowers, fruits, honey, nuts, leaves, seeds, spices etc. as well as decorative, ceremonial and medicinal items.

The forest plays vital roles as raw material provider for furniture, paper, food and health industries (Sharma *et al.* 1992). According to the World Bank (2001) globally more than 1.6 billion people depend on forest for their livelihoods at varying degrees. About 60 million indigenous people are almost wholly dependent on forest. Some 350 million people who live within or adjacent to dense forests depend on them to a higher degree for subsistence and income. Many rural communities in Africa depend on medicinal plants from the forest for their primary health care delivery.

Understanding the impacts of climate change on forest-dependent rural livelihood will inform sustainable forest management planning. There is need to understand climate change impacts and the implications on forest dependent rural livelihoods. This paper aims at investigating the impacts of climate change on livelihoods of the respondents with the view to identifying possible adaptation strategies.

METHODOLOGY

Study area

This study were carried out in Ondo State, Nigeria. The State is located in southwestern part and lies within latitude 7°18'N and longitude 5°02'E. It covers an area of over 15,595 square kilometers. The climate of the state is tropical with two distinct seasons viz: the dry and rainy seasons. The rainy season commences in March and ends in October with a peak in July/ August while the dry season occurs between October and March. Up to 2000mm of rainfall may be experienced in the coastal areas of the south, which diminishing to 1500mm in the hinterland. The temperature varies from 21°C to 29°C throughout the year with an average value of 25°C. The State has 17 Forest Reserves covering over 3,07566km² stratified into: 2,834.68 high forests,

194.76Km² savannah and 46.22Km² mangrove/fresh water swamp.

Sampling procedure

Stratified, multistage random sampling procedure was used for this study. Ondo State was stratified into Local Government Areas (LGAs). Four LGAs were first randomly selected viz: Odigbo, Akure North, Owo and Idanre. In each of the LGAs, one Forest Reserve was then selected for this study. In Odigbo LGA, Oluwa Forest Reserve was selected. In Akure North, Ala Forest Reserve was selected. In Owo LGA, Owo Forest Reserve was selected while Idanre, Forest Reserve was selected in Idanre LGA. From each Forest Reserve, three rural communities surrounding the Forest Reserve were randomly selected for the study, thus, twelve communities were used for this study from which thirty households each were randomly selected. Finally, thirty (30) respondents were randomly selected for interviews from the selected households in each community. Ninety respondents' were randomly selected for sampling in each LGA making a total of three hundred and sixty (360) respondents.

Primary data were collected from the households in the rural community in the study locations using socioeconomic survey. This was done through personal interviews guided by a set of structured questionnaire for each respondent. Also, a 7 man Focus Group Discussions (FGD) involving opinion leaders was held in each community to further collect relevant qualitative information on the subject matter. The socioeconomic data generated were subjected to descriptive statistical analysis.

RESULTS AND DISCUSSION

Awareness of respondents about climate change

The study (Table 1) found that found that more of the respondents identified with flood (62.2%) compared to drought (37.2%) as offshoots of climate change in the study area. However, flood was perceived to be more noticed in Idanre (74.4%) than in any other sites while Akure North was perceived to be the most hit by drought (45.6%) compared to other parts of the study area. On the sources awareness about the climate change phenomenon, majority of the respondents' was informed about climate change through radio (Fig. 1). Adekunle *et al.* (2011) had earlier reported the use of radio as the first external sources of awareness about climate change in his study area. The study of Azeez and Okafor (2013) in rural southeastern Nigeria also reposed this finding. Also, more (62.2%) respondents noticed the changes

in rainfall pattern, which led to the 2004 flooding while only 37.2% noticed the temperature increase which culminated in the 2007 drought (Table 1). This showed that though indices of climate change were available in their communities, not all respondents were aware or noticed them. Somorin (2010) reported similar climatic scenario in the Republic of Congo, particularly in coaster regions, which he affirmed implied a change in the structure and functioning of

the forest ecosystems. According to Nyong (2005) droughts and floods are already common occurrences, with some countries experiencing both within a year. In her third assessment report, IPCC (2001) also reported Africa as the most vulnerable region to climate change, due to the extreme poverty of many Africans, frequent disasters such as droughts and floods and her agricultural systems heavily dependent on rainfall.

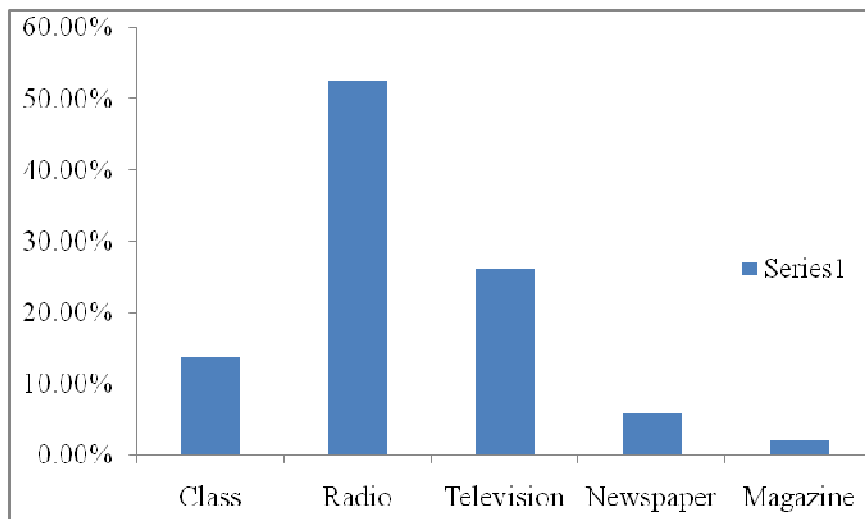


Figure 1: Distribution of Respondents' Sources of Awareness about Climate Change

Table 1: Frequency distribution of respondents' identification with notable climate change events

Identified Events	Odigbo		Akure North		Owo		Idanre		Mean %	Mode
	Freq	%	Freq	%	Freq	%	Freq	%		
Drought (2007)	39	43.3	41	45.6	13	34.4	23	25.6	37.2	Akure
Flood (2014)	51	56.7	49	54.4	59	65.6	67	74.4	62.2	Idanre
Total	90	100	90	100	90	100	90	100	100	

Income generating activities of respondents'

Results from the study ranked farming as most popular income generating activity in the study sites (Figure 2). This is followed by trading, processing of produce, transport business, hired labourer, livestock

rearing, gathering of NTFPs, artisan works and hunting. This result showed that farming is the major occupation in all the communities and that most of the communities depended on forest resources for their livelihoods.

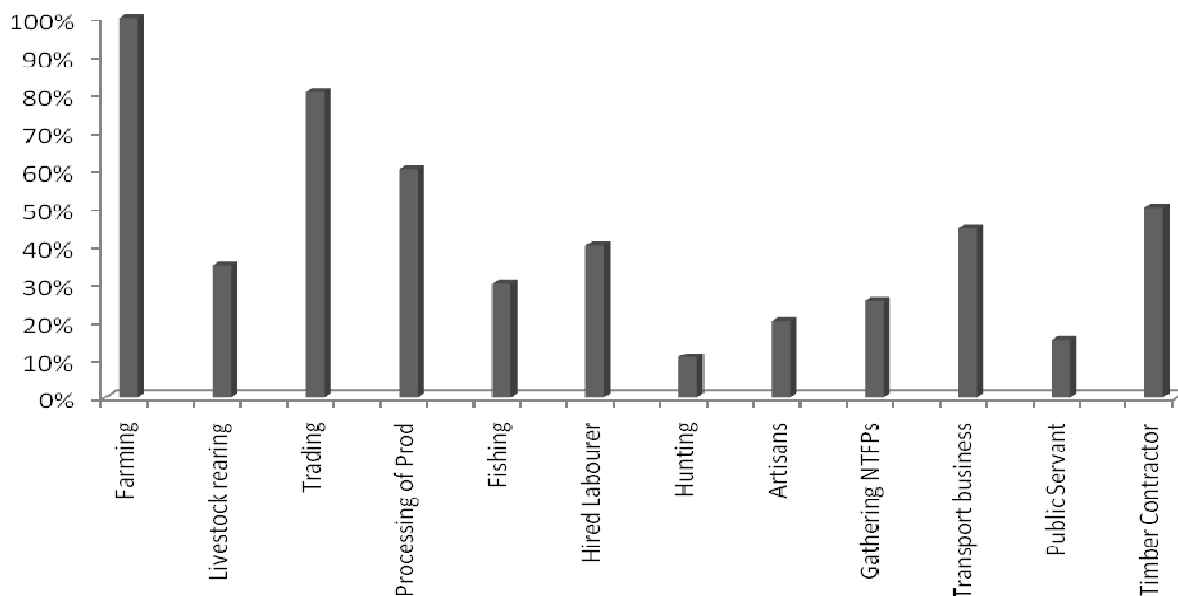


Figure 2: Frequency distribution of respondents' livelihood activities

Hunting was the least income generating activity in all the communities; this may be adduced to prevalence of Ebola outbreak news as at the time of carrying out this study, which compel most people to avoid eating bush meat or associating with related activities. Even the hunters could not eat bush meat because of the Ebola outbreak. This may be why the result was not in agreement with Adekunle *et al.* (2011) findings, which did not rate hunting as the least income generating activity in the same study area.

Impacts of climate change on respondents' income, health and food intake

Idanre recorded the highest number of respondents (13.3%) with the lowest annual income of between ₦12000.0 and ₦60000.0 from their primary livelihood sources (Table 2). The highest annual income of between ₦36000.0 and ₦420000.0 was recorded among respondents from Akure North (2.2%) and those in Owo (2.2%). Majority of the respondents' in all the studied sites (Odigbo, Idanre and Owo LGAs) had annual income of between ₦18 1,000 - ₦240,000 from their primary sources of livelihood. This is in agreement with Adekunle *et al.*

(2011) who reported an average annual income of ₦378,758.83 in their study area is. He further reported that they are still within the ambit of poverty line which has a lot of implication on their standard of living with the increasing problem of climate change. From FGDs in this study, it was gathered that climate change has caused land degradation and by extension reduction in farm outputs, which also reduced their income. This was reposed by the findings of Paudel *et al.* (2011) that decreases in land productivity can be attributed to climate vagaries in their study area. Invariably, many of the respondents' in this study are living below poverty line, since poor land productivity will negatively impact livelihoods output.

According to World Bank (2001) poverty is a colossal challenge to 2.8 billion of the worlds' population and 6 billion people are living on less than \$2 a day. Some of the respondents were not able to meet their basic food and non-food needs because of low income. Skoufias *et al.* (2011 and 2011a) also expressed concern about climate change slowing down or possibly reversing the progress on poverty reduction.

Table 2: Frequency distribution of respondents' annual income from primary occupation

Income (₦ '000)	Odigbo		Akure North		Owo		Idanre		Mode
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	
12 – 60	4	4.4	3	3.3	2	2.2	12	13.3	Idanre
>60 – 120	27	30.0	15	16.7	13	14.4	18	20.0	Odigbo

Income (₦'000)	Odigbo		Akure North		Owo		Idanre		Mode
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	
>120 – 180	6	6.7	10	11.1	4	4.4	22	24.4	Idanre
>180 – 240	29	32.2	18	20.0	33	36.7	22	24.4	Owo
>240 – 300	8	8.9	15	16.7	11	12.2	15	16.7	Akure/Owo
>300 – 360	16	17.8	25	27.8	22	24.4	0	0.0	Akure
>360 – 420	0	0.0	2	2.2	2	2.2	0	0.0	Akure/Owo
Nil	0	0.0	1	1.1	3	3.3	1	1.1	Owo
Total	90	100.0	90	100.0	90	100.0	90	100.0	

Data on respondents' annual income from other sources (Table 3), shows that majority of those making more than ₦120000.0 were from Owo (38.9%) while Akure North house majority of those earning between ₦12000 and ₦60000/annum (91.1%) in the study area. Thus, annual income of respondents' from other sources was between ₦12000 and ₦60000 from this study. Implicitly, most of this annual income is from the sales of Non Timber Forest Products, which is in agreement with the submission of Vedeld *et al.* (2004) that a higher proportion of the total income of forest dependent respondents' comes from forest resources. Most rural poor people maintain diversified livelihood strategies

because they cannot obtain sufficient income from any single strategy to survive and also to reduce risks. This is why most farmers include forest products in their livelihood systems. And this had exposed them to climate risks. Reports from FGDs revealed that respondents use to earn more from their land before the advent of climate change. In their study, Paudel *et al.* (2011) also linked decrease in forest products availability over time to climate change and over exploitation.

Table 3: Distribution of respondents by annual income from other sources

Income (₦'000)	Odigbo		Akure North		Owo		Idanre		Mode
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	
12 – 60	73	81.1	82	91.1	36	40	66	73.3	Akure
>60 – 120	15	16.7	7	7.8	13	14.4	24	26.7	Idanre
>120 – 180	0	0	0	0	35	38.9	0	0	Owo
Nil	2	2.2	1	1.1	6	6.7	0	0	Owo
Total	90	100.0	90	100.0	90	100.0	90	100.0	

Respondents' annual income spent on house health

Spending of respondents on household health was analysed and the results (Table 4) reveal that modal spending on health was from Idanre respondents who spent more than ₦120000 but not more than ₦180000 annually in this direction. The lowest spending in the area of household health was recorded in Owo (31.1%), which was between ₦12000 and ₦60000. Also, Akure North was observed to record the modal spending of between >₦60000 and ₦120000 on household health. In

summary, annual income spent on household health in the study area was between ₦61,000- ₦120,000.

By implication, more than half of the respondents' annual income from their major occupation was spent on household health. Basu and Ostro (2009) were of the opinion that the rural poor are the most reliant on environmental goods and services and therefore the most vulnerable to climate change health risks. The least spending on household was recorded in Owo LGA. This might be adduced to the less severe impact of climate change in the LGA.

Table 4: Frequency distribution of respondents by annual spending on household health

Spending (₦'000)	Odigbo		Akure North		Owo		Idanre		Mode
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	
12 – 60	41	45.6	30	33.3	60	66.7	28	31.1	Owo
>60 – 120	46	51.1	57	63.3	22	24.1	56	62.2	Akure
>120 – 180	3	3.3	3	3.3	8	8.9	6	6.7	Idanre
Total	90	100.0	90	100.0	90	100.0	90	100.0	

Respondents’ annual income spent on children education

Modal spending on children education was observed by this study (Table 5) to be between ₦360000 and ₦420000 by 10.0% of the respondents’ in Akure North. Respondents from Idanre recorded the modal lowest spending (₦12000 – ₦120000) on children education in the study area. Owo was observed to record the modal spending (42.2%) in the range of ₦120000 and ₦180000. Respondents from Odigbo also recorded the modal spending of between ₦180000 and ₦360000 on children education (Table 5). The study revealed the spending of between ₦301,000- ₦360,000 on children education in Odigbo and Akure North LGAs. This is more than the annual income of most respondents’ from their primary occupation. Excerpts from FGDs revealed that they supplement their income with the income from the sales of forest products.

Income from the sales of forest products, such as woods, medicinal herbs, gums, latex, resins and spices was observed by Byron and Arnold (1999) as providing financial capital, which can be used either as working capital for trading activities or to educate children. These forest resources was however reported to have reduced due to climate change and by extension less is spent by the farmers on their children education with majority resulting to borrowing money to pay for their children education.

Climate change has both direct and indirect negative impacts on the general well-being of people. Livelihoods of rural communities are likely to suffer most as they are highly exposed to climate extremes such as severe droughts and floods and their consequences on the one hand, and have limited capacity to respond to such impacts on the other (Dahal *et al.* 2009). Dube and Phiri (2013) also

reposed this from their study, which reported 98% of their respondents affirming the negative effect of climate change on their crop yield. The report submitted that crops wilted due to inadequate rainfall and rising temperatures. Decline in food production they observed will lead to increased malnutrition and severe consequences, particularly for children (Dube and Phiri, 2013). Ninan *et al.* (2012) was of the opinion that the climate sensitivity of an agriculture practice will likely affect food production, which in turn will impact on poverty and livelihoods. This was also the view of Nhemachena *et al.* (2010) who observed that climate change has economic impacts on crop and livestock farming system. Lecocq and Shalizi (2007) also stated that the ultimate damages of climate change may significantly affect economic growth. Haminton *et al.* (2005) also highlighted a number of other illustrative impacts that climate variability and change have on livelihoods and food access, many of which also impact on food availability and nutrient access aspects of food security. These impacts affect food security through altering or restraining livelihood strategies, while also affecting the variety of food available and nutritional intake.

According to Muller-Kuckelber (2013), one of the most pertinent issues of climate change in regards to human development is reduced agricultural productivity. This reduction in agricultural production is the consequences of increase in the infestation of pests and diseases. A change in climate may bring about the introduction of new crop pests and diseases. Crop pests and diseases are greatly influenced in their incidence, spread and distribution by climate especially temperature, moisture and relative humidity. They often damage the health of forests and crops in a relatively short period, which requires a high level of preparedness to cope.

Table 5: Frequency distribution of respondents’ annual spending on children education

Spending (₦ '000)	Odigbo		Akure North		Owo		Idanre		Mode
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	
12 – 60	1	1.1	1	1.1	3	3.3	46	51.1	Idanre
>60 – 120	0	0.0	6	6.6	46	51.1	38	42.2	Idanre
>120 – 180	13	14.4	16	17.8	38	42.2	2	2.2	Owo
>180 – 240	24	26.7	16	17.8	3	3.3	0	0.0	Odigbo

Spending (₦ '000)	Odigbo		Akure North		Owo		Idanre		Mode
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	
>240 – 300	15	16.7	8	8.9	0	0.0	0	0.0	Odigbo
>300 – 360	24	26.7	17	18.9	0	0.0	0	0.0	Odigbo
>360 – 420	5	5.6	9	10.0	0	0.0	0	0.0	Akure
Nil	8	8.9	17	18.9	3	3.3	4	4.4	Akure
Total	90	100.0	90	100.0	90	100.0	90	100.0	

Perception of effects of climate change on the availability of forest resources

Assessment of respondents' perception of forest products availability in the study area (Table 6) revealed that among the identified tree resources, *Mansonia altissima* was the commonest (78.6%) while on NTFPs, firewood rated highest (78.9%). Also worthy of note is that forest tree resources are more abundant in Idanre and Odigbo while the NTFPs are more prevalent in Owo and Odigbo. Invariably, Odigbo holds the highest retinue of forest resources in the study area.

Generally, 78.6% of the respondents noticed changes in the availability of *Mansonia altissima*, 12.0% noticed changes in availability of *Terminalia superba*, 8.0% noticed changes in the availability of *Gmelina arborea*, 5.5% noticed changes in the availability of *Tectona grandis* while 4.7% observed changes in availability of Obeche (Table 4). The respondents were of the opinion that climate change reduced availability of timbers in the forest. This confirms Dube and Phiri (2013) findings that big trees were disappearing due to deforestation. Discussions with opinion leaders also reveal that increase in temperature may dehydrate some timbers and by extension limit their usefulness even though they may not go into extinction. This agrees with Sacramento *et al.* (2013) findings in Chicualacuala District, Gaza Province, in Mozambique, where high temperature and changing rainfall patterns were observed to likely affect tree growth and their availability. Specifically, they found that fruit trees like Massala (*Strychnos spinosa*) and Macuacua (*Strychnos madagasearienses*) got dry due to extreme heat in the District. Also, Majule (2010) reported that timber is likely to remain relatively unchanging except where there is decrease in rainfall. From this study, 78.9% of the respondents noticed changes in availability of firewood while 15.0%, 4.7% and 1.4% observed changes in availability of seeds, fruits and mushroom, respectively (Table 1). This is not too far from a similar study by Majule (2010) who reported fuel wood decrease as a result of reduced rainfall and predicted likely fuel wood increase when rain increases. Majule (2010) further stated that availability of natural resources is commensurable

with climate change, over use, land transformation and population growth. The decrease of these forest products had created a negative impact on the livelihood of the forest dependent communities.

Perception of the effects of climate change on forest dependents rural livelihoods

Examining respondents' perception of the impact of climate change on their livelihood, the study (Table 7) found that shortage of food (44.7%) was the most popular impact and was more rampant among Odigbo respondents (57.8%). Closely following food shortage impact was perceived low income (26.6%), which was more noticed by Akure North respondents' (35.5%). Identified perceived effects of climate change on forest fringe livelihoods (Table 7) were ascribed mainly to changes in rainfall patterns and increase in temperature as garnered from focus group discussions with some respondents. This ascription agrees with Dube and Phiri (2013) findings in Zimbabwe where farming was observed to be largely dependent on rainfall patterns. Any negative changes in the rainfall patterns are therefore likely to negatively impact rural livelihoods. Armah *et al.* (2010) reposed this when they reported flood as simultaneously triggering reduction in food production and by extension a reduction in household income, which ranked second among identified effect of climate change on livelihoods in the study area (Table 7).

Armah *et al.* (*Op. cit.*) further reported that floods may affect seed supply either through affecting crop production (on farms) or by destroying seed stores (in homes). Either way, the lack of seeds for subsequent planting could have a negative multiplier effect on food production. Increase temperature could reduce global food supplies and contribute to higher food prices (IPCC, 2007). This further confirms Iglesias *et al.* (2009) who reported that when the optimal range of temperature values for a crop in a particular region is exceeded, crops tend to respond negatively, resulting in a drop in yield.

The shortage of food might also be due to shortage of water, which the respondents (7.5%) ranked as the third impact of climate change on their livelihoods.

The respondents mentioned that due to decreased rainfall; the water table has been lowered resulting in water scarcity for irrigation. This agrees with Acharya (2011) findings from Nepal’s agriculture sector, which was seriously affected by climate change. The study reported an abysmal low income for farmers who are the most affected by the severe water stresses linked to decreased supply and increased demand of water from irrigation channels.

The shortage of food might also be due to flooding, another important impact of climate change on respondents livelihoods (Table 7). Floods are likely to have dramatic impact on food production system. Increasing rainfall patterns can lead to floods erosion and also increased weed infestation. Floods and changes in rainfall pattern had drastically decreased yield and production. This is similar to the statement of Armah *et al.* (2010) during the months of August and early September 2007, heavy rainfall led to severe flooding in Northern Ghana resulting in the loss of lives, displacement of vulnerable persons and the destruction of key infrastructure, food stocks and livestock throughout the region.

Flood was also observed to damage road and causes soil erosion by the same study. This observation was in line with the work of Shrestha *et al.* (2014), which reported floods as often destroying the local village roads and bridges every year thereby making transportation difficult during the whole monsoon

season. Walthall *et al* (2012) also reposed heavy rainfall as causing flooding in their study area as warmer temperatures speed up the water cycle. This eventually will lead to increase in transportation cost as observed in Ondo State (Table 7). Platteau (2000) was of the opinion that availability and access to transport infrastructure influences access to markets.

Increase temperature is expected to aggravate drought and by extension the death of livestock (Table 7), which as observed by the respondents also impacts forest fringe livelihood. Somorin (2010) was of the same opinion when he submitted that climate variability and extreme events like drought will affect the grazing of natural rangelands, resulting in stock mortalities. He further reported that climate change will also have impacts on livestock in Africa; higher temperatures are good for small farm animals like goat and sheep because they are heat tolerant, but by contrast, large farm animals like cattle are not heat tolerant. Heat stress and drought have a negative impact on animal health, dairy and meat production as well as livestock production. This also confirms Walthall *et al* (2012) findings that an animal’s ability to adjust its metabolic rate to cope with temperature extremes can lead to reduced productivity and in extreme cases death. Prolonged exposure to extreme temperatures will also further increase production costs and productivity losses associated with all animal products, e.g. meat, eggs and milk.

Table 7: Frequency distribution of respondents’ perception of climate change impacts on their livelihoods

Identified Impacts	Odigbo		Akure North		Owo		Idanre		Mean	Mode
	Freq	%	Freq	%	Freq	%	Freq	%		
Flooding	5	5.6	1	1.1	4	4.4	6	6.7	4.5	Idanre
Death of livestock	1	1.1	6	6.7	7	7.8	10	11.1	6.7	Owo
Shortage of food	52	57.8	40	44.4	39	43.4	30	33.3	44.7	Odigbo
Increased transportation cost	6	6.7	2	2.2	2	2.2	9	10.0	5.3	Idanre
Shortage of water	2	2.2	7	7.8	11	12.2	7	7.8	7.5	Owo
Bad road	3	3.3	2	2.2	5	5.6	7	7.8	4.7	Idanre
Low income	21	23.3	32	35.5	22	24.4	21	23.3	26.6	Akure
Total	90	100	90	100	90	100	90	100	100	

Identified adaptation measures to negative impact of climate change

On identified measures for adapting to climate change impact among respondents (Figure 3), the study found that planting of trees was the most popular suggestion, most especially in Owo site (50.1%). This agrees with Ofuoku (2011) findings in Delta State, Nigeria where rural farmers adopted planting of trees as climate change adaptation measure.

Also, worthy of note is the suggested change in planting dates to meet the climate change agenda, which was mostly aired by respondents from Odigbo followed closely by those from Akure North site. The study of Adekunle *et al.* (2011) made similar findings in their study area where respondents choose different planting date as adaptive measures. In their own study Agwu *et al.* (2011) found that 38% of farmers in West Africa change their planting dates in response to changes in rainfall patterns due to climate change. Akure North had the highest respondents

(25.6%) that adopted agro forestry practice as the adaptation measures.

This was the adaptation measure that stood out in the study of Onyekuru *et al.* (2014) as farmers'

adaptation choice to climate change menace. Idanre had the highest respondents (23.3%) that adopted harvesting early as the adaptation measures; a measure not considered at all by respondents from Owo.

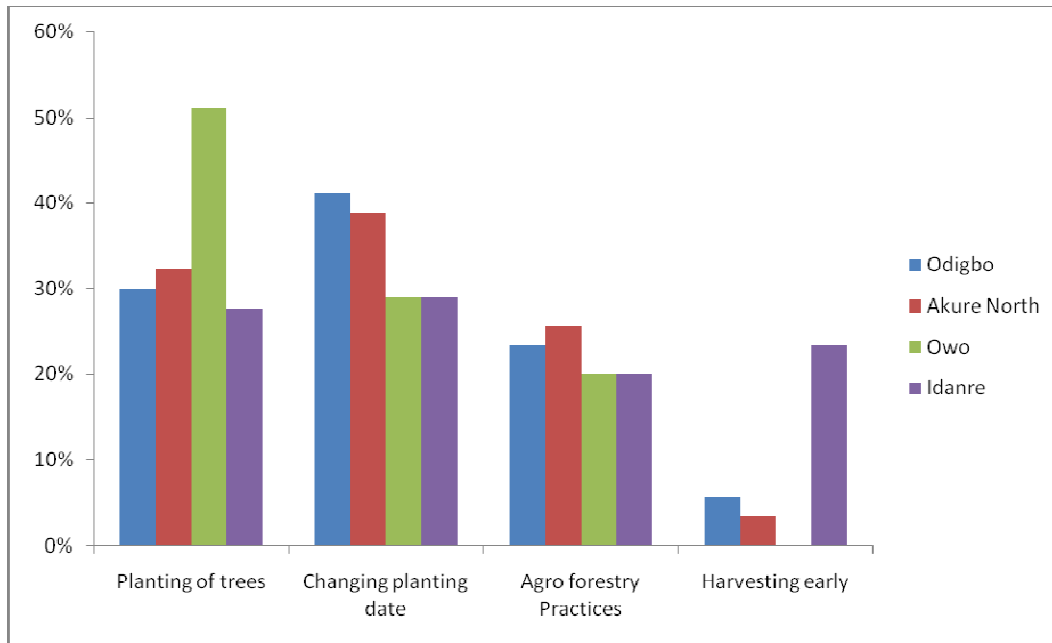


Figure 3: Distribution of measures adopted by respondents in adapting to climate change

CONCLUSION AND RECOMMENDATIONS

Majority of the respondents were aware of the climate change and the adverse impacts of climate change on their livelihoods. Climate change not only affects forest resources availability, it also negatively impact the mainstay of the rural forest fringe communities livelihood, which is mostly farming.

By extension it affects the livelihood outcomes of respondents and puts their lives at risk. Adaptation measures have been identified by the communities for sustaining their production systems, which is expected to be taken serious by policy makers in the state concerned and the Nigeria state as a whole. Among the adaptation measures adopted by the respondents, choosing different planting date is the dominant. This goes beyond relying on indigenous ways of doing things, which is likely to take time. The practice of agroforestry, planting of trees on farmlands and harvesting early are other identified mitigating measures.

It is therefore suggested and recommended that agro forestry practices should be adopted by all farmers in Ondo State as an adaptation measure against climate change. It ensures socioeconomic development and

boosts food security and eradicates poverty. It is also imperative that government step up awareness program on climate change with the view to better informing respondents' about the implications of some of their innocent farming activities, which negatively impact the forest ecology and by extension their livelihoods. In the interim, government is expected to invest in meteorological gadgets, which will aid the prediction of weather. This is with the view to better inform rural farmers on appropriate planting periods using well organised extension organisations and or media most appropriate to deserving communities.

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Analysis of poverty level among timber millers in Osogbo Agricultural Zone of Osun State, Nigeria

^{1*}Ganiyu, M. O., ²Fanifosi, G. E. and ³Ariyo, C. A.

^{1&2}Department of Agricultural Economics, Faculty of Agricultural Sciences, Ladoké Akintola University of Technology, Ogbomosho, Nigeria

*Corresponding Author: E-mail: moganiyu@lautech.edu.ng

ABSTRACT

Poverty continues to mull over from one generation to another and currently worsen among the rural dwellers than expected. Although, past government has adopted different programme to tackle poverty, but its intensity keeps increasing day-by-day. This study was therefore conducted to analyzed poverty status among timber millers (sawn-wood producers) in Osogbo Agricultural Zone of Osun State. A multistage sampling procedure was used to select 90 respondents. Primary data (on socioeconomic characteristics, the annual income and expenditure faced by timber millers, source of credits and raw timbers as well as the mode/condition of living of the respondents) were collected with the aid of structured questionnaire supplemented with oral interview. Data were analyzed using descriptive statistics, Logistic regression model and Foster Greer Thorbecke (FGT) poverty index. Results reveal that 62.2% of the respondents were male household heads with the mean age of 48years, 88.9% of the respondents were married and had a household size of 5 persons on average. Most of the timber millers in the area were largely literate, 72.2% were primarily into sawn-wood or timber milling enterprise and they depend mostly on cooperative loans for finance. The poverty aversion parameter values for poverty incidence (P_0), poverty depth (P_1) and poverty severity (P_2) were 44.5%, 28.3% and 21.6%, respectively. This indicates that the poverty incidence was about 45%, the depth of poverty was 28.3% while the poverty severity was 21.6% among the respondents in the area. The study shows that meal skipping (35.4%), having low cost meal (24.3%), reducing meal size (15.4%), fasting (13.2%), borrowing from neighbours (8.1%), hunting and harvesting of fresh fruits from bush (3.7%) were the main coping strategies employed by the respondents in the study area to lessen the impact of poverty syndrome. The marginal effect from Logit estimate reveals that age of the respondents ($P=0.046$), access to credit ($P=0.011$) and revenue generated from timber milling business ($P=0.000$) significantly determined poverty level among the respondents in the study area. However, significant numbers of timber millers (45%) are poor and if credit facilities should be made available and accessible to them and they were able to utilise them credibly, it will give an avenue to boost the production of timber and therefore reduce poverty among the timber producers in the study area.

Keywords: Poverty, Timber millers, Sawmill, Sawn-wood, FGT poverty index.

INTRODUCTION

The rural households combine many coping strategies to get out of poverty trap, but despite these efforts, the problem of poverty continues to revolve from generation to generation and currently worsen among the rural dwellers than expected. Poverty is a vicious cycle that keeps the poor in a state of destitution and deprivation. According to Garba,(2006), all the poverty alleviation initiatives in Nigeria since independence did not actually meet their goals as many households are still wallowing in extreme poverty. Nigerians and many other people in less developed countries are suffering from poverty which is obviously caused by poor economic conditions such as economic recession, unemployment, high inflation rate, poor infrastructure, lack of good governance and corruption both at the local and national levels. For instance, presently in this country and nearly all the states people are facing serious

hunger and malnutrition because of lack of money and high rate of unemployment. It is truly believed that poverty is severe in rural areas of Nigeria, where up to 80% of the population lives below the poverty line, and social services and infrastructure are limited (IFAD, 2011 and Awotide *et al.*, 2011).

One of the crucial coping measures that individuals or households use to combat poverty in the society among others is their means of livelihoods; that is, the various business activities that serve as source of income for the people to sustain their living. Sekumade and Osundare (2014) reported that livelihood is generally diversified (with majority doing more than two jobs) for more income and better standard of living. However, a person is regarded as being poor, if such a person cannot obtain the basic needs of life like food, shelter, clothes and

good health or relatively a person living on less than \$1.25 per day. Eurostat (2010) defined the poor as persons, families and groups where resources (material, cultural, and social) are so limited as to exclude them from the minimum acceptable way of life of the member of state to which they belong. The poor are those who are unable to obtain an adequate income, find a stable job, own property or maintain healthy condition. According to Sancho (1996), poor people are deprived of essential level of education and they cannot meet up with their basic health needs. They have no or limited access to basic necessities of life such as food, clothing, decent shelter, and are unable to meet social and economic obligations, they lack skills and gainful employment, have few if any, economic assets and sometimes lack of self esteem (Olayemi, 1995).

World Bank (2002) described comprehensively that “poverty is hunger, poverty is lack of shelter; poverty is being sick and not able to see a doctor; poverty is not being able to go to school and not knowing how to read; poverty is not having a job; poverty is not having a job; poverty is fear for the future, living one day at a time; poverty is losing a child on illness brought by unclean water; poverty is powerlessness; lack of representation and freedom”. Poverty creates slum and changes the pattern of houses which cause the appearance of informal activities, which in turn change the land use pattern of the community. These changes in land use have impact on physical structures, infrastructural facilities and services, socioeconomic values and even the psyche of the residents of the area (Jean-Claude, 2006). Poverty assessment survey has shown that over 70% of the population is living on less than a dollar per day and over 50% living below the national poverty line (FAO, 2006). The survey also revealed that poverty is especially higher in rural areas where majority of the people are resident and deriving livelihood from agriculture and forest resources (NBS, 2006).

In addition, Maghori (2008) observed that in the traditional setting, poverty was understood as material deprivations, as living with low income and low consumption which manifest by way of poor nutrition and poor living conditions. However, income poverty does not exist alone rather it is often times associated with so-called human poverty-low health and education levels. Gore (2002) explained the concept of all-pervasive poverty. According to him, poverty is all pervasive, where the majority of the population lives at or below income levels sufficient to meet their basic needs, and the available resources, even when equally distributed, are barely sufficient to meet the basic needs of the population.

He reiterates further that pervasive poverty leads to environmental degradation. This is because poor people eat into the environmental capital stock to survive. This, in turn, undermines the productivity of key assets on which the livelihood depends. It should also be noted that where extreme poverty is all-pervasive, state capacities are necessarily weak.

Nonetheless, the endowment value of forests and woodlands in Africa is enormous, and can be used to promote a wide range of livelihood opportunities, including increased income and enhanced livelihood security. As a result, the relevance of forestry in poverty reduction seems imperative to some extent because, a large number of rural poor people depend on forest resources to some degree, though the definitions used for ‘dependence’ and the resulting estimates are highly variable and their accuracy is questionable (Calibre Consultants and the Statistical Services Centre, 2000). The summary report of World Commission on Forest and Sustainable Development (WCFSD, 1999) estimated that 350 million depend almost entirely for their sustenance and survival needs on forests and that another 1 billion depend on forests and trees for fuel-wood, food and fodder. The World Bank (2001) estimated that 1.6 billion depend to varying degrees on forests for their livelihoods, with 350 million living in or near dense forests depending on them to a high degree.

Aiyelaja *et al.* (2013) who investigate the contributions of timber/sawn wood marketing to livelihood sustenance in Port Harcourt city, Nigeria reported that sawn wood marketing is a viable enterprise in the area. The study thus, recognized the needs for sawn wood marketers to organise themselves into cooperative groups in order to secure loan and credit facilities from funding agencies for improved marketing efficiency and livelihood.

All these put together motivate this research work (the analysis of poverty level among the timber millers in Osun State, Nigeria). The following specific objectives were analyzed to achieve the focus of the study: describe the socioeconomic characteristics of the timber millers, analyze the poverty status among timber millers in the study area, examine the determinants of poverty and identify the coping strategies employed to alleviate poverty among the timber millers in the study area.

METHODOLOGY

Study area, population, sampling procedure and sample size

The study was conducted in Osogbo Agricultural zone of Osun State, Nigeria. The State which is made up of 30 Local Government Areas (LGAs) is located in the South-western Nigeria. It covers an area of approximately 14,875sqkm, and is bounded by Ogun, Kwara, Oyo and Ondo States in the South, North, West and East respectively. The population of the study consists of all timber millers in selected Local Governments under Osogbo ADP Zone, Osun State.

A multi-stage sampling procedure was used in the selection of the respondents. The first stage involved a purposive selection of six (6) LGAs out of thirteen (13) LGAs in Osogbo zone (about 46 percent of the LGAs in the zone) based on the high concentration of sawmills. The second stage involved a random selection of 3 sawmills from each of the selected LGAs totaling 18 sawmills. Lastly five (5) timber millers each from all the chosen sawmills were randomly picked this forms the third stage. In all a total number of ninety (90) respondents was used for the study.

Source of data and data analytical techniques

The study used structured questionnaire combined with one on one interview schedule to obtain data from primary source. Descriptive statistics, Foster-Greer-Thorbecke (FGT) poverty index and Logistic regression model were used to analyze the data. FGT poverty index is a poverty measure which consists of the headcount index, poverty gap index, and the squared poverty gap index (FGT, 1984). These are referred to as decomposable poverty measures which show that the poverty measure is a weighted average of the poverty measures of the individual in a group.

- (a) Foster-Greer-Thorbecke (FGT) poverty index: the general formula for the FGT poverty measure is as specified below;

$$P_{(\alpha)} = \frac{1}{n} \sum_{i=1}^q \left[\frac{Z - y_i}{Z} \right]^\alpha \dots\dots\dots (1)$$

Where y_i = the income of the i th person/ household, α = non-negative poverty aversion parameter, which has the value of “0” for headcount ratio, “1” for poverty gap or incidence and “2” for poverty severity, n = total number of farm households sampled for the study, q = the number of person with

income below the poverty line (Z) and Z = total poverty line.

- (b) Logistic regression is a non-linear regression model that forces the output (predicted values) to be either 0 or 1. Therefore, it computes the maximum likelihood estimator. The relationship between the poverty status variable Y_i and its determinants X_i was given as;

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \mu_i \dots\dots\dots (2)$$

Where $Y_i = 1$ if poor, $Y_i = 0$ if otherwise and $i = 1, 2, 3, \dots\dots\dots n$ (i.e. poverty status)

X_i is a vector of explanatory variables and β is the vector of parameters.

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \mu_i \dots\dots\dots (3)$$

- Y_i = poverty level (poor/non-poor)
- X_1 = age of the respondents (years)
- X_2 = sex (male = 1 and otherwise= 0)
- X_3 = household size (actual numbers)
- X_4 = years spent in school (years)
- X_5 = source of credit (formal = 1, Otherwise = 0)
- X_6 = years of experience (years)
- X_7 = revenue from timber milling (₦)
- μ_i = error term

RESULTS AND DISCUSSION

Socioeconomic characteristics of the timber/saw millers in the study area

Table 1a presents the socioeconomic characteristics of the saw millers. Results revealed that 62.2% of the respondents were male and 37.8% were female which implies that male timber millers dominated the milling occupation in the study area. More than one third (35.6%) of the respondents were between ages of 51 and 60 years, 28.9% were between age ranges of 41-50, 18.9% of the respondents were between the age ranges of 31-40; 10% of the respondents were above 60 years of age and 6.67% of the respondents fell below 30 years of age. The mean age was 48 years and it implies that the timber millers were in the

middle age and they are still active as found also by Yusuf and Adewumi (2016). More than two-third (88.9%) were married, 6.7% were widowed and the remaining 4.4% of the respondents were single. The findings also revealed that 60% of the timber millers had household size of 5 members; and 40.0% of the timber millers had household size of 6 to 10 members. The mean household size was 5.0 which imply that an average timber miller had a family size of 5 members that were subsisting from the income generated from the timber milling activities. Forty percent of the respondents had tertiary education and 26.7% had their secondary education, while 21.11% of the respondents had no formal education. This result shows that majority of the respondents were educated and literate and this implies that those households who have higher educational qualifications were not likely to be trapped by poverty because of the human capital they possessed. From Table 1b, the findings also showed that 72.2% of the respondents chose timber milling as their main occupation while 27.8% did not choose timber milling occupation as their main occupation. It indicated that those who did not choose it as their major occupation were having it as their secondary occupation in order to beat up the financial challenge

used to face at home, though a large number of the respondents had timber milling as their main occupation. In addition, 52.2% of the respondents belonged to a timber miller association and 47.8% of the respondents did not belong to a timber miller association. About 41.1% of timber millers had 6 to 15 years of experience in milling activities, 28.89% of the respondents had between 16 to 25 years of experience, 16.7% had between 26 to 35 years of experience and only 12.2% of the respondents had 5years of experience and below in the timber milling activities. The mean year of experience of the respondents was 17.3 years and this implies that most of the timber millers had at least 17 years of experience in the timber milling occupation. Above average (64.44%) of the respondents sourced finance through cooperative society, 20% got finance through self-finance credit source, 7.8% source for financial support from bank loans, 5.6% of the respondents had other means of finance like contribution and donation while the rest (2.2%) of the respondents had their financial support from their relatives. The result therefore showed that most of the timber millers belonged to cooperative societies where they are provided with financial support.

Table 1a: Distribution of timber/saw-millers based on socioeconomic characteristics

Socioeconomic variables	Frequency	Percentage	Mean
Gender			
Male	56	62.2	
Female	34	37.8	
Age group			
< 30	6	6.7	
31-40	17	18.9	48.2
41-50	26	28.9	
51-60	32	35.6	
Above 60	9	10.0	
Marital Status			
Single	4	4.4	
Married	80	88.9	
Widow/widower	6	6.7	
Household Size			
≤ 5	54	60.0	
6-10	36	40.0	5.0
Educational Level			
Non formal	19	21.1	
Vocational	2	2.2	
Primary	9	10.0	
Secondary	24	26.7	
Tertiary	36	40.0	
Total	90	100.0	

Source: Field Survey, 2015

Table 1b: Distribution of saw-miller based on socioeconomic characteristics continued

Socioeconomic variables	Frequency	Percentage (%)	Mean
Main occupation			
Timber milling	65	72.2	
Not timber milling	25	27.8	
Working experience			
≤ 5	11	12.2	
6-15	37	41.1	
16-25	26	28.9	17.3
26-35	15	16.7	
Above 35	1	1.1	
Membership of association			
Belonging	47	52.2	
Not belonging	43	47.8	
Source of credit			
Self-finance	18	20.0	
Cooperative society	58	64.4	
Relatives/friends	2	2.2	
Banks	7	7.8	
Others	5	5.6	
Total	90	100.0	

Source: Field Survey, 2015

Living pattern (Mode of Living) of the timber millers

The respondents' mode of living is presented in Table 2. Findings reveal that 63.3% of the respondents owned their residential apartment and 36.7% rented their residential apartment. This implies that majority of the respondents owned their residential building apartment. Also, 57.8% of the respondents lived in a flat, while only 10.0% of the respondents lived in a room and parlour apartment. Again majority (80.0%) of the respondents had water closet type of toilet, 14.4% used modern pit type toilet, 4.4% used local pit latrine form of toilet and 1.1% had their defecation in the bush, this indicated that majority of the respondents used water closet type of toilet in their houses. It was also revealed that 45.6% of the respondents had borehole as their source of drinking water, 32.2% of them had their water from the well; 18.9% of the respondents had tap water as their source of drinking water; and the remaining 3.3% of the respondents had river/stream water as their source of drinking water. The result implies that most of the respondents had their drinking water from boreholes in the study area. 70% of the respondents patronized public health centre when sick, 18.89% of the respondents patronized private health centre when sick and 11.1% of the respondents patronized local-medical centre for treatment when sick. This implies that majority of the respondents visited public hospitals for treatment when sick than any other health care centre in the study area.

Table 2: Distribution of timber millers based on their living pattern/Mode of Living

Living pattern	Frequency	Percentage (%)
Source of housing		
Owned	57	63.3
Not owned	33	36.7
Type of house		
Flat	52	57.8
Face to face	20	22.2
Bungalow	9	10.0
Room and parlour	9	10.0
Type of toilet		
Water closet	72	80.0
Modern pit	13	14.4
Pit latrine	4	4.4
Bush	1	1.1
Source of water		
Tap water	17	18.9
Borehole	41	45.6
River/stream	3	3.3
Well	29	32.2
Health centre		
Public health centre	63	70.0
Private clinic	17	18.9
Local-medical centre	10	11.1
Total	90	100.0

Source: Field survey, 2015

Poverty status of the saw/timber millers

Table 3 presents the poverty status of the timber millers in the study area. Foster Greer Thobcke

poverty index was used to show the extent of poverty among the timber millers in the study area. The total annual income for all timber millers was ₦28,757,000 and the *per capita* income was also ₦6,339,674 while the mean *per capita* income was ₦70440.82. The poverty line is the equivalents of 2/3 mean *per capita* income and it was estimated to be ₦46960.54 per annum. The poverty aversion parameters employed were P_0 , P_1 and P_2 which means poverty incidence (headcount), gap (depth), and severity, respectively.

The incidence of poverty in this study was 0.444 which indicated that 44.4% of the sampled timber millers were poor based on the poverty line of ₦46,960.54 for the timber millers. The value P_1 (poverty depth) among the timber millers was 0.283, indicating that an average poor timber miller would require 28.3% of the poverty line to get out of poverty. The value P_2 (poverty severity) among the sampled timber millers was 0.216, indicating that the poverty severity of poor timber millers was 21.6%. This finding is in agreement with available national statistics that put the poverty incidence in the South-west in 2004 at 43% (National Bureau of Statistics, 2008), but contrary to findings by Amao *et al.*, (2013) where the poverty incidence (P_0), the poverty depth/gap (P_1) and the poverty severity (P_2) were reported with high values. This implies that poverty exists among the timber millers in the study area and adequate measures to alleviate poverty in the area need to be adopted.

Table 3: Poverty Status estimates using FGT Poverty Index for the timber millers

Poverty Aversions	Poverty Indices	Percentage (%)
Poverty incidence, P_0	0.445	44.5
Poverty depth, P_1	0.283	28.3
Poverty severity, P_2	0.216	21.6

Source: Field survey, 2015

Coping strategies adopted by the timber millers

Identified and ranking of the coping strategies adopted by the respondents is presented in Table 4. Meal skipping, low cost meal, meal size reduction, fasting, borrowing from neighbor, wild fruit consumption were identified to be the major measures used in the study area to cushion the effect of poverty among timber milling households. The ranking of poverty coping strategies was done using the frequency counts. The study indicated that 35.4% respondents adopted meal skipping as their coping strategy, 24.3% resulted to meal size reduction, 15.4% of the respondents involved in the consumption of low cost meal, 13.2% resulted to fasting, 8.1% borrowed from neighbor, and 3.7% resulted to consumption of fresh fruits. It was observed that most of the respondents were no longer eating three square meals per day instead they eat in the morning (breakfast), and night (dinner) or in the night alone and not even their favorite food.

Table 4: Ranking of respondents based on coping strategies adopted

Coping strategies	Frequency	Percentage (%)	Rank
Meal skipping	48	35.4	1 st
Low cost meal	21	15.4	3 rd
Meal size reduction	33	24.2	2 nd
Fasting	18	13.2	4 th
Borrowing from neighbour	11	8.1	5 th
Wild fruit consumption	5	3.7	6 th

Source: Field Survey, 2015

*Multiple Responses

Determinants of Poverty among Timber Millers in the Study Area

Table 5 shows the result of the determinants of poverty among the respondents in the study area. Age of the respondents was directly related to poverty status and statistically significant at 5% level of significance. This indicates that as age of the household head increases, the likelihood of the household being poor increases as well. This might be probably due to the fact that as the household head

gets older, the energy begins to depreciate and output and income also decline, which increases the likelihood of the household falling into poverty. This is supported the findings by Sikander and Ahmed (2008) that age of the household head is also a significant factor in determining the poverty status of the households. The result was not consistent with the findings of Ogwumike and Akinnibosun (2013) who found that the probability of the household being

poor has a negative correlation with age of the household head.

Access of the household head to source of credit was directly related to poverty status and statistically significant at 1% level of significance. This means that the likelihood of the timber miller being poor increases as they have more access to credit and this does not follow a priori expectation. Household access to credit supposed to remove them out of poverty but it was not. This might be caused by high interest charge on loan disbursement or due to the misuse of credit or loan obtained. Revenue generated by the household head from timber milling occupation was directly related to poverty status and statistically significant at 1% level of significant, which implies that as the revenue generated by the

respondents from timber milling increases, the likelihood of the household being poor increases. This does not satisfy the a priori expectation and it might be seen as a result of mismanagement of revenue by the respondents. The result is contrary to findings by Asogwo *et al.*, (2012) and Amao *et al.*, (2013). Both household size and number of years spent in school by the timber millers were not statistically significant and do not have expected sign of being inversely related to the probability of the household being poor. This result disagreed with findings by Amao *et al.*, (2013). Also, the household size and years of working experience were not significant but have the expected sign of being negatively related to the likelihood of the household being poor.

Table 5: Parameter estimates of Logistics Regression Model

Explanatory variables	Coefficients	Std error	z-statistics	p [Z/>Z]
Constant	-7.1222	2.295	-3.10	0.002
Age	0.0157	0.0079	1.99	0.046**
Sex	0.0042	0.1257	0.03	0.973
Household size	-0.0074	0.0416	-0.18	0.859
Years spent in school	0.0194	0.0165	1.17	0.241
Access to credit	0.2090	0.0821	2.55	0.011***
Working experience	-0.0099	0.0081	-1.23	0.219
Revenue from timber milling	1.13e-06	0.0000	4.14	0.000**

Source: Computed from Field Survey data, 2015

Notes: *** significant at 1%; ** significant at 5%; * significant at 10%

CONCLUSION AND RECOMMENDATIONS

Based on the findings of this work, it can be deduced that majority of the respondents in the study area were male, married and relied on cooperative source of credit. The age of the respondents was averagely 48years. Most of the respondents in the study area have tertiary education and are natives of the study area. Majority of the respondents have moderate household size of about 5, their major occupation is Timber milling. The study further showed that incidence of poverty (P_0) was 0.445, poverty depth (P_1) was 0.283 and poverty severity index (P_2) was 0.216. The significant factors in determining poverty in the study area as revealed by this study were age, household income and access to credit. Poverty alleviation strategies had little or no effect on the standard of living of the respondents in the study area.

Based on the findings of this study, the following recommendations are suggested in order to reduce poverty in the study area.

- There should be provision of infrastructural facilities that can enhance suitable business environment such that diversification of means of livelihood would be more profitable to alleviate poverty among the timber milling households. This is essential due to the fact that involvement of the timber millers in secondary occupations aside milling activities did alleviate poverty because of their ability to earn good income from these activities.
- Large family size should be discouraged through education and measures like birth control of family planning. Awareness on birth control should be done.
- Credit facilities should be made available and accessible to the timber milling households and proper utilisation of credit should be ensured. By doing this, it will give an avenue to boost the production of timber and therefore reduce poverty among the timber producers in the study area.

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Analysis of labour use pattern among yam farmers in Atisbo Local Government Area of Oyo State, Nigeria

¹Fato B. F., ¹Oguntade M. I., ¹Oluade E. A. and ²Oyegbami, A.

¹Department of Agriculture Extension and Management, Federal College of Agriculture, P.M.B.5029 Moor Plantation, Apata, Ibadan

²Institute of Agricultural Research & Training, P.M.B.5029 Moor Plantation, Apata, Ibadan

Corresponding E mail: bukkysalahu2@gmail.com

ABSTRACT

Labour plays a very crucial role in agricultural production. Its availability for agricultural production activities remains worrisome as many capable hands have migrated to other production sector of the economy. The study examined the labour use pattern among yam farmers in Atisbo local government area of Oyo State, Nigeria. Multistage sampling procedure was used to select 120 farmers for the study. Structured questionnaire was used to collect data from the respondents. Data were presented using descriptive (frequency and percentage) and inferential (Chi square and Pearson and Product Moment Correlation) statistics at $p=0.05$. Mean age of the respondents was 52.8 years. Also, 72.5% of the respondents were male. The result on labour use pattern reveals that farmers use hired labour mostly for land clearing (81.7%), ridge making (85.0%) and planting operation (60.8%) while family labour is used for fertilizer application (61.7%) and weeding (37.5%). Hired and family labour (85% and 69.17% respectively) were the major sources of labour in the area, 86.7% of the respondents claimed that hired labour is always available while 40% claimed that family labour is always available. The major constraints to labour availability were high cost (86.7%) and scarcity of labour (50.8%). There was a significant relationship between religion ($\chi^2 = 0.000$, $P < 0.05$) labour availability ($\chi^2 = 0.034$, $P > 0.05$) and labour use pattern, however, there were no significant relationship between the respondents' socio economic characteristics like age ($r = 0.083$), size of farmland ($r = 0.296$) and labour use pattern in the study area. The study concluded that hired and family labours were found to be readily available in the area with hired labour been used for tedious activities such as land clearing, ridges making, staking and harvesting in the study area, however, this was constrained by high cost and scarcity of labour.

Keywords: Labour use, Yam production, Labour availability.

INTRODUCTION

Agriculture had contributed about 63% to the nation's gross domestic product (GDP). According to the Central Bank of Nigeria official statistics in the year 2011, incomes were derived from export of major cash crops such as rubber, cocoa, palm oil, cashew nuts, groundnut and cotton among others. With the dramatic shift of focus to crude oil exploration and the attendant oil boom of 1970s, agriculture was displaced as the foreign exchange earner, as a consequence therefore agriculture's contribution to the GDP declined to 34% (Hawa, 2011). A lot of people working on the farm moved to work for the oil sector. Shittu (2008) reported that rural urban migration in Nigeria was massive with as much as about 38% of the economically active members of the rural farm families in southwest Nigeria reported to have migrated to urban centers, leaving the farm to very few aged ones who could only produce on the subsistence level and so causing scarcity of labour to work in the farm. The integration of farm and non- farm

labour markets, which has been triggered by economic growth and technological change in terms of improved communication and transportation systems has also allowed a reallocation of labour by farm residents from farm to off-farm work.

Human labour is about the only form of farm labour available to small holder farmers in Nigeria. This form of labour account for up to 80% of total farm power and constitute between 80% and 90% of the cost of production in many farming system (Awoyemi, 1981; Dvorak, 1996). Labour plays important economic and social roles in any economy. It is one of the key factors of production as well as source of livelihood to billions of people worldwide. Nigeria agricultural production is highly labour intensive, over 90% of the non-mechanised production systems depend on human labour and for mechanized production systems between 50 and 60% of the tasks depend on human labour (Shaubet *al.* 1997; Olayide, 2002).

Yam (*Dioscore spp*) is a root tuber crop and arguably the most important crop in Nigeria known as the king of crops for it is not just grown for its nutritional value and as an important source of income but also for its cultural, social, economic and religious significance (Durno and Stuart, 2005). Nigeria is the world's largest producer of yam. Yam production in Nigeria has more than tripled over the last 45 years from 6.7 million tons in 1961 to 393 million tons in 2006 (FAO, 2007). According to International Institute of Tropical Agriculture (IITA) (2013), Nigeria accounted for about 70% of the world production, amounting to 17million tones from land area of 2,837 hectares under yam cultivation. If this volume of yam is produced in Nigeria where farm mechanization is very low, a lot of human labour will be involved. This study general objective is therefore to analyse the labour use pattern among yam farmers in the study area. Specifically, it was designed to:

- i. determine the socio economic characteristics of yam farmers in the study area,
- ii. identify the source of labour supply to yam farmers,
- iii. determine the availability of labour to yam farmers,
- iv. determine the labour use pattern for yam production,
- v. determine the constraints faced by the farmers in the use of hired labour.

METHODOLOGY

The study was carried out in ATISBO Local Government Area (LGA) of Oyo state. It is one of the ten (10) Local Government areas in Oke- Ogun area of Oyo state Nigeria. It lies between latitude 8.41° N and longitude 3.42° E. The inhabitants are predominantly farmers growing crops such as yam, cassava, guinea corn, groundnuts and maize. A purposive sampling technique was used to select the LGA because of the intensity of yam production in the area. Simple random sampling of 4 out of the 6 villages in LGA was carried out resulting in selection of Ago-Are, Tede, Irawo and Sabe. Thirty (30) yam farming households were purposively sampled per village making a total of 120 respondents. Structured questionnaire was used to elicit information from the respondents. Data were described using frequencies, percentages and mean, while Chi square and Pearson Product Moment Correlation (PPMC) were used to test for

significant relationships between respondents' socioeconomic characteristics and labour use pattern.

RESULTS AND DISCUSSION

Socioeconomic characteristics of the respondents

Table 1 reveals that 72.5% of the respondents were male, while 27.5% were female. This indicates that yam production in the study area is dominated by male farmers, which may also be attributed to the large area of land needed for yam production that female farmers may not have access to. Abubakar (2003) in a similar study reported that men are generally considered as head of the family with regards to resources acquisition and utilisation. The Table further shows that the average age of the respondents was 52.79 years. This shows that majority of the respondents were still in their active and productive ages, which can invariably contribute meaningfully to the agricultural development in the area. This finding is supported by the finding of Yekinni (2010) and Badiru (2013) who reported 49.1 and 43.9 as mean ages of farmers, respectively in earlier studies. Distribution of respondents by educational attainment reveals that 25.0% of the respondents had primary education, 39.2% of them had secondary education, while 35.8% had tertiary education. This implies that there is high level of literacy among the farmers in the study area. This is contrary to the findings of Meizen-Dick (2004) as reported by Ajayiet *al.*, (2010) that low level of education prevails in many sub-Saharan countries. The incidence of high level of education among the farmers in the study area is good for quick adoption of improved technologies which will enhance productivities.

Results on marital status show that majority (72.5%) of the respondents were married. This is an indication that the population of the farming household is increasing and this may provide the required labour for agricultural activities.

The distribution of the respondents based on the household size revealed that the mean household size of the respondents was 7.81 persons with 59.2% having between 6-9 persons per household; this indicates that there is an abundance of household labour for agricultural production in the study area. This is supported by Inioniet *al.*, (2007) who reported that the existence of relatively small household size in rural areas negates the preponderance of large family sizes in rural area.

The results also show that 63.3% of the respondents were Muslims, while 36.7% were Christians. Christianity and Islam are the two dominant religions in Nigeria. The distribution of the respondents that was between 21 and 40 years of farming experience were 73.30% and 9.2% had between 41 and 60 years of farming experience with an average of 18.6 years farming experience.

The results also show that most of the respondents (55.0%) had between 1 and 2 hectares of farm land, while 19.0% had less than 1 hectare and 25.8% had above 2 hectares of farmland. This implies that majority of the respondents were small scale farmers with average farm land of 2.73 hectares.

Table 1: Distribution of respondents by their socioeconomic characteristics

Variables	Frequency	Percentage	Mean
Gender			
Male	87	72.5	
Female	33	27.5	
Age			
20 – 39	18	15	
40 – 59	63	52.5	
60 – 79	31	25.8	
80 – 99	8	6.7	52.79
Educational Level			
Primary Education	30	25	
Secondary Education	47	39.2	
Tertiary	43	35.8	
Marital Status			
Single	1	0.8	
Married	87	72.5	
Widowed	29	24.2	
Separated	3	2.5	
Household Size			
1 – 5	29	24.2	
6 – 10	71	59.2	
11 – 15	16	13.3	
16 and Above	4	3.3	7.81
Religion			
Islam	76	63.3	
Christianity	44	36.7	
Years of Farming Experience			
1 – 20	88	73.3	
21 – 40	21	17.5	
41 – 60	11	9.2	18.64
Size of Farmland			
Less than 1 Hectare	23	19.2	
1 – 2 Hectare	66	55	
Above 2 Hectare	31	25.8	2.73

Source: Field Survey, 2016

Sources of labour supply to farmers

Results in Table 2 show that the most common sources of labour in the study area were hired and family labour which was indicated by 85% and 69.17% of the respondents respectively followed by 52.50% which uses own labour. This finding corroborates the work of Adegeye and Dittoh

(2001), who found that farm labour for crop production can be obtained from family non-paid sources, such as the household relatives, friends and hired paid sources. The size of family labour however determined the amount of labour to be hired. Other sources of labour as indicated by the respondents include casual labour (29.2%) and shared labour (10%). There is a limit to the use of

own labour because no individual farmers can perform all the activities on the farm by himself alone especially among the old farmers and in cases where we have large farms. From the study, it is clear that farmers use combination of the different sources. The number of hired labour per planting season in the study area was 1 - 2 labour per season for 64.16% of the respondents while 29.17% hire 3-4 labour per planting season. The number of hired labour depends on the size of the farm and the number of family labour available to

work on the farm. The use of hired labour according to Ezedinma (2000) is mostly as a result of inability of family labour to meet up with increase demand for labour especially during the peak among household headed by old people. Adult male is mostly hired for farm labour among the respondents as claimed by 95.8%, female and children are not hired in the study area except in few instances for weeding and fertilizer application.

Table 2: Distribution by sources of labour supply to farmers

Variables	Frequency	Percentage (%)
Source of Labour		
Family Labour	83	69.17
Hired Labour	102	85.00
Own Labour	63	52.50
Casual Labour	35	29.17
Shared Labour	12	10.00
Number of Hired Labour/Season		
1 – 2	77	64.17
3 – 4	35	29.17
5 – 6	8	6.66
Gender of Labour		
Adult Male	115	95.80
Adult Female	3	2.50
Children	2	1.70

Source: Field Survey, 2016

Labour availability for farm work

Results from Table 3 shows the extent to which the respondents make use of labour; where 40.8% claimed that they rarely use family labour, 40.0% claimed that they always use family labour while 19.2% claimed they never use family labour for their farm operation. Also 86.7% claimed the frequent use of hired labour while 8.3% claimed

rarely use of hired labour and 5.0% claimed they never use hired labour, 50.3% rarely use group labour, while 42.5% claimed they never use group labour and 6.7% always use group labour. This shows that hired labour are mostly used in the study area.

Table 3: Distribution of labour availability for farm work

Variables	Always	Rarely	Never	Mean
Use of family labour	40.0	40.8	19.2	
Use of hired labour	86.7	8.3	5.0	
Use of grouped labour	6.7	50.8	42.5	33.3
Use of casual labour	3.3	59.2	37.5	
Use of share labour	8.3	5.0	86.7	

Source: Field Survey, 2016

Labour use pattern by the Farmers

Table 4 shows the labour use pattern among the yam farmers in the study area. The table reveals that hired labour was mostly used for land clearing (81.7%), ridge making (85.0%), planting (60.8%), staking (62.5%) and harvesting (69.16%), while family labour is mostly used for weeding and fertilizer application. Johnson (2003) is of the view that family labour used in peasant agriculture outnumbered the hired labour but owing to the decline in polygamy and rise in school enrollment, the use of hired labour is on the increase. Hired labour is used for very tedious and technical part of yam farming such as ridge making, planting,

staking, and harvesting. This may be due to the fact that women and the children may not be able to carry out these activities. It may also be attributed to rural urban migration and the reluctance of the young school leavers to undertake heavy chores on the farm using primitive tools (Olayide and Heady, 2000, Iwuekeet *et al.* 2002). Very few of the farmers carry out all the activities themselves especially when the farm size is quite small. This is according to Ayanwuyi *et al.* (2011) that labour cost of yam production from molding to staking especially in the forest area account for approximately 40% of cultivation cost. So, in order to cut production cost, family members do all the production and marketing activities themselves.

Table 4: Distribution of farmers by labour use pattern

Activities	Hired Labour	Family Labour	Own Labour	Shared Labour
Land Clearing	98 (81.7)	17 (5.8)	3 (2.5)	12 (10)
Ridge Making	100 (85)	4 (3.3)	1 (0.8)	15 (12.5)
Planting	73 (60.8)	20 (16.7)	7 (5.8)	20 (16.7)
Weeding	40 (33.3)	45 (37.5)	32 (26.7)	3 (2.5)
Staking	75 (62.5)	25 (20.8)	20 (16.7)	0 (0.0)
Fertilizer Application	21 (17.5)	74 (61.7)	25 (20.8)	0 (0.00)
Harvesting	83 (69.16)	30 (25.0)	5 (4.2)	2 (1.6)

Source: Field Survey, 2016

Constraints faced in the use of hired labour for yam production

Table 5 shows the result on various constraints faced by the respondent in the use of hired labour for yam production. Majority (86.7%) of the respondents claimed that the high cost of labour, scarcity of labour (50.8%) and

insufficient funds to hire labour (52.5%) as major constraints to the use of hired labour. This implies that cost of hiring labour is very high in the study area. Other constraints in the use of hired labour identified by the respondents are the distance of the farm from the villages which tends to discourage hired labour.

Table 5: Distribution of constraints faced in the use of hired labour for Yam Production

Variables	Major constraints	Minor constraints	Not a constraints
High Cost of Labour	86.7	12.5	0.8
Scarcity of Labour	50.8	45.8	3.3
Insufficient Funds	52.5	31.7	15.8
Long distance of Farm	21.7	62.5	15.8

Source: Field Survey, 2016

Test of Hypothesis

Results in Table 6a reveal that the respondents' socio economic characteristics like religion ($\chi^2 = 0.000$, $p < 0.05$) and labour availability ($\chi^2 = 0.034$, $p > 0.05$) were significantly related to labour use pattern, this should be expected since the study area is dominated largely by Muslims with large family size which will supply more labour to the farm. This is in line with the findings of Reardon (1997)

who opined that family size affect the ability of a household to supply labour to the farm sector.

The result of Pearson's Product Moment Correlation (PPMC) in Table 6b reveals that respondents age ($r = 0.083$, $p > 0.05$), farming years of experience ($r = 0.152$, $p > 0.05$), and size of farmland ($r = 0.296$, $P > 0.05$) were statistically not significant. This implies that the fact that the strength to work on the farms is not premised on

age, year of farming experience and size of farmland in the study area.

Table 6a: Chi – Square analysis showing the relationship between respondents’ socioeconomic characteristics and labour use pattern

Socioeconomic Characteristics	χ^2 - value	P – value	Decision
Gender	0.084	0.827	NS
Educational Level	3.727	0.155	NS
Marital Status	2.963	0.397	NS
Religion	0.000	0.99	S
Labour Availability	0.034	0.853	S

Table 6b: PPMC Analysis of respondents’ socioeconomic characteristics and labour use pattern

Socioeconomic characteristics	r – value	P – value	Decision
Age	0.083	0.076	NS
Farming Year Experience	0.152	0.066	NS
Size of Farm Land	0.296	0.09	NS

CONCLUSION AND RECOMMENDATIONS

The major objective of the study was to examine the labour use pattern among yam farmers in ATISBO Local Government area of Oyo State, Nigeria .The result shows that yam farmers were still in their active age with large family size to supply labour to the farm. The major source of labour for yam farming was hired and family labour, both were found to be readily available in the area with hired labour been used for tedious activities such as land clearing, ridges making, staking and harvesting while family labour is used for fertilizer application and weeding. Religion and labour availability were found to have a significant relationship with labour use pattern, meaning that availability determines the pattern of usage while the other socioeconomic characteristics have no significant relationship with labour use pattern. The major constraints faced in the use of hired labour in the study area include, high cost of labour, insufficient fund and scarcity among others.

It is therefore recommended that the yam farmers should be urged to organise themselves into cooperative groups so as to have the capacity to take part in share labour and have access to more funds to enhance production effectiveness and efficiency. Additionally, there should be provision of incentives by farmers for farm labours so as to encourage them in yam production. Policies should also be in place on cost of farm labours in such a way that it will be uniform and can be easily affordable by farmers.

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Assessment of tourists' visitation motives and tourism facilities in Olumo rock, Abeokuta, Ogun state, Nigeria

Ojo, S.O.

Department of Wildlife and Ecotourism Management, University of Ibadan,

Correspondent author e-mail: gbemiga_ojo@yahoo.co.uk

ABSTRACT

This study examined the tourist visitation motives and tourism facilities in Olumo Rock Tourism Complex. The study was carried out using 60 randomly selected tourists and six staff adjudged to be representative of the total population. Data for research were collected through personal interview and administration of questionnaires to the tourists/visitors and staff at Olumo Rock Tourist Centre over a period of 12 months and were subjected to statistical tools such as frequency tables analyzed by using simple percentages and Bar chart. Fifty percent and 45% of the respondents' visitation motives to the site were relaxation and recreation, respectively. The facilities offered included transportation facilities, internet services, hospitality units, and 85.0% of the respondents were satisfied with these facilities. All the visitors examined were willing to -visit again if opportunity arises. The study concludes that Olumo Rock Tourist's Centre attracts tourists whose travel motivational factors are relaxation and recreation. The site also has supporting facilities to enhance the satisfaction of her visitors. There is a need for increased publicity through various media to advertise the centre and sensitize people on the tourism resources and facilities of the Complex.

Keywords: Olumo rock, Tourist visitation motives, Tourism resources

INTRODUCTION

Tourism refers to the entire world industry of travels, hotels, transportation and all other components including promotion, which serve the needs and wants of travellers. World Tourism Organisation (WTO) in its proposed definition to the United Nations Conference on Travel and Tourism (1963) defined a tourist as a temporary visitor staying at least for twenty-four hours or over-night in a country visited whose journey is for the purpose of leisure (holidays, recreation, sports) or business (family, meeting, mission, health, study or religion). Tourism can also be termed as the science, art and business of attracting and transporting visitors, accommodating them and graciously catering for their needs and wants. This implies any activity that voluntarily and temporarily takes a person away from his/her usual place of residence in order to satisfy a need, either for pleasure, excitement, experience and or relaxation. According to Marguba (2001), the major types of tourism include historical tourism, ecological tourism or ecotourism, cultural tourism, religious tourism and traditional tourism.

Tourism started ages ago and precisely in the Roman Empire in 14th century A. D. It started as a social obligation for the hosts to make guests/travelers comfortable when they came calling. It would be recalled that the Roman Empire spread all over Europe at that time and it contained many sparse and

mineral springs whose water contained healing property. Up till today, visitors flock these sparse healing resorts to find solution to their health problems. The idea of earning a living from these guests became apparent so that the host might not have to bear all the brunt of giving minimum comfort to their guests (Aremu, 2001). Tourism gained international recognition in 1925 as international tourism started in the Netherlands by Mr. Deventer. It has now matured into a strong industry to restore hope in the economic status of most developed world, as well as inject sanity and beauty into the entire environment (Ayodele and Falade 1992; National Concord, 1993). International tourism has become an important economic and political tool in modern development, not only is the amount of money generated in the international tourism industry enormous, the flow of that money is somehow determined. International tourism involves the movement of people across nations and this has implications on the ability of their home government to protect their lives and properties (Folorunsho, 2001). Tourism, like other economic and social activities, does not occur evenly or randomly in space. Certain sites, locations or regions are more favourable for tourism development than others, influenced by factors like climate, physical conditions, attraction, facilities, accessibility, land tenure and use, constraints and incentives, and others such as labour costs, political stability and so on. This gives potential tourists the opportunity to choose

a destination that stimulates their interests and motivates them to travel (Jonsson and Devonish, 2008).

In Africa, tourism has given rise to development of conservation areas. Africa stands unique in some aspect of tourism such as cultural and safari (wildlife) or ecotourism. It also provides an extension of summer holidays for the Europeans with its almost all year round sunshine. Africa is very rich in resources such as beautiful climate, with good sunshine all year round, pleasant beachfronts, floral of cultural values and historic potentials; but for varied reasons, these potentials are neither fully exploited nor turned to good advantage (Ayodele, 2002). Most countries especially the African countries like Kenya, Tanzania, Uganda, Zimbabwe, South Africa, Egypt etc have developed their tourism industry such that they have become the mainstay of their economy. As a result, it has brought growth and development to these countries.

In Nigeria, tourism is becoming an increasingly vital part of the Nigerian economy with the rapid expansion and growth of the hospitality industry even though most of the population is urban with the rural gradually coming up and still works in Agriculture. Tourists are attracted by Nigeria's cultural diversity, scenery and festivals. Each region of Nigeria offer something for foreign visitors, from Obudu Cattle Ranch, OsunOsogbo Groove, Agbokim Water Falls in Calabar and a number of beaches and coastal as seen in Lagos. Not only are foreign tourists traveling to Nigeria after the serious awareness created by the Nigeria Tourism Development Commission (NTDC), Nigerian themselves have also started taking more domestic vacations and developing interest in recreation as well (Ajala 1988; Dieke, 2003).

Ogun state is a multi-ethnic and multi-religious state that is rich both in natural resources and cultural identity (David, 2001). Tourism is a relatively young but growing industry in Ogun State. Its slow pace of development may be multi-causal in reasons such as previous administrations' interest, huge and intensive capital needed for its take off and so on. Mother Nature has so blessed the state with beautiful climate, soil, vegetation, historical sites and monuments, land and especially rock formations in which Olumo Rock is prominent. In the face of dwindling federal allocations to the state and the snail-crawling increase in the Internally Generated Revenue (IGR), there is need to develop natural endowments in terms of tourism so to meet the economic needs of the state and for people to enjoy the scenic pleasures they stand to offer. This study therefore was carried out to

examine tourists' visitation motives and tourism facilities in Olumo Rock. This will enable tourism destination managers to understand what drives a tourist to visit their site as well as the usage of facilities offered and the satisfaction derived from them. Hitherto, tourism destinations can be effectively managed with prospects of increased tourists' influx which is tantamount to improved economic benefits

METHODOLOGY

Study Area

Ogun state is located within South-Western Nigeria. It lies within the tropics and covers a land area of approximately 16,762 square kilometers. It is bounded in the West by Benin Republic, in the south by Lagos state and the Atlantic oceans, in the East by Ondo state and in the North by Oyo state. Abeokuta is located amidst a group of granite rocks of natural formation and has an average height of about 280 meters above sea level. It has two distinct climatic seasons which are wet and dry seasons. The wet season starts in April and ends in October while the dry season begins in November and ends in March. An average rainfall of 104cm is often within Abeokuta. Its soil is clayey in nature, firm and fertile with rock basement complex.

Olumo rock is a massive outcrop of granite rock of primitive formation from which Abeokuta, the capital of Ogun state derives its name. It is located in the traditional core of Abeokuta town and lies between Ikija and Ikereku neighborhoods and also visible from all parts of the city. The highest point on the Olumo rock is about 137 meters above sea level and the Ogun River which takes the name of the state flows west of Olumo. The rock whose name "Olumo" means "God built it", is surrounded by a number of caves in which the Egbas took refuge and fortress in the time of Yoruba wars of the 19th century. One of such caves, which is about 6m by 7m wide, has slab-like stones that must have served as seats for ancient dwellers around the cave.

Data Collection and Sampling technique

Reconnaissance survey was carried out at the study area prior to the actual collection of data. The research was carried out by randomly selecting sixty tourists/visitors and six staff that were available during the period of study as respondents. Data for research were collected through personal interviews and the administration of questionnaires to the respondents at Olumo Rock Tourist Centre for a period of twelve months (April 2008-March, 2009).

The reason for this was to collect data during both festive (Easter, Ramadan, Christmas, New Year etc) and non-festive periods.

Data Analysis

Data from the study were subjected to statistical tools such as frequency tables and analyzed using simple percentages and Bar and Pie charts.

RESULTS AND DISCUSSION

Tourists' motives for visiting

Data on tourists' motives for visiting Olumo Rock Tourist Complex is represented on Figure 1. Fifty percent of the respondents visited the centre for the purpose of relaxation, 45.0% for fun and 5% for wilderness experience. Moreover, 20.0% of the respondents visited Olumo Rock tourist centre occasionally; 65% rarely and 15.0% regularly (Fig 2). This is an indication that many people are yet to appreciate the importance and benefits of visiting the tourist centre.

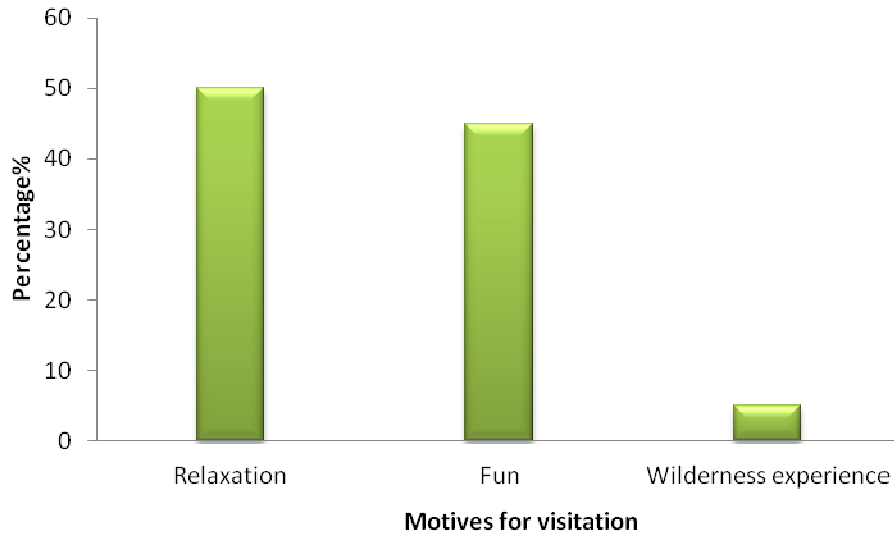


Fig 1: The Motive of Visitors to the Olumo Rock Tourist Centre, Ogun state

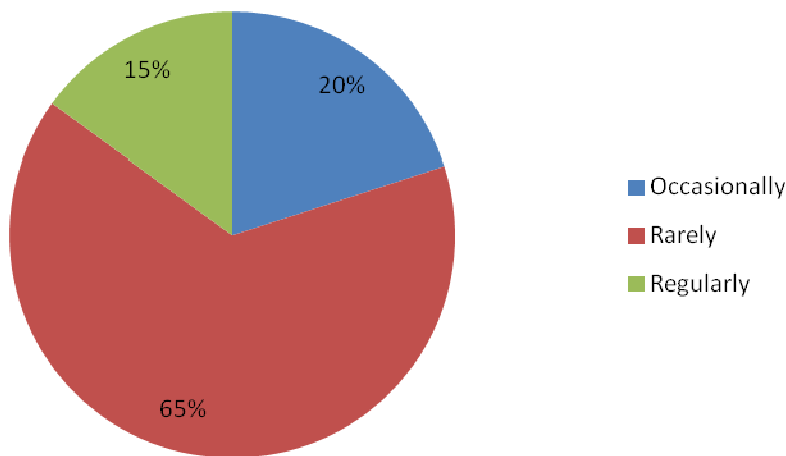


Fig 2: Frequency of visitation to Olumo Rock Tourist Centre in Ogun State

Facilities and their usage in Olumo Rock Tourist Complex

Table 1 shows that 66.7% of the tourists confirmed the usage of cars and buses as part of tourism-

supporting facilities, while 33.3% did not;66.7% also made use of hotels and other accommodation facilities, while 33.3% did not. Table 1 also revealsthat 50.0% of the tourists attested to the usage of internet facilities, while 50.0% did not. Similarly, all the respondents confirmed the presence and usage of GSM operation facility; 66.7% agreed on the usage of restaurant and fast food centre while 33.3% did not agree. Furthermore, 33.3% of the tourist interviewed agreed on availability and usage of casino and other games while 66.7% did not make use of the casino and other games. 16.7% made use of the cinema hall while 83.3% did not.

Table 1: Facilities and their usage by tourists

Facilities	Yes (%)	No (%)
Cars and Buses	66.7	33.3
Hotel and other facilities	66.7	33.3
Internet Facilities	50.0	50.0
GSM Operation	100.0	0.0
Restaurant and Fast Food	66.7	33.3
Casino / Game	33.3	66.7
Cinema Hall	16.7	83.3

Source: Field survey, 2009

Opinion of staff on site facilities and tourists characteristics

Table 2 indicates that anequal percentage of the staff (50.0%) each agreed and disagreed that the centre had stable electricity, while 50% of the staff were of the opinion thatawareness of the centre was through television / radio, posters and bills (33.3%), while 16.67% was of the opinion that there was no awareness to the tourist’s centre. All the staff agreed that foreigners visit the tourist centre regularly and that an increase in number of visitors had been recorded.

Table 2: Opinion of staff on site facilities and tourists characteristics

	Frequency	Percentage
Stability of Electricity		
Yes	3	50.0
No	3	50.0
Medium of awareness		
TV/Radio	3	50.0
Posters and Bills	2	33.3
No Awareness	1	16.7
Influx of Foreigners		
Yes	6	100.0
No	0	0.0
Increasing Rate of Visitation		
Yes	6	100
No	0	0

Source: Field survey, 2009

Tourists’ satisfaction with facilities at Olumo Rock Tourists Centre

Higher proportion (85.0%) of respondents at Olumo Rock Tourists Centre, Abeokuta was satisfied with the facilities at the centre while 15% were not satisfied (Fig 3). This shows that the facilities there were of appreciable standard that are capable of attracting tourists after the first visit. Figure 4 shows that all the visitors interviewed were willing to re-visit Olumo Rock Tourists Centre Abeokuta if they had further opportunity. This shows a great potential of visitors’ patronage of the centre.

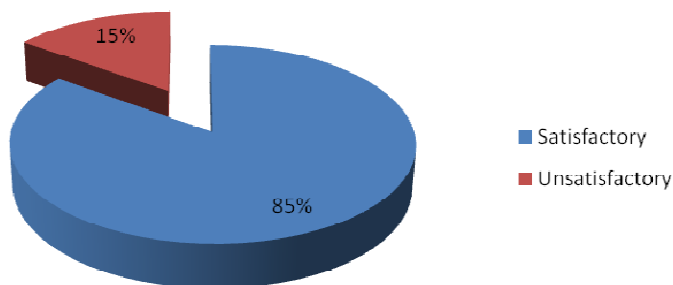


Fig 3: Tourists satisfaction with Facilities at Olumo Rock Tourists Centre

Source: Field Survey, 2008

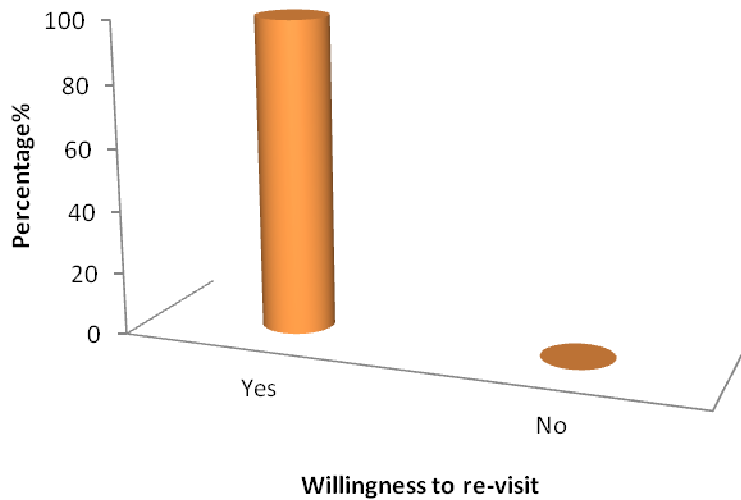


Fig 4: Tourists willingness to re-visit

The study revealed that the main reasons why tourists visit the destination included the need to find relaxation (50%) and the need to seek pleasure and enjoyment (45%). This is in agreement with the findings of Jonsson and Devonish (2008). The desire to relax and have fun is a dominant motivating factor and site selection criteria by tourists. The study also revealed that majority (65%) of the tourists rarely visited Olumo Rock Tourist Centre. This may be attributed to lack of interest or dearth of publicity or awareness about the centre. This is one of the reasons why awareness should be taken proper care of so as to stimulate interest. This is in consonance with Whiteman (1996), who reported that the stated purposes of tourism are to raise the public’s awareness of the environment, to sensitize travelers to nature and its processes. On the opinion of staff on medium of awareness to the tourist centre, 50% of the staff was of the opinion that awareness to the centre was through television / radio; 33.33% through posters and bills while 16.67% was with the opinion that there is no awareness to the tourist’s centre.

The facilities offered in Olumo Rock Tourism Complex include transportation facilities (cars and buses), hotels, internet facilities, GSM operation, restaurant or fast food outlets and majority of the tourists made good use of them appreciably. Furthermore, on the opinion of the tourists about the facilities at Olumo Rock Tourists Centre, 85% of respondents were satisfied with the facilities at the centre while 15% were not satisfied. This showed that the facilities there were of appreciable standard that are capable of attracting tourists after the first visit. These findings agree with the assertion of Jonsson and Devonish (2008) that ‘the central

element of the tourism system is the destination with its features and resources’.

The study also shows that, the visitors are satisfied with the facilities provided at the centre, which led to all the tourists interviewed (100%) willing to re-visit the centre. On one side, this stresses the importance of infrastructures in tourism development as reported by Brohman (1996). On the other side, it depicts a high level of destination loyalty by tourists. Destination loyalty is viewed as an intention to revisit the destination and as tourist’s perception of a recommendable place (Kuusik *et al*, 2011).

CONCLUSION

Olumo Rock’s Tourist’s Centre, Abeokuta, attracts tourists whose main visitation motives are relaxation and recreation. The facilities offered by the site include transportation facilities, hospitality units, internet services, stable electricity, and so on. Majority of the respondents made use of these facilities. Moreso, tourists’ satisfaction with the facilities offered by the Complex is high. The fact that all the tourists examined were willing to re-visit Olumo Rock tourist Centre if opportunity warranted coupled with the high standard facilities there that are capable of attracting tourists after the first visit is a great potentiality of the centre. There was however no medical facility at the centre; that is not good enough in case of any eventuality.

RECOMMENDATIONS

- I. Advertisement jingles should be placed on radio and television to arouse the interest of people to the centre. Also, billboards on the centre should

be placed at strategic locations. Handbills, posters etc should be used to advertise the centre. Publicity helps to sensitize people not only on the location of the centre but also to make them understand / know the benefit available in their culture, history and ecological value of their environment.

- II. Interpreters should be employed at the centre to assist visitors who cannot communicate in English Language or in the indigenous language (Egba and/or Yoruba) to learn about the centre and its environment.

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