The Nigerian Journal of Rural Extension and Development

THE NIGERIAN JOURNAL OF RURAL EXTENSION AND DEVELOPMENT (NJRED)

Aims and Scope

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.

In addition, the Journal publishes book reviews and research and research –in-brief articles.

The Review Process

NJRED employs a two-tier review system.

First, the editor reviews each submission to determine its suitability for further peer review by the NJRED Manuscript Review Committee. If the submission is judged as unsuitable, the editor either rejects the submission or highlights weaknesses and proffers revision suggestions to the author(s).

Second, submission judged suitable for further review is sent to 2 reviewers for in-depth assessment based on a blind review process. The reviewers focus on contribution to knowledge and appropriateness of methodology alongside writing style.

All correspondence to: njredunibadan@yahoo.com

Note to Contributors

Mission of Manuscripts
Articles must be original research work which should not have been submitted for publication else where. Formatting of articles is to be done using MS Word (any version) with tables and figures well formatted, heading and other illustrations clearly distinguishable.

Articles submitted should be provided with a short abstract of about 250 words at the beginning of the text, reporting concisely the main results and important conclusions. At least 3 keywords are required at the base of the abstract.
The cover sheet should contain:
   a. Title of the article
   b. Author (s), name (s), indicating correspondence author with e-mail address
   c. The first page of the manuscript should contain the title of the article.

List of references for each work cited should be given at the end of the text, in alphabetical order using the APA style of referencing, that is, surname of author (s), initials, year of publication in parenthesis, title of paper, name of journal (underlined or italicized) or book, volume, and first and last pages of the reference.

Tables and figures must be numbered, self explanatory and appropriately referred to in the body of paper. All measurements must be in metric system with currency conversions stated.

Only e-copies of manuscripts are acceptable and the journal assumes no responsibility for loss of manuscripts or accompanying materials in the mails. Authors are advised to retain copies of their submission.

Author(s) of accepted manuscript will receive a pdf and hard copy of the journal volume in which their article appears. Authors will be required to pay a flat page charge to off-set the cost of publication.

E- Copies of paper are to be sent preferably by e-mail to: njredunibadan@yahoo.com

Annual Subscription*

Overseas	Surface Mail	Airmail
Institution/Organisations	$100	$120
Individuals	$50	$60
Student	$20	$30

Africa		
Institutions /Organisations	N10,000.00	

TABLE OF CONTENTS

Nigerian Journal of Rural Extension and Development Vol. 13 (June, 2019)

Management practices of aquaculture in Osun state: Implications for sustainable development

Agbeja, Y. E. and Adetunji, C.
Department of Aquaculture and Fisheries Management
Correspondence details: eniolagbeja@yahoo.com, ye.agbeja@mail.ui.edu.ng

ABSTRACT

This study identified some prevalent management practices of aquaculture in Osun State with a view to investigating if these practices are deemed environmentally responsible and if they are in accordance with sustainable fish farming practices, towards supporting food security in the study area and Nigeria as a whole. Data for the study was collected via the use of questionnaire and a total of 130 respondents were sampled. Management aspects investigated in this study included, sources of fingerling, species cultivated, stocking density, feeding habits, use of genetically modified resources, effluent discharge, social sustainability, marketing channel and economic profitability. Results reveal that most of the management practices investigated were, to a large extent, sustainable except for the management of untreated effluent discharge. It was recommended that government should develop and promote strategic plans that will ensure environmental protection from effluents discharge of aquaculture through the establishment of regulatory bodies to audit aquaculture practices.

Keywords: Sustainable Aquaculture, Fish-farm Management, Responsible fish-farming

INTRODUCTION

Consumption of fish protein by Nigerians constituted about 3.2 million tonnes in the year 2006 (National Bureau of Statistics, 2014). The Federal Government of Nigeria indicated that Nigeria spends about N125.38 billion on annual importation of fish (Food Business International, 2014). This huge spending on importation of fish can be reduced and used to invest in fish farming, thereby boosting domestic production, which invariably creates employment and reduces poverty. However, fish farming or production has to be practiced in a sustainable manner for the industry to remain vibrant.

The concept of sustainable development has since the 1992 Rio Conference on Environment and development been made imperative with the regulatory guide provided by the "The Brundtland report of the World Commission on Environment and development, which defines it as "development which meets the needs of the present without compromising the ability of future generations to meet their own needs". Therefore, it became paramount for every country to interpret the concept of sustainable development in context of its specific development needs. These interpretations are to be taken further for each sector of activity including fishery and aquaculture development. This is to ensure that developmental activities take place at an acceptable environmental cost.

In the agricultural sector of the Nigeria's economy which employs about 70% of the active labour force, fish occupies a unique position in that it is the cheapest source of animal protein consumed by the average Nigerian, accounting for up to 50% of the total animal protein intake (FDF, 2009). With diminishing returns from over fishing in capture fisheries, aquaculture has been growing at some 20% per year since 2003 in Nigeria and continues to attract many investors and new farmers. According to the World Fish Center (2009), aquaculture is the world's fastest growing food production sub-sector, growing at an annual rate of 8.9% since 1970. Land otherwise not suitable for any other form of agriculture can be used for fish farming (aquaculture) such as FADAMA irrigated areas, swamps, spent land, borrow pits, etc. (USAID, 2010).

An example of international work that has been done in reinterpreting sustainable development in relation to aquaculture activities is the Food and Agriculture Organisation's Code of Conduct for responsible fisheries (FAO Code, 1995). The Code seeks to promote adherence to principles and standards favorable to sustainability in the conservation, management and development of fisheries. The 1995 FAO code of conduct for responsible fisheries (article 9), specifically addresses aquaculture development and encourages countries to establish procedures that promote sustainability in aquaculture by the use of strategic planning that are effective and specific to aquaculture so as to undertake appropriate environmental assessment and monitoring aimed at reducing adverse ecological changes and related economic and social impacts resulting from water extraction, land use, discharge of effluents, use of drugs and chemicals and other aquaculture activities.

At the national level, this involves conservation of genetic diversity and integrity of ecosystems by encouragement of appropriate practices and procedures. At the operational level, promotion of responsible aquaculture should involve encouragement and in some aspects, the regulation of chemical inputs that are hazardous to human health and damaging to the state of the environment. Not the least important are the need to prevent aquaculture practices that are actually harmful to the aquaculture industry itself, such as practices that give rise to disease transmission, and the need to ensure food safety in aquaculture products.

The World Bank projected aquaculture to be the prime source of seafood by 2030, as fish demand grows and global wild capture fisheries approach their maximum take. When practised responsibly, fish farming can help provide livelihoods and feed a global population that will reach nine billion by 2050 (World Bank, 2014).

The aquaculture system can truly be sustainable if the following issues are considered;

- Environmental sustainability: effluents discharge or fish loss from aquaculture should not cause a tangible disruption to the ecosystem such as substantial pollution impact or result in loss of biodiversity.

- Economic sustainability: Aquaculture as a business must be viable to encourage committed investors.

- Social and community sustainability: Aquaculture must be socially responsible and contribute to community well-being.

A number of certification programs have made advancement in defining key characteristics of sustainable aquaculture. Such essential practices according to World Bank (2014) include:

- Environment practices: conservation of mangrove and wetland; effective and efficient effluent management and water quality control; control of sediment and sludge management; conservation of soil and water; efficient fishmeal and fish oil use; sourcing of broodstock and juvenile fish responsibly; control of escapes and minimizing biodiversity and wildlife impact.

- Community practices: establish well-defined rights, aquaculture zones and responsibilities for aquaculturists, compliance with established regulation and effective enforcement; community involvement; worker safety, fair labor practices and equitable compensation.

- Sustainable business and farm management practices: effective biosecurity and disease control systems; minimal antibiotic and pharmaceutical use; microbial sanitation; maintain global standards for hygiene; efficient and humane harvest and transport; accountable record-keeping, traceability and profitability of the aquaculture business.

Domestic production of fish in Nigeria is about 511,000 metric tonnes, which can only meet about one third of demand while the country imports more than 700,000 metric tonnes of fish each year at a cost of some US $ 0.7 billion. This is in spite of the fact that the country has the capacity to produce more than 3 million metric tonnes of fish per year with 14 million hectares of inland waters, 853 km^2 of coastline bordering an extensive mangrove ecosystem comprising lagoons, estuaries, wetlands and series of interconnecting creeks and considerable interest in aquaculture from the private sector (FAO, 2005).

Sustainable aquaculture is a dynamic concept and the sustainability of an aquaculture system will vary with species, location, societal norms and the state of knowledge and technology (World Bank, 2014). The growth of aquaculture and its response depends on management strategies, management technique and fish stock management techniques (Payne, 1986).

This paper identified some prevalent management practices of aquaculture in Osun State with a view to investigating if the practices are in accordance with sustainable fish farming practices, towards ensuring food security in the study area and Nigeria as a whole. The aspects investigated include, sources of fingerling, species cultivated, stocking density, feeding habits, use of genetically modified resources, effluent discharge, social sustainability, marketing channel and economic profitability.

Study Area

Osun state was created in 1991 from the eastern third of Oyo state. It is a land-locked state that covers an estimated area of 8,062 square kilometres. It lies within latitudes 6° and 9° N of the equator and approximately between longitudes 2° and 7° E of Greenwich meridian (Anamayi, *et al.*, 2010). The state has a covering of tropical rain forest, and the Osun is the most important river. Osun's economy is based mainly on agriculture. Agriculturally, Osun state is divided into three Zones: Osogbo zone, Iwo zone and Ijesa- Ife zone. Osun state comprises of thirty-one local governments.

Methodology

Three agriculture zones of the state, namely, Iwo zone, Osogbo zone and Ijesa-Ife zone were purposively selected and one hundred and fifty respondents were randomly selected (fifty respondents for each zone) from various local government area within the region based on the intensity of aquaculture practices in the area. However, only 130 responses were analyzable.

Structured questionnaire was used to obtain information from the respondents. The study was socio-economic in nature and farmers were asked questions to reveal their demographic characteristics, prevailing farm management practices such as; sources of fingerling, species cultivated, stocking density, feeding habits, use of genetically modified resources, effluent discharge, and social and economic sustainability.

The data collected were subjected to descriptive statistics such as frequency counts and percentages. Returns on investment (ROI) were used to analyze profitability of fish farming. The formula for ROI is as shown below:

ROI = (Net profit/Cost of investment) x 100.

Socioeconomic characteristics of respondents:

Table 1 indicates the social characteristics of respondents. These include their age, marital status, level of education and source of finance. The results show that majority of fish farmers in Osun state were between the ages of 36 and 50 years (51.5%), mostly married (69.0%) with an average family size of 6. Most of the respondents are educated with 38.0% attaining university education. This could indicate the higher level of skill or technicality involved in fish farming as it is with other types of animal farming such as poultry, Adedeji *et.al.* (2014). Majority of the respondents obtained their initial investment funds from personal savings, which suggests there may be inability or difficulties involved in obtaining financial credits such as loans for starting a venture like fish farming. However, there are prospects that this condition may change for farmers because the Federal Government of Nigeria through the Central Bank of Nigeria (CBN) in collaboration with Federal Ministry of Agriculture and Rural Development (FMARD) has established Commercial Agriculture Credit Scheme (CBN, 2014). However, farmers will need adequate information on how to harness the scheme efficiently through their local financial institutions.

RESULTS AND DISCUSSIONS

Table 1: Distribution of respondents by socioeconomic characteristics

Age	Frequency	Percentages
<35	22	17.0
36-50	67	51.5
>51	41	31.5
Marital Status		
Single	32	25.0
Married	90	69.0
Widowed	3	2.0
Divorced	5	4.0
Educational background of respondents		
Modern school	12	9.0
Secondary school certificate	23	18.0
Koranic school	8	6.0
Polytechnic/National Certificate of Education	38	29.0
University	49	38.0
Source of finance		
Personal savings	89	69.0
Bank loan	14	11.0
Cooperative	23	18.0
Donation and other sources	2	2.0
Total respondents	130	100.0

Sources of fingerlings

Figure 1 indicates that the farmers procured their fingerlings (fish seed) mainly from other fish farm hatchery 79.0% and18.0% acquired fingerling from the wild, 1.0% respondents self-bred, while the

source of acquisition for 2% of the respondent could not be identified. The use of wild-caught fingerlings does not support sustainable aquaculture as wild captured fingerlings are seasonal, have limited growth, usually made up of different strains, which may be difficult to separate

by uninformed farmers (Anetekhai, *et al*, 2004). These results indicate support for sustainable development, as most farmers sourced their fish seeds from controlled culture systems (hatcheries). This also indicates the industry is gradually overcoming the bottleneck of sourcing good quality fingerlings. This is because in Anetekhai *et. al.*

(2004), reported that there were very few hatcheries in Nigeria and most of them produce below 10% capacity as a result of lack of brood stocks, skilled manpower, good water, electricity, live food for fries, difficulty in obtaining natural hormones and expensive nature of synthetic hormone.
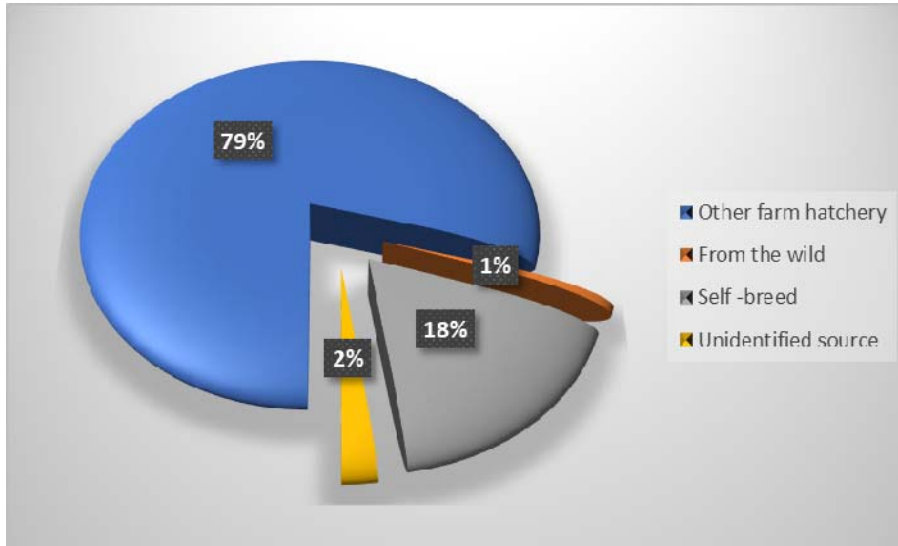
Figure 1: Sources of fingerlings

Species cultivated and culture system

The culturing system adopted by most respondents is monoculture with78.0%, while 22% practised poly culture with tilapia species. Species cultivated in the study area included; catfish species (*Clarias gariepinus, Heterobranchus bidorsalis*) and tilapia species. These species support the principle of sustainable aquaculture, which requires species, cultivated to be native to open water systems. The use of non-native species has been known to become pests that lead to economic losses as they prey on and compete with native species, change or alter aquatic habitat. The 1995 FAO code encourages nations to perform a risk assessment when embarking on the use of non-native species.

Results obtained on culture systems show that 15.0% of respondents practiced extensive management system, 74%, semi –intensive management system, while 11.0% practiced intensive management system. This indicates that most Osun state fish farmers practiced semi-intensive management system of which 60% practiced integrated fish farming, while 40.0% practiced purely fish farming. Among those that practice integrated fish farming, 65% were involved fish cum poultry 12.0% involved in fish cum piggery and 23% involved in fish cum poultry, sheep and goats.

Stocking density

Average stocking density for the study area was recorded at 2,300 fingerlings per ha. However, 78.0% of the respondents indicated that they stocked their pond based on their financial capability.

Stocking density is one of the crucial factors that determine fish growth and final biomass that will be harvested (Engle and Valderrama, 2001; Rahman *et al*., 2005, Boujard *et al*., 2002).

The respondents also had practices such as segregation by size which helps not only to regulate population density, but equalizes competition for food and reduces cannibalism of the smaller fishes by the shooters especially in the culture of catfish. Identifying optimum stocking density for a species is a critical factor not only for designing an efficient culture system (Leatherland and Cho, 1985), but also for optimum husbandry practices (Dasuki *et al*. 2013). Sustainable aquaculture should use stocking densities that support the welfare of fishes by minimizing risk of disease outbreaks and transmission. The stocking practices of aquaculturists in the study area are adequate and promote sustainability.

Feeding Habits

Results on feeding habits reveal that most farmers used feed that composed 40.0% crude protein, of which the formulation on the average used contained 28.0% fish meal and 47.7% soya bean. Respondents also fed their fishes as follows: 15.6% supplemented their fish feed with poultry feed waste, 32.0% fed their fish with pelleted feed, while 51.6% fed their fish with floating feed. Floating feed was used by most of the fish farmers because it does not sink quickly into the pond. In order for aquaculture to be sustainable, efforts must be aimed towards feeding fish with plant-based feeds origins thereby minimize the use of scarce fishmeal or fish-oil-based feeds (Green peace international, 2014). Provision of sustainable aquafeed ingredients is strongly linked to the future development of aquaculture, and sourcing of the raw materials for these ingredients should also be environmentally acceptable and should not impact the ecosystems negatively (Simard et. al, 2008)

Genetically modified fish or feed

Genetically modified or engineered fish or fish feed is still in its infancy in Osun state. The only reported use was towards sex reversal of tilapia species which had been attempted by 4.0% of respondents, 65.0% indicated having knowledge about GMO but never used it, while 31% indicated having no idea about GMO's. There are several advantages associated with the use of GMOs, e.g. genetic modification could be used to increase feed production rates, sex differentiation, resistance to pathogens, behaviour modification, and tolerance to environmental conditions that will invariably open up doors to economic viability of species (Le Curieux-Belfond *et al*. 2009). The use of genetically engineered fish or feed is contrary to sustainable aquaculture; in line with the precautionary principle of sustainability, it is of utmost importance to consider the advantages versus the disadvantages of using GMO's in aquaculture. Concerns as regards the use of GMOs are related to health issues, ecology, and ethical concerns.

Effluent discharge

All respondents (100%) indicated that effluents from the fish farms were not subjected to any form of treatment before being discharged into the environment. Fortunately, there has not been any report of negative environmental impacts. Aquaculture facilities discharge effluents which consists of uneaten fish feed, fecal matter, metabolic excretions and dead fish, and they comprise of both organic solid wastes and dissolved organic and inorganic nutrients that can cause damage to the ecosystem. This result corroborated the findings of Akinrotimi *et al*. (2007) that reported that effluent from aquaculture in Port Harcourt metropolis in Rivers State, Nigeria, regularly released into the environment cause damage to the aesthetics of the surrounding and putrefying odour emanates from these areas.

Social sustainability

Most of the respondents 81.0% were owner managed with the use of family support and casual labor, while 14.0% of the respondents employed farm manager. Few (5.0%) of the respondent's fish farms were managed by government agency or Agricultural officer. The most common sources of water used for aquaculture were wells, springs, rivers and lakes, groundwater/borehole, and municipal water. Of the sources mentioned, wells and springs are considered to be consistently of high quality.

Figure 2 shows that out of all the respondents sampled in this study, 1.6% used tap water as source of water for their fish farming, 6.5% of the fish farmers used bore hole water, 82.1% used water from streams, while 9.8% fish farms used dug-out well-water for their fish farms. From these results, the prevalent source of water for aquaculture in Osun state is from streams and rivers which suggest that most of the fish farms were situated close to streams.
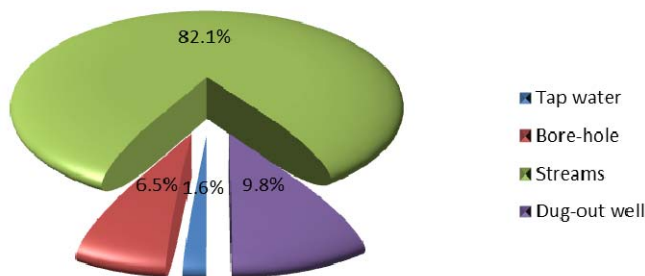
Figure 2: Source of water used for fish farming by respondents

This situation may be detrimental to the sustainability of fish farming as water quality parameter may be compromised due to farm's susceptibility to negative chemical and biological parameters that may originate from polluted water.

Social sustainability with respect to aquaculture has to do with the social wellbeing of the local people, in terms of employment, use of local resources such as water supply, wetland use, mangrove forests; threat to human health; long-term economic sustainability of communities (Greenpeace, 2014; World bank, 2014).

Water quality is a critical parameter when culturing fish or any aquatic organism. The quality of the water in the production systems can significantly affect the organism's health, performance and the costs associated with getting a product to the market. There are a lot of negative chemical and environmental factors associated with fish farming operations that have their origins in the source of water selected. Farm site selection should be made based on both the quality and quantity of water available.

Market channels

Marketing channels of aquaculture in Osun state is as shown in Figure 3. Ninety percent of respondents indicated that they sold their fish through middlemen or agents. Problems associated with the use of middlemen include; price fixation by middlemen at the expense of fish farmer's cost of production which invariably reduces their profit. The fish farmers believe that the middle men exploit them.

The respondents indicated that the problem of middle men can be substantially reduced with better use of groups/associations or cooperatives whereby members help themselves towards the sales of their fish by setting up a joint pricing and monitoring of the scheme, to ensure compliance to set standards.

Marketing has been defined as all processes involved from the production of a commodity until it gets to the final consumer. Marketing is an integral part of aquaculture because for production meets its objective it must reach its final consumers.
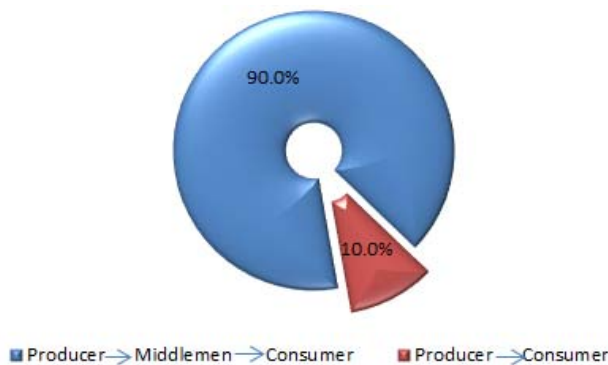
Figure 3: Marketing channel of aquaculture products in Osun State, Nigeria

Economic profitability
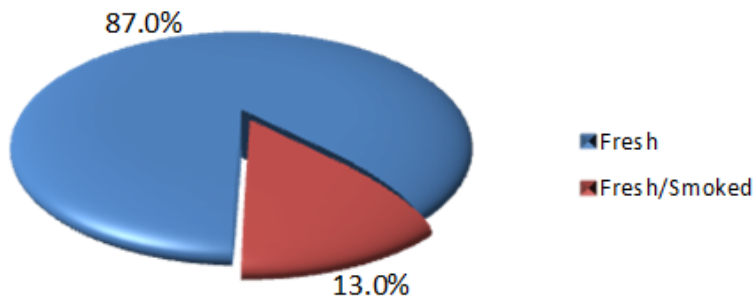
Figure 4: Forms in which Fishes are sold

The respondents sold their harvest either as fresh or smoked fish, with 87.0% respondents sold as fresh and 13.0% sold as either fresh or smoked their harvest before sales (figure 4). Survival of an aquaculture enterprise depends on its profitability.

The profitability of fish farming in the study area was calculated based on cropping of table sized fishes once per production cycle of an average of five months. The ROI for this study was estimated to be 71%. This implies that for every naira invested in fish production a return of N1.71 and a profit of N0.71 were obtained. This corroborates the findings of Adewuyi *et al*, (2010) that estimated the profitability of fish farming in Ogun state and stated that there is a considerable level of profitability at a ROI of 51%.

CONCLUSION AND RECOMMENDATIONS

Based on the findings of this study, aquaculture practices in Osun state should be encouraged because to a large extent it is sustainable and it also a profitable enterprise.

In support of responsible and sustainable aquaculture practices it is hereby recommended that:

- The Nigerian government to develop and promote strategic plans that will ensure environmental protection from effluents discharge of aquaculture through the establishment of regulatory bodies to audit aquaculture practices, to guard against irresponsible and unsustainable practices.

REFERENCES

Adedeji, O. S., Amao, S. R., Alabi, T. J., Opebiyi, O. B. (2014). Assessment of Poultry Production System in Ilesha West Local Government Area of Osun State, Nigeria. *Scholars Journal of Agriculture and Veterinary Sciences;* 1(1):20-27

Adewuyi, S. A., Phillip, B. B., Ayinde, I. A. and Akerele, D. (2010). Analysis of Profitability of Fish Farming in Ogun State, Nigeria. *Journal of Human Ecology*, 31(3): 179-184

Akinrotimi, O. A., Ansa, E. J., Owhonda, K. N., Edun, O. M., Onunkwo, D. N., Opara, J. Y., Anyanwu, P. E. and Amachree, D. (2007). Variation in oxygen carrying capacity of *Sarotherodon melanotheron* blood in different acclimation media. *Journal of Animal and Veterinary Advances* 6(8): 932 – 937.

Anetekhai, M. A., Akin-Oriola, G. A., Aderinola, O. J. and Akintola, S. L. (2004). Steps ahead for aquaculture development in Sub-Saharan Africa—the case of Nigeria. *Aquaculture* 239: 237–248

Atanda, A. N. (2007). Freshwater fish seed resources in Nigeria, pp. 361-380. In: M.G. Bondad-Reantaso (ed.). Assessment of freshwater fish seed resources for sustainable aquaculture. *FAO Fisheries Technical Paper.* No. 501. Rome, FAO. 628p.

Boujard, T., Labbé, L. and Aupérin, B. (2002). Feeding behaviour, energy expenditure and growth of rainbow in relation to stocking density and food accessibility. *Aquaculture Research* 33: 1233-1242.

Boyd, C. E. B., Lim, C., Queiroz, J., Salie, K., de We, L., McNevin, A. (2008). Best Management Practices for Responsible Aquaculture. *USAID Report* 47pp

Central Bank of Nigeria (2014). Guidelines for mrCommercial Agriculture Credit Scheme. https://www.cbn.gov.ng/out/2014/dfd/cacs %20guidelines%20new-14th%20may%202014.pdf

Dasuki, A., Auta, J. and Oniye, S. J. (2013). Effect of Stocking Density on Production of Clarias gariepinus (Tuegels) in Floating Bamboo Cages at Kubanni Reservoir, Zaria, Nigeria. *Bayero Journal of Pure and Applied Sciences*, 6(1): 112 – 117

Engle, C. R. and Valderrama, D. (2001). Effect of stocking density on production characteristics, coasts, and risk of producing fingerlings channel catfish. North American *Journal of Aquaculture* 63: 201-207.

Food and Agriculture Organisation (2005). Small Scale aquaculture in Sub-Saharan Africa. Revisiting the aquaculture target group paradigm. Rome: FAO Fisheries.

Food Business International (2014). Fish importation to end in 2015. http://foodbusinessng.org/?p=74

Federal Department of Fisheries (2009). Nigeria National Aquaculture Strategy. Assisted by FAO. Formally approved by Government. 18 p.

Green Peace International (2014). Sustainable aquaculture.

http://www.greenpeace.org/international/en/campaigns/oceans/sustainable-aquaculture/

Isayagi, N., Veverica, K. and Daniels, W. (2009). Manual for the Commercial Pond Production of the African Catfish in Uganda. USAID-assisted "Fisheries Investment for Sustainable Harvest" (FISH) project. Cooperative Agreement: 617-A-00-05-00003-00. Dept. of Fisheries and Allied Aquacultures: Auburn University, Alabama, USA. 222 p.

Leatherland, J. F. and Cho, C. Y. (1985). Effect of rearing density on thyroid and inter- renal gland activity and plasma and hepatic metabolite levels in rainbow trout, Salmo gairdneri Richardson. *Journal of Fish Biology*, 27: 583-592.

Rahman, M. A., Mazid, M. A., Rahman, M. R., Khan, M. N., Hossain, M. A. and Hussain, M. G. (2005). Effect of stocking density on survival and growth of critically endangered mashseer, Torputitora (Hamilton), in nursery ponds. *Aquaculture* 249: 275-284.

Simard, F., Ojeda, J. and Haroun, R. (2008). The sustainable development of Mediterranean aquaculture: Problems and perspectives, in CIHEAM, Options Méditerranéennes, Series B, No. 62:113-124.

United States Agency for International Development (2010). Best Management Practices for Fish Farming: Package of Practices (POP) for Fish Farming USAID Markets Programme – Nigeria. 38pp

World Bank (2014). Sustainable aquaculture http://www.worldbank.org/en/topic/environment/brief/sustainable-aquaculture

Assessment of bush meat exploitation by hunters in Ifon Area of Ondo state, Nigeria

Alarape, A. A. and Aduloju, M. M.

[1]Department of Wildlife and Ecotourism Management, University of Ibadan, Ibadan, Oyo State, Nigeria

Correspondence details: alarapeabideen@gmail.com

ABSTRACT

This study assessed the bush meat exploitation by hunters in Ifon Area of Ondo State. Questionnaire was administered as interview guide to all 30 members of hunters association in the area as well as personal visits and observations were made, while discussions and interviews were made use of to obtain information on the study area. Data collected was analysed using descriptive statistics (Frequency count and Percentage, Measure of Central Tendency and Measure of Dispersion). Results reveal that the bush meat species commonly found and consumed, reasons for bush meat hunting, the effect of bush meat exploitation on the area and the level of awareness with regard to the negative impact of bush meat exploitation on Wildlife Conservation. Based on these findings, it is essential that, logging companies are encouraged or urged not to facilitate bush meat hunting and transportation in their concessions. Likewise, social marketing activities should be put in place to attempt to direct consumer preferences for animal protein away from bush meat species that are particularly susceptible to over-exploitation.

Keywords: Bush meat exploitation, Wildlife conservation, Social marketing

INTRODUCTION

In Africa, uninhabited forest is often referred to as 'the bush', thus wildlife and the meat derived from it is referred to as 'bush meat' (in Yoruba- *Eran-Ìgbé*). This term applies to all wildlife species, a number of which are threatened or endangered species, used for meat including: elephant (*Loxodonta africana*); gorilla (*Gorilla gorilla*); chimpanzee (*Pan troglodytes*) and other primates; forest antelope (duiker: *Cephalophus monticola*); porcupine (*Hystix cristata*), bush pigs; cane rat (*Thryonomys swinderianus*); pangolins; monitor lizard (*Varanus niloticus*); and guinea fowl (*Numida meleagris*). Bush-meat generally refers to meat from wildlife sources or undomesticated animals which are normally consumed in place of meat from domestic origin or livestock. Bush meat, the meat of wild animals is one of the most valuable tropical forest products after timber. It is an important source of protein, widely consumed in both rural and urban areas (Wilkie and Carpenter, 1999). The magnitude of its exploitation and consumption however varies from one place to the other and is determined principally by its availability, but this is also influenced by government control on hunting, socio economic status and cultural prohibitions (Asibey and Child, 1999). Bush meat has been part of the local diet for centuries (Grubb *et al.*, 1998 cited by Bifarin *et al.*, 2008). National estimates of the value of the domestic trade in bush meat range from US$42 to US$205 million across countries in West and Central Africa (Davies, 2002). Ayodele, *et al*, (1999) postulated that the supply of Bush meat from wild sources no doubt serves as the only possible measure to bridge the gap between livestock production and human population growth.

Though habitat loss is often cited as the primary cause of wildlife extinction, unbridled hunting for the meat of wild animals has become an immediate threat to the future of wildlife in Ifon Area of Ondo State and around the world. However, in recent years, there has been an important transition from subsistence to commercial hunting and trading of wildlife because of accelerating population growth, modernisation of hunting techniques, and greater accessibility to remote forest areas (Ape Alliance, 1998; Wilkie and Carpenter, 1999). Bush meat and pet trade are often by-products of hunting. Commercial exploitation of Bush meat has reached a crisis situation in Africa leading to the formation of the Bush meat Crisis Task Force (BCTF) with the vision of eliminating the unsustainable, illegal, commercial bush meat trade (BCTF, 2004). Sustainable exploitation of natural resources requires that levels of off-take be lower than the rate of production. This is rarely the situation with Bush meat enterprise in any part of West Africa. Over exploitation of wildlife resources leads to impoverishment of local people through the destruction of wildlife habitats, wildlife based economy, environmental degradation and loss of biodiversity (Ayeni and Mdaihli, 2003; Madzou and Ebanega, 2006).

In tropical areas, the meat of wild animals has long been part of the staple diet of forest–dwelling peoples. In Africa, bush meat is sold for public consumption either fresh or smoked. Bush meat remains the primary source of animal protein for the majority of forest families, and can also

constitute a significant source of revenue (Juste *et al*., 1995). The high demand for bush meat and the lucrative trade associated with it is the main reason for the high extraction rates estimated for many West and Central African countries (Fa and Peres, 2001). Although changes from subsistence to commercial hunting has been occurring for some time (Hart, 2000), many more hunters are now supplementing their incomes with the sale of bush meat. Such commerce increases the amount of hunting and reduces the sustainability of populations of numerous wildlife species largely because it enlarges the effective human population density of consumers eating meat from an area of forest (Bennett and Robinson, 2000). Commercial hunters and traders supply urban markets for profit to meet the increasing demand for animal protein in urban centres. Markets in towns and cities are the main sales–point for species extracted from natural areas (Fa *et al*., 2000; Fa *et al*., 1995). The specific objectives of the research work were to obtain information on: aanimal species commonly found and consumed as bushmeat, reasons for bush meat hunting, the effect of bush meat exploitation on the area and the level of awareness with regard to the negative impacts of bush meat exploitation on Wildlife Conservation.

METHODOLOGY

The study was carried out in Ifon; the headquarters and seat of government of Osẹ Local Government Area of Ondo State of Nigeria. Ifon is a junction town with two axes to Edo State and one to the rest of Ondo State. It lies at about the mid-point on the Federal Highway that connects Akurẹ and Benin City. Located on an elevated terrain, a view from the centre of the town confirms the beauty of the surrounding vegetation and the richness of the Ifon land. Ifon is blessed with many mineral resources e.g. Kaolin and granite. There are also abundant forest resources like timber and games reserve. Ifon games reserve is one of the well-known reserves in Nigeria. Questionnaire was administered as interview guide to all 30 members of hunters association in the area as well as personal visits and observations were made, while discussions and

interviews were made use of to obtain information from respondents in the study area. Data collected was analysed using descriptive statistics (Frequency count and Percentage, Measure of Central Tendency (Mean, Median and Mode) and Measure of Dispersion (Standard deviation, Variance and Sum).

RESULTS AND DISCUSSION

There was only one hunters association in the area having thirty (30) members. All the respondents in Ifon area of Ondo State were male (table 1) reflecting the fact that hunting of wildlife was a male-dominated occupation. The Age group/ stratification of the respondents as it appear in table 1 shows that, no respondent was less than 20 years of age. The other age brackets and the percentages were 20-30years (13.3%), 31-40years (20%), 41-50years (33.3%), and >50 years (33.3%). The highest number of respondents were within the age bracket 41-50years and >50years.

Of the respondents 3.3% were single while 96.7% were married. No respondent was a divorcee or widower. The level of education attained by the respondents and their percentage respectively were: primary (33.3%), secondary (40.0%), OND/HND/NCE/BSc/MSc/PhD (16.7%) and respondents represented by 'Others' (10.0%).

The mean and Median of respondents sex was 1.00, with the Mode 1. Whereas, the Standard deviation and variance of respondents' sex was 0.000, the sum total was 30. The mean and median of respondents' age were 3.87 and 4.00, respectively, with the Mode of 4[a] (here, multiple modes exist, and 4 happen to be the smallest). The Age standard deviation and variance were 1.042 and 1.085, respectively, with the total sum of 116. The marital status mean, median and mode were 1.97, 2.00 and 2, respectively, whereas the standard deviation, variance and sum of the marital status were 0.183, 0.033 and 59, respectively. The Level of education attained by the hunters had the mean, median and mode as; 2.03, 2.00 and 2, respectively, whereas, the standard deviation, variance and sum were 0.964, 0.930 and 61.

Table 1: Distribution of respondents by demographic characteristics

Demographic characteristics	Frequency	Percent
Sex		
Male	30	100.0
Female	0	0
Age		
< 20	0	0
20-30	4	13.3
31-40	6	20.0
41-50	10	33.3
>50	10	33.3

Demographic characteristics	Frequency	Percent
Marital Status		
Single	1	3.3
Married	29	96.7
Divorcee	0	0
Widow	0	0
Level of education		
Primary	10	33.3
Secondary	12	40.0
OND/HND/NCE/BSc/MSc/PhD	5	16.7
Others	3	10.0

Source: Field Survey, 2012

Out of the respondents, 93.3% were of the opinion that the populations of wild animals are inexhaustible, while 6.7% thought the effect of exploitation of Bush meat on wildlife will be negative in the area. The majority of the hunter's believe that exploitation of bush meat does not have any effect on wild animals in the area, confirming the common position that, the rate of production is higher than the rate of exploitation. By this, it is believed that the rate at which the animals reproduce in the wild at Ifon area of Ondo State was higher compared to the rate at which they were exploiting them, and as such, their hunting activities had no effect on the wildlife in the area. These clearly show the extent of their level of awareness, because no matter how numerous the wildlife are in the bush, if they are exploited without check, the number will be depleting at a gradual or steady rate, which will result in extirpation of population of wildlife at the end. Some were aware of the laws relating to bush meat but believe that bush meat is part of God's gift to man that should be killed and eaten at anytime one wishes or even depend on for sustenance.

All the respondents agreed that, bush meat exploitation in Ifon Community is contributing to the economy and development of the area, though some said they had not really felt the effect personally in their own family, but were hopeful that it will impact positively soon. The impact on the household was positive as the hunters made references to their achievement as a result of the hunting of wildlife and they also attributed the economic development of the community to bush meat exploitation because they transported some of the bush meat to urban areas at times where they are sold at high prices.

Most of the respondents attributed their hunting reason to poverty in that they needed to support their families. As shown in Table 2, 22 respondents (73.3%) hunt to support their families, while 3 respondents (10.0%) hunt due to hardship and 5 respondents (16.7%) hunt for leisure. When the animals are killed, they are often sold to people fresh or smoked. But in most cases the bush meat is smoked as a means of preservation to increase shelve-life of the products. Some hunters claimed that they hunt animals for leisure, while the greater number of them hunts due to hardship and to support their families. Some even said that if any member of his family was not in-support, such individual run the risk of not having any share in the bush meat or in anything derived from the sale of bushmeat.

Table 2: Distribution of respondents by effect of bush meat exploitation on Wildlife, its contributions to the community and hunters reasons for hunting

Effect of Bush meat on wildlife	Frequency	Percent
Positive	28	93.3
Negative	2	6.7
Economic benefit to the development of Ifon community		
Yes	30	100.0
No	0	0
Reasons for Hunting		
Leisure	5	16.7
Due to Hardship	3	10.0
Support Family	22	73.3

Source: Field Survey, 2012

Shown in Table 3 below are the lists of animal species that are commonly found and consumed in the study area. For so many (fifty!) decades according to personal interview all these species were found in abundance but as at the time of this research work, some were rarely found due to exploitation; this was an indication of the negative impact of hunting on the populations of animals in the area.

The most common bush meat available in the region were Grasscutter (*Thryonomys swinderianus*), Antelopes, Bush 'Rabbit' (*Lepus crawshayi*) and Bush Pigs. The people prefer the first two believing that they have high protein content. According to Barrie and Aalangdong (2005), overhunting has further reduced wild populations of many forest-dependent animals. Likewise in Ifon area, most wildlife species have been extirpated as the hunters themselves said that some species (like Buffalo, *Syncerus caffer*; Leopard, *Panthera pardus*; Elephant, *Loxodonta africana*; and Lion, *Panthera leo*) that they had seen before and often killed were no longer available.

Table 3: Distribution by availability of meat of species of animals in Ifon area of Ondo state

	Species of Animal	Rare	Abundant
1	Grasscutter: *Thryonomys swinderianus*		—
2	Antelope (Duikers).		—
3	Monkey: *Mandrillus leucophaeus*		—
4	Bushbuck: *Tragelaphus scriptus*	—	
5	Scrub Hare: *Lepus capensis*	—	
6	Bush dog: *Lycaon pictus*		—
7	Porcupine: *Hystrix cristata*	—	
8	Bush 'Rabbit': *Lepus crawshayi*		—
9	Squirrels: *Funisciurus anerythrus*		—
10	Bush Pigs: *Potamochoerus porcus*		—
11	Crocodile: *Crocodilus niloticus*	—	
12	Pangolin: *Manis tetradactyla*	—	
13	African Buffalo: *Syncerus caffer*	—	
14	Leopard: *Panthera pardus*	—	
15	Elephant: *Loxodonta Africana*	—	
16	African Grey Parrot: *Psittacus erithacus*	—	
17	African gaint rat: *Cricetomys gambianus*		—
18	Monitor Lizard: *Varanus niloticus*		—
19	Tortoise: *Kinixus belliana*		—
20	Giant snail: *Archachatina marginata*		—

Source: Field Survey, 2012

CONCLUSION

Studies have shown the impact of bush meat hunting on forest wildlife populations. The present level of hunting in Ifon area of Ondo state is affecting the distribution and density of bush meat species as those animal species abundantly found in the past were becoming so rare or even unavailable. This is likely to be unsustainable for most large-bodied animals, and may only be sustainable, in the short-term, for rodents. Though, as at now, the total number of hunters in the area is less than hundred, there is high possibility of increase in the number due to poverty and unemployment.

The impact of bush meat hunting is likely to get worse in the future as road construction by logging companies provides ever more access to the forest and to expanding urban markets.

Therefore, it is essential that, logging companies must be encouraged or made not to facilitate bush meat hunting and transportation in their concessions. Likewise, social marketing activities should be put in place to attempt to direct consumer preferences for animal protein away from bush meat species that are particularly susceptible to over-exploitation. Since these hunters are the major drivers of Bush meat Exploitation in the area, there is need to set up (Hunters-to-Protectors) projects to recruit, train and re-employ wild animal hunters as guards/teachers to enlighten the people on need to conserve the wildlife. It is also necessary to establish Task Forces to check bush meat hunting, monitor faunal populations and guard against the influx of commercial hunters. Poverty too is part of the problem faced by the community and there is high possibility that most graduate will later turn to hunting of bush meat for sustenance. Thus, provision of employment for the people will also discourage them from hunting,

REFERENCES

Ape Alliance (1998). The African Bush meat Trade- Recipes for Extinction. *Available from P. O Box 308, Bristol, UK or http://www.4apes.com/bushmeat/report/bushmeat.pdf* Retrieved 30/05/2012.

Asibey, E. O. A. and Child, G. S. (1999). Wildlife Management for rural development in Sub-Saharan Africa. *An International Journal of the forestry and food industriesUnasylva 161, Vol. 41. 1990. http:www.fao.org/docrep/t8850e/t8850e03.htm#wildlife*

Ayeni, J. S. O. and Mdaihli, M. (2003). Wildlife hunting and bush-meat utilisation in the Takamanda Forest Reserve areas of South west Province, Cameroon. *Ethiopian Journal of Environmental Studies and Management Vol.3 No.1 2010 p67.*

Ayodele, I. A., Ebin, C. O. and Alarape, A. A. (1999). Essentials of Wildlife Management. Jachin Publishers Ibadan 122pp.

Barrie, A. and Aalangdong, O. I. (2005). Rapid Assessment of Large Mammals at Draw River, Boi-Tano and Krokosua Hills. In A Biological Assessment of the Terrestrial Ecosystems of the Draw River, Boi-Tano, TanoNimiri and Krokosua Hills Forest Reserves, Southwestern Ghana.(J. McCullough, J. Decher and D. G. Kpelle, eds), *RAP Bulletin of Biological Assessment 36.Conservation International, Washington, DC.* pp. 67–72.

BCTF (2004). Recipes for Survival: Controlling the Bush meat Trade- A wildlife crisis in West and Central Africa and around the world. Bush meat Crisis Task Force, Washington, DC. *World Society for the Protection of Animals 23years of animal welfare 1981- 2004 pp. 1-122.*

Bennett, E. L. and Robinson, J. G. (2000). Hunting of wildlife in tropical forests: implication for biodiversity and forest people. Environmental Department Papers, Biodiversity Series- Impact Studies. *Paper No. 76.*

Bifarin, J. O., Ajibola, M. E. and Fadiyimu, A. A. (2008). Analysis of Marketing bush meat in Idanre Local Government Area of Ondo State, Nigeria; *African Journal of Agricultural Research Vol. 3 (10), October, 2008. pp. 667-671,*

Davies, G. (2002). Bush Meat and International Development; *Conservation Biology 16(3): 125 – 132.*

Fa, J. E., Juste, J., Perezdel, V. J. and Castroviejo, J. (1995). Impact of market hunting on mammal species in Equatorial Guinea. *Conservation Biology 9:1,107–1,115.*

Fa, J. E., García, Y. J. E. and Castelo, R. (2000). Bush meat markets in Bioko Island as a measure of hunting pressure. *Conservation Biology., 14: 1,602–1,613.*

Fa, J. E. and Peres, C. A. (2001). Game vertebrate extraction in African and Neotropical forests: an intercontinental comparison. *In: Conservation of exploited species: 203–241.*

Hart, J. (2000) Impact of sustainability of indigenous hunting in the Ituri forest, Congo- Zaire: A comparison of unhunted and hunted duiker populations In: Hunting for sustainability in tropical forests: 106–153 (J. G. Robinson and E. L. Bennett, Eds.). Columbia University Press, Columbia.

Juste, J., Fa, J. E., Perezdel, V. J. and Castroviejo, J. (1995). Market dynamics of bush meat species in Equatorial Guinea. *J. Appl. Ecol., 32: 454–467.*

Madzou, Y. C. and Ebanega, M. O. (2006). Wild game and its use in the tropical environment, Cameroon. Nature and Faune, Vol. 21, Issue 1, 2006: pp.18 – 33

NEST (1991). Nigerian Threatened Environment: A National Profile. Nigerian Environment Study/ Action Team (Nest), Ibadan. Intec Printers Ltd, Ibadan, pp.124-131.

Wilkie, D. S. and Carpenter, J. F. (1999). Bush meat hunting in the Congo Basin: An assessment of impacts and options for mitigation. *Biodiversity and Conservation 8: 927–955*

Farmers' preference for agricultural radio programmes in Niono area of Segou, Mali

[1]Tijani, S. A., [2]Traore, A. B. and [1]Badiru, I. O.

[1]Department of Agricultural Extension and Rural Development, University of Ibadan, Ibadan, Nigeria

[2]Sasakawa African Association, Mali

Correspondence details: bodebadru@gmail.com, Tel.: +2348034660732

ABSTRACT

This study examined farmers' preference for agricultural radio programmes in Niono area of Segou, Mali. Dataon farmers' radio set ownership, listening time and listenership of agricultural radio programmes were obtained from 205 randomly selected respondents. Data were analysed using descriptive (percentages) and inferential statistics (Chi-square and Pearson's Product Moment Correlation) at $\alpha=0.05$. Most farmers had high radio set ownership (79%), preferred listening to radio in the evening (61.50%) but had low listenership status (60.5%). The respondents preferred listening to *Cikelaw ka Kene* from *Kaira* radio station ($\overline{x}=1.2683$). Farmers' radio set ownership ($X^2 = 39.623$), listening preferred time ($r = 0.22$) and their listenership status ($r = 0.696$) were significantly related to farmers' radio agricultural programme preference. Broadcast of *Cikelaw ka Kene* from *Kaira* radio station should be sustained, while relevant agricultural information should be targeted at the evening period to enhance listenership among farmers in the study area.

INTRODUCTION

Agriculture plays an important role in Mali's economic growth by giving employment to about 80% of the active population and contributes 30% to Malian Gross National Products (GNP) (National Directorate of Agriculture of Mali 2016). Livelihoods of many Malians are dependent on agricultural development, which could lead to food security. In this regard, Habtemariam (2004) states that a thriving agricultural economy is critical for reducing poverty, ensuring food security and managing natural resources. To this effect, agricultural extension is expected to play an acceleratory role.

Though, many actions or efforts have been made by several governments, donors or NGOs to make the Malian agricultural sector better and fit to the real needs of the rural dwellers. In spite of these efforts, Mali farmers are generally still grappling with many challenges that pose as a barrier to contribute effectively and sustainably to country's development. Some of the challenges faced include insufficient agricultural inputs, poor credits facilities and low technologies access due to inadequate or poor means of agricultural information system. This is in line with Oladele (2011) submission that lack of agricultural information is a key factor that has greatly limited agricultural advancement in developing countries.

Therefore, in order to make agriculture more profitable and attractive, the deployment of relevant communication system is necessary to bring agricultural stakeholders together to exchange views and experiences on agricultural improvement technologies. To do so, involvement of Information Communication Technologies (ICTs) transfer tools (especially radio) is required. It is common knowledge that radio is a powerful medium of disseminating accurate and timely agricultural information among farmers in third world countries. It is a vital and viable channel which could bridge the gap between farmers and researchers as well as improve access to agricultural technologies and their subsequent utilisation among farmers. According to Torimiro and Alfred (2008), communication is the process whereby messages are passed from the source to the end users with the aim of changing the attitude of the receiver in a desired direction.

In Mali, especially in Niono area, the radio is a powerful tool through which the inhabitants receive various agricultural information through six agricultural programmes. The programmes are: *Cike Kunafoni* ORTM(Office of Radio and Television of Mali)*, Cikelaw ka Kene Sahel, Cikelaw ka Kene Cesiri, Cikelaw ka Kene Office, Cikelaw ka Kene Kaira and Cike Kunafoni Kolon*. Thus, the programmes are used by researchers and extension agents to overcome the communication chasm occasioned by limited number of extension agents.

Although the programmes are good means of broadcasting agricultural information to large audiences in a timely manner, regardless of the distance, sex and race etc., it is important that the diffused programmes take into account the felt needs of the end users. To have an understanding of the programmes performance in this regard, an assessment of farmers' agricultural radio programmes preference is required to get empirical data which could contribute to enhance the quality

of diffused programmes, hence the need for this study.

Objectives of the study

Mainly, this study assessed farmers' preference for agricultural programmes in the study area, while it specifically tried to:

1. describe the socio-economic characteristics of farmers in the study area;
2. determine farmers' radio set ownership in the study area;
3. ascertain the time of listening to agricultural programmes on radio in the study area;
4. examine farmers' listenership status of agricultural programmes on radio in the study area;
5. assess the relationship between farmers' radio set ownership and programme preference;
6. investigate the relationship between time of listening to agricultural information programmes and programme preference; and
7. examine the relationship between farmers' listenership status and programme preference in the study area.

METHODOLOGY

The study was carried out in Niono area of Segou. Niono is located in Segou, Mali, on latitude: 14° 51' 59.9" (14.8666°) north, longitude 6° 1' 36.5" (6.0268°) west, and an average elevation of 274 meters (899 feet) above sea level. Niono is a town and commune among seven others in Segou region of Mali. It has an approximate area of 23,063 square kilometres and lies on the northwest edge of the Inner Niger Delta, near the main channel of the Niger River. Niono has 12 subdivisions and 227 surrounding villages. According to General Census of the Population and the habitat in Mali (2009), it had a population of 365,443 inhabitants. The main livelihood activities of the people are animal production, crop farming, agroforestry, and fishing.

All farmers who were able to access to agricultural information programmes on radio in Niono constituted the target population of this study. A multi-stage sampling procedure was used to select respondents for the study. At the first stage, 30 percent of the subdivisions of Niono were randomly selected to give us four rural areas out of 12 i.e. Niono, Siribala, Kala-Siguida and Sirifila Boundy. In the second stage, 10 percent of the villages were also randomly selected which amounted to eight villages (two villages each from

the four subdivisions). At the third stage, 13 percent of farmers in the selected villages were randomly selected which gave 205 respondents.

Interview schedule was used to collect data from the respondents in the study area. The schedule consisted of open-ended andclosed-ended questions. Moreover, facevalidity was conducted on the instrument by experts in the Department of Agricultural Extension and Rural Development, University of Ibadan, Nigeria.

Measurement of variables

Farmers' listenership status was derived from a combination of scores on listening frequency as well as extent of listening to the agricultural programmes after standardising the scores. Listening frequency was measured by asking respondents to indicate on a three-point scale of never, occasionally and always which were score 0, 1 and 2 respectively. However, respondents listening extent was measured on a four-point scale of not at all, just a little, large part and whole programme. These were scored 0, 1, 2 and 3 respectively. The scores were then categorised into high and low listenership status based on the mean score of1.3951. The minimum score was 1.00, while the maximum score was2.00.

In addition, farmers radio set ownership and their time of listening to agricultural programmes were respectively measured at ordinal level as yes (1) or no (0) and morning (1), afternoon (2), evening (3) or both morning and evening time (4) respectively.

Farmers 'agricultural programmes preference was measured by asking them to indicate their preferences on a three-point scale of not preferred (0), less preferred (1) and preferred (2). The mean scores were used to rank them to indicate famers' programme preference.

Results and discussion

Socioeconomic characteristics - Table 1 shows that most (39.5%) of the respondents fell between the ages of 48- 61 years with the mean age being 47.3±12.6. This implies that the respondents were mostly middle aged persons. This category of people constitutes the main active farm workers due to their strength and energy. In addition, they were mostly males (83.9%). This suggests that males were mostly engaged in farming activities in the study areas. This could be due to the fact that male farmers have better access to farmland, inputs, and support activities linked to farm business in the area. The majority was married (93.7%), a situation which could spur them into searching for useful agricultural information

needed to break even and take better care of their dependents.

Most of them had no formal education (82%) and this suggests that local languages or strategies should be used to disseminate any agricultural radio programme in the study area, so that the programmes can be better comprehended by the farmers. Badiru (2013) observed that a significant gap between the broadcasters' knowledge and their listeners should not be neglected throughout the information disseminating process so that meaningful and mutual understanding can be ensured among participants in the agricultural information system. In the same vein, Okwu, Kuku, and Aba (2007) opined that an individual's level of education affects his or her access, comprehension, and adoption of modern agricultural practices. The respondents were predominantly Muslims (97.1%). This implies that the mosques could be a veritable outlet for agricultural information dissemination in the area.

Most of the respondents were engaged in crop farming activities (98.5%) and animal husbandry (51.2%). This implies that farmers in the study area are not restricted to only one agricultural enterprise, a situation that is quite important to their livelihood improvement. Interestingly, the mean household size of the respondents was 14.5± 10.5 persons. This may be explained by the fact that most of the rural households in Mali are polygamous which contributes to increasing the family size with the intention to use them as active workers in farming activities.

The result also shows that, farmers in the study area had long years of farming experience with a mean of 29.1± 13.7 years. This suggests that farmers in the study area are experienced enough to choose the relevant agriculture radio programmes which could help them improve their work and therefore enhance their livelihood status. Agwu (2004) had earlier opined that farmers with many years of farming experience have a higher technology adoption rate, which could increase their level of acceptance of new ideas as a means of overcoming production constraints and hence facilitate increased productivity. Moreover, majority (76%) of the respondents earned between 500 to 101,834 FCFA monthly from agricultural activities. This implies that farmers in the study area are poor and cannot satisfy their household needs from their farming activities income. Indeed, livelihood diversification activities should be promoted among farmers in study area which could strengthen their resilience to poverty and food insecurity.

Table 1: Distribution of the respondents based on their socio-economic characteristics

Variable	Frequency	Percentage	Mean	Standard Deviation
Age				
20-33	34	16.6	47.3	±12.6
34-47	59	28.8		
48-61	81	39.5		
62-75	30	14.6		
76-89	1	0.5		
Sex				
Male	172	83.9		
Female	33	16.1		
Marital status				
Single	8	3.9		
Married	192	93.7		
Widowed	5	2.4		
Education attainment				
No formal education	168	82		
Primary education	30	14.6		
Secondary education	7	3.4		
Religion status				
Muslim	199	97.1		
Christian	4	2		
Traditional	2	1		
Agricultural enterprise engagement				
Crop farming	202	98.5	0.9854	
Animal husbandry	105	51.2	0.5122	

Variable	Frequency	Percentage	Mean	Standard Deviation
Fishery	5	2.4	0.244	
Storage	27	13.2	0.1317	
Marketing	61	29.8	0.2976	
Processing	7	3.4	0.341	
Poultry	18	8.8	0.0878	
Family size				
2-13	116	56.6	14.5	$\pm$10.5
14-25	61	29.8		
26-37	19	9.3		
38-49	7	3.4		
50-61	1	0.5		
62-73	1	0.5		
Farming experience				
1-15	42	20.5	29.1	$\pm$13.7
16-30	84	41		
30-44	52	25.4		
45-59	23	11.2		
60-74	4	2		
Monthly income				
500-101834	162	79		
101835-203169	23	11.2		
203170-304504	12	5.9		
304505-405839	4	2		
405840-507174	4	2		

Source: Field survey (2017)

Farmers' radio set ownership and time of listening to agricultural programmes on radio

Farmers' radio set ownership - As indicated in Figure 1, most (79%) of the respondents owned radio sets. This implies that the populace of the study area were potentially able to get more information about agriculture which could be a positive means to increase their production and productivity**.** This is in line with Badiru (2013)'s findings in a similar survey in southwestern Nigeria which showed that ownership of radio set was high among rural dwellers.
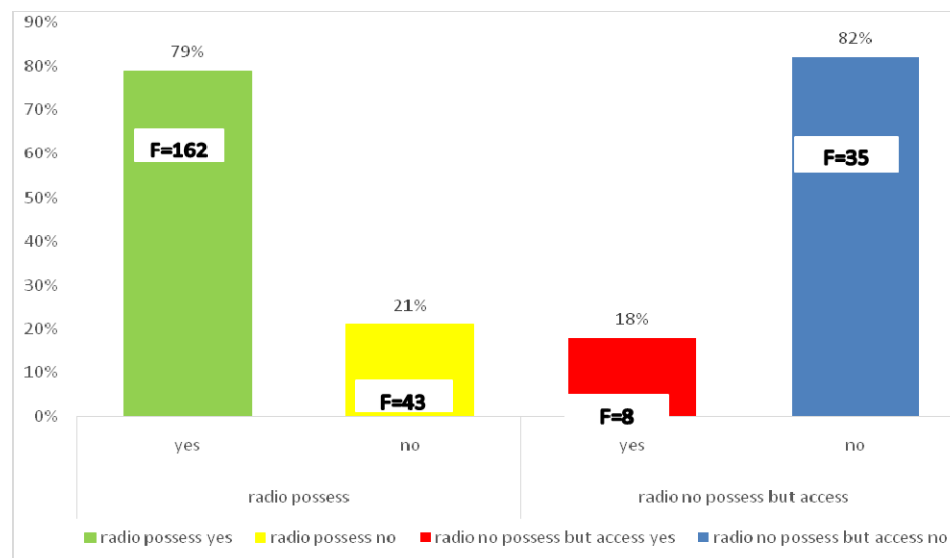
Source: Field survey (2017)

Figure 1: Distribution of respondents based on radio set ownership

Farmers' agricultural program listening time - As indicated in Figure 2, the result shows that, the respondents listened to radio throughout the day from morning till evening. In fact, many (59.50%) of the respondents listened to radio in the morning. This is likely due to the fact that most of the agricultural information are broadcasted in the morning time which is pushing the farmers to conform due to programme availability. Meanwhile, further analyses in the same figures, show that 61.50% of the respondents preferred to listen to radio in the evening time. This is in line with the finding of Badiru (2013) that the most preferred listening periods to radio among rural dwellers in southwestern Nigeria were in the morning and evening time.

	Morning	Afternoon	Evening	All the time
■ Percentage	59.50%	6.30%	46.30%	39.50%
■ Most preferd time	30.70%	5.40%	61.50%	2.40%

Figure 2: Distribution of the respondents based on their time of listening to agricultural programmes

*Multiple response option

Source: Field survey (2017)

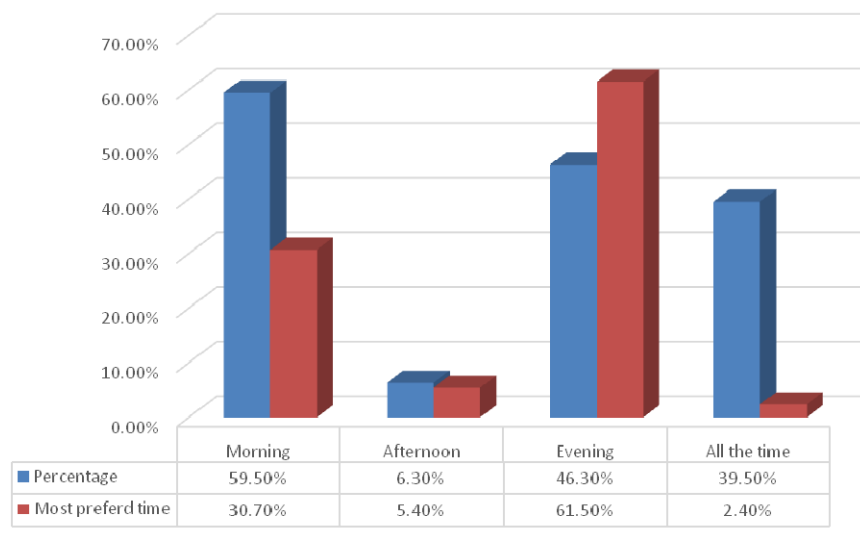**Farmers' listenership status of agricultural programmes on radio**

Farmers 'listenership frequency - Table 2 shows that, *Cikelaw ka Kene* from *Kaira* radio station and *Cike Kunafoni* available on ORTM were the most frequently listened to by farmers in the study area as they were ranked 1st ($\bar{x}= 1.2000$) and 2nd ($\bar{x}= 0.8633$) respectively. This high listenership frequency could considerably affect the users' activities positively.

Table 2: Distribution of respondents based on their listenership frequency to agricultural information programme on radio

Programmes	Never %	Occasionally %	Always %	Mean	Rank
Cike Kunafoni ORTM	41.50	30.20	28.30	0.8683	2nd
Cikelaw ka Kene Sahel	53.20	21.50	25.40	0.7220	3th
Cikelaw ka Kene Cesiri	73.70	16.10	10.20	0.3659	5th
Cikelaw ka Kene office	52.20	25.40	22.40	0.7024	4th
Cikelaw ka Kene Kaira	29.30	21.50	49.30	1.2000	1st
Cike Kunafoni Kolon	81	14.10	4.90	0.2390	6th

Source: Field survey (2017)

Farmers 'listenership extent to the agricultural programs on radio - Table 3, results show that most of the farmers in Niono area listened to the whole agricultural information programme of *Cikelaw ka Kene* from *Kaira* and *Cike Kunafoni* from ORTM which were respectively ranked 1st ($\bar{x}= 1.8488$) and 2nd ($\bar{x}= 1.3707$). This result is quite plausible because it implies that the more the

programmes are preferred the higher the audiences will be fostered to listen to the whole of the

programmes.

Table 3: Distribution of the respondents based on their listenership extent to agricultural information programme

Programmes	Not at all	Just a little	Large part	Whole	Mean	Rank
Cike Kunafoni ORTM	41.50	14.10	10.20	34.1	1.3707	2nd
Cikelaw ka Kene Sahel	53.70	10.70	6.80	28.8	1.1073	3th
Cikelaw ka Kene Cesiri	72.70	8.80	3.90	14.6	0.6049	5th
Cikelaw ka Kene office	52.70	9.80	13.70	23.9	1.0878	4th
Cikelaw ka Kene Kaira	29.30	6.80	13.70	50.2	1.8488	1st
Cike Kunafoni Kolon	82	5.40	7.30	5.9	0.3756	6th

Source: Field survey (2017)

Listenership status of the respondents

Categorisation of the listenership status scores shows that most of the respondents (60.5%) had low listenership status to farm broadcasts as indicated in Table 4. This implies that many of

them did not have sufficient listenership to many of the agricultural programmes present in the study area. This result is in line with Badiru (2013) which reported that most of the rural listeners in the Southwestern region had low listenership status of rural development broadcasts.

Table 4. Categorisation of listeners based on listenership status (frequency and extent) of agricultural radio programmes

Listenership status	Frequency	Percentage
Low	124	60.5
High	81	39.5
Total	205	100.0

Mean = 1.3951, minimum = 1.00, maximum = 2.00, SD= 0.49007

Farmers' preference for agricultural radio programmes

As indicated in Table 5, the mean scores show that most of the respondents preferred listening to *Cikelaw ka Kene* from *Kaira* radio station which

was ranked as 1st due to having the highest mean ($\overline{x}$=1.2683). Also, *Cike Kunafoni*' available on ORTM occupies the 2nd position ($\overline{x}$=1.2683). This fact is likely to be related to the credibility and relevance of the programmes among farmers.

Table 5: Distribution of the respondents based on preference for agricultural information programmes

Programmes	Not preferred	Less preferred	Preferred	Mean	Rank
Cike Kunafoni ORTM	41.5	18.5	40.0	0.9854	2nd
Cikelaw ka Kene Sahel	52.7	16.6	30.7	0.7805	3rd
Cikelaw ka Kene Cesiri	73.7	12.7	13.7	0.4	5th
Cikelaw ka Kene office	52.7	21.5	25.9	0.7317	4th
Cikelaw ka Kene Kaira	29.8	13.7	56.6	1.2683	1st
Cike Kunafoni Kolon	81	10.7	8.3	0.2732	6th

Source: Field survey (2017)

Test of relationship between farmers' radio set ownership, preferred listening time and agricultural radio programmes preference

Results in Table 6 show that farmers' radio set ownership (X^2= 39.623, p = 0.023) and their preferred listening time (r=-0.22**, p=0.04) were significantly related to preference for agricultural

radio programmes. This implies that ownership of radio sets could influence preference for a particular programme, while airing a programme within the preferred listening time could also enhance listeners' preference for such a

programme. Therefore, all stakeholders in agricultural programming need to pay closer attention the preferred listening time of their audiences to enhance programme preference and listenership.

Table 6. Chi-square and Pearson's Product Moment Correlation (PPMC) analyses of the relationship between radio set ownership, listening preferred time and agricultural radio programmes preference

Variable	χ^2 values	r-values	df	p-value	Decision
Ownership	39.623		24	0.023	S
Programme listening time preference		0.22*		0.04	S

Level of Significant=0.05

Test of relationship between farmers' listenership status and their preference of agricultural radio programs.

Table 7 reveals that there was a significant relationship between respondents' listenership status and their preference of agricultural radio

programmes (r = 0.696*, p=0.000). This implies that the respondent's listenership status has a relevant influence on their preference of agricultural radio programmes. Thus, a programme that enjoys high listenership status is likely to be preferred by the audience.

Table 7. PPMC analyses of the relationship between listenership status of farmers and their preference for agricultural radio programmes

Variable	r-values	p-value	Decision
Listenership status versus agricultural programmes preference	0.696*	0.000	S

CONCLUSION AND RECOMMENDATIONS

The study concluded that most of the respondents had radio sets and preferred listening to agricultural programmes in the evening time. In the same vein, respondents preferred listening to *Cikelaw ka Kene* from *Kaira* and *Cike Kunafoni* from ORTM radio stations. However, agricultural radio programmes generally had low listenership status among the respondents. Agricultural broadcasters should target their broadcasts at the evening time in order to enhance programme preference and listenership status among the end users. Meanwhile, *Cikelaw ka Kene* from *Kaira* and *Cike Kunafoni* from ORTM radio stations could be used as the flagships by the agricultural decision makers to broadcast useful agricultural information in the evening time among farmers in Niono.

REFERENCES

Agwu, A. E. (2004). Factors infringing adoption of improved cowpea production technologies in Nigeria. *Journal of International Agricultural Extension Education*, 1(1), 81–88.

Badiru, I. O. (2013). Sponsorship and listenership of rural development broadcasts on radio in Southwest Nigeria. Thesis, Department of Agricultural Extension and Rural Development, University of Ibadan, Nigeria. 185 pages

Habtemariam, A. (2004). The comparative influence of intervening variables in the adoption behavior of maize and dairy farmers in Shashemene and Debre Zeit, Ethiopia. Thesis, University of Pretoria, Pretoria. 294 pages

National Directorate of Agriculture of Mali (2016). Plan for agricultural campaign in Mali. National Directorate of Agriculture, Mali. 43 pages

Okwu, O. J., Kuku, A. A. and Aba J. I. (2007). An assessment of use of radio in agricultural information dissemination: a case study of radio Benue in Nigeria.*African Journal of Agricultural Research*. Vol. 2 (1), pp. 014-018, January, 2007.http://www.academicjournals.org/AJAR

Oladele, O. I. (2011). Effect of information communication technology on agricultural information access among research, extension agents and farmers in South Western Nigeria. *Journal of Agriculture and Food Information. 12: 167-176.*

Oyesola, O. B. and Oladeji, J. O. (2006). Spatial interactions of rural dwellers and participation in community development activities in Oyo State. A proceedings of the eleventh annual national conference of the Agricultural Extension Society of Nigeria 3rd-6th April, 2006. Pp.63-91.

Torimiro, D. O., and Alfred, Y. (2008). Communication in agricultural extension. In O. A. Akinyemiju & D. O. Torimiro & (Eds.), *Agricultural extension: A comprehensive treatise*, (pp. 133–141). Lagos, Nigeria: ABC Agricultural Systems Ltd

Sustained utilisation of acquired entrepreneurial skills among youth in Southwestern Nigeria: National Directorate of Employment's perspective

Adelakun, O. E.

Department of Agricultural Extension and Rural Development, University of Ibadan, Ibadan

Correspondence detail: flakyonline@yahoo.com, 07030716939

ABSTRACT

Entrepreneurial skills are recognized as veritable tools for reducing youth unemployment in Nigeria. However, for it to produce required effects, the extent to which such skills are sustainably used must be ascertained. This study therefore investigated the sustained utilisation of acquired entrepreneurial skills among youth in Southwestern Nigeria from the perspective of National Directorate of Employment. Multistage sampling procedure was used to select 163 respondents for the study from Ogun and Osun States. Data were collected using structured questionnaires and were analyzed using descriptive statistics.

The results show that respondents had training on poultry production (17.1%), grasscutter production (11.6%) and trading (9.2%) among others. Also 32.5% of the participants did not diversify into any activity while others diversified into activities such as okada riding, trading, sales of recharge cards, barbing, farming, and computer operator while some also got job. Almost all the participants (99.3%) completed the training, about 88.9% were given take off grant or materials and 96.9% had been able to put the learnt skill to use. Sustained utilisation of acquired NDE entrepreneurial skills was high (73.4%).

The study concluded that NDE entrepreneurial skills are sustainably used. It is recommended that the sustainably used components of NDE activities be developed as a package and adapted by organisations engaging in similar training programme.

Keywords: Sustained utilisation, Entrepreneurial skill, NDE, Youth

INTRODUCTION

Entrepreneurship is a state where an individual gainfully employs his/her skills, attitude and cognitive abilities to earn a living as well as helping others around him to earn same. Oviawe (2010) noted that entrepreneurship is acquisition of skills and ideas for creating employment for oneself and others. It is the act of starting a company, arranging business ideas and taking risks in order to make a profit through the skills one acquired through education (Omolayo, 2006). Nwangwu (2007) also described it as the process of bringing together the factors of production, namely: land, labour and capital to provide goods or services for public consumption.

The objectives of entrepreneurship education cannot be overemphasized as it focuses on equipping the individual with creative and innovative skills and information towards creating a sustainable life-style, sustainable future, self-reliance and development (Chike-Obi, 2012). This is in tandem with the philosophy of National Directorate of Employment (NDE) which was formed by the Nigerian government to tackle employment problems in both the short and long term perspectives by formulating and administering job creation as well as entrepreneurship-related training programmes.

The aim of NDE is self-enterprise, which emphasises self-employment and self-reliance in preference to wage employment. In essence, the idea is to create a generation of youth that are sufficiently, functionally skilled, psychologically, educationally and vocationally well equipped with a career focus for sustainable livelihood and poverty reduction. Since its establishment, the skill acquisition aspect of the programme has imparted both agricultural and non-agricultural training skills to unskilled youths thereby putting them into gainful self-employment, while the labour intensive and loan granting activities of the programmes have also engaged many skilled unemployed youth (Toluwase and Omonijo, 2013). Therefore with a comprehensive entrepreneurship education such as offered by NDE in Nigeria, poverty will be eliminated, sustainable growth of the economy will be assured, and the development of many people cannot be contested. Moreover, if Nigerian youths must overcome poverty, they must move beyond entrepreneurial skill acquisition to engaging the skill acquired for profit making, hence ensuring sustainability. It is upon this fulcrum that this study sought the sustainability of entrepreneurial skills acquired by youth from NDE programme in Southwestern Nigeria. The training skills acquired were identified, the activities diversified to were determined as well as the characteristics of the training received.

METHODOLOGY

The study population consisted of youth participants in NDE vocational skill acquisition programme in southwestern Nigeria. Multistage sampling procedure was used to select respondents for the study. Osun and Ogun states were randomly selected out of the six states in southwestern Nigeria. The lists of participants between 2011-2013 were obtained from NDE's office of each state and were stratified along rural/urban dichotomy and age. Simple random sampling was used to select 25% of participants from each state to provide 88 and 75 participants from Osun and Ogun states respectively to provide a sample size of 163 respondents for the study.

In order to ascertain sustainable utilisation of entrepreneurial skill acquired by respondents; the composite scores of completion of programme, receipt of take-off grants, still in business and diversification to other activities were standardized and the mean score of 2.9±0.9 was generated. This was used to categorize extent of sustainable utilisationinto high and low.

RESULTS AND DISCUSSION

Type of training skills received - The result on Table 1 reveals the various training underwent by respondents in the study area. A larger percentage (17.1%) of respondents had training on poultry production, followed by grasscutter production (11.6%). Others include trading (9.2%), fashion design (8.6%), catering service (8.0%), garri processing (5.5%), computer repair (4.9%), hair dressing (4.3%), aluminium (3.1%) and vucalnising (1.0%).

Table 1: Distribution of respondents by type of training received

Training	Osun	Ogun	Total
Poultry	18 (20.5)	10 (13.3)	28 (17.1)
Fishery	6 (6.8)	8 (10.7)	14 (8.6)
Piggery	4 (4.5)	8 (10.7)	12 (7.4)
Grasscutter	2 (2.3)	7 (9.3)	9 (11.6)
crop farming	3 (3.4)	2 (2.7)	5 (3.1)
Garri processing	4 (4.5)	5 (6.7)	9 (5.5)
Horticulture	1 (1.1)	0 (0.0)	1 (1.0)
Catering	9 (10.2)	4 (5.3)	13 (8.0)
fashion design	10 (11.4)	4 (5.3)	14 (8.6)
bag /shoe making	2 (2.3)	0 (0.0)	2 (1.2)
Trading	7 (8.0)	8 (10.6)	15 (9.2)
Photography	3 (3.4)	0 (0.0)	3 (1.8)
Welding	2 (2.3)	0 (0.0)	2 (1.2)
computer business/training and repairing	6 (6.8)	2 (2.7)	8 (4.9)
house painting	1 (1.1)	1 (1.3)	2 (1.2)
hair dressing	2 (2.3)	5 (6.7)	7 (4.3)
automobile mechanic	5 (5.7)	2 (2.7)	7 (4.3)
candle/soap making	1 (1.1)	0 (0.0)	1 (1.0)
Carpentry	1 (1.1)	0 (0.0)	1 (1.0)
Vulcanizer	1 (1.1)	0 (0.00	1 (1.0)
Electronic	0 (0.0)	4 (5.3)	4 (2.6)
Barbing	0 (0.0)	1 (1.3)	1 (1.0)
Aluminium	0 (0.0)	5 (6.7)	5 (3.1)
Total	88 (100.0)	75 (100.0)	163 (100.0)

Source: Field survey, 2018

Activities diversified to by respondents

The result on Table 2 indicates that 32.5% of the participants did not diversify into any activity. While others diversified into activities such as okada riding, trading, sales of recharge cards, barbing, farming, and computer operator while some also got job. The result further shows that participants in Osun State diversified more into trading (20.5%), this may be as a result of ease of trading which does not require stringent conditions to start, trading can be engaged in anywhere and at any time with minimum start-up fund. Also 14.9% of the respondents diversified into okada riding, which confirms Okonkwo, Emehute and Nwosu (2010)assertion that the quest for social and economic survival has driven many Nigerian youths into various jobs including riding of commercial motorcycle popularly known as '*okada*' business. It is obvious from the result that

few participants diversified to vocational trade such as barbing, painting, aluminium, hairdressing, fashion designing among others. The implication is that in time to come, people who are skilled in some technical vocations will be scarce because young people are no longer interested in learning the skills in those vocations. Such vocations include: auto mechanic repairs, bricklaying, plumbing, carpentering, painting, welding, electrical installation and maintenance, agriculture, catering to mention a few (Fatokun, 2015).

Table 2: Distribution of respondents by activities diversified into

Activities	Osun	Ogun	Total
None	28 (31.8)	25 (33.3)	53 (32.5)
Okada	14 (15.9)	7 (9.3)	21 (12.9)
Online business	3 (3.4)	0 (0.0)	3 (1.8)
Trading	18 (20.5)	15 (20.0)	33 (20.2)
Sales of recharge card	6 (6.8)	12 (16.0)	18 (11.0)
Farming	3 (3.4)	8 (10.7)	11 (6.7)
Got a job	7 (8.0)	0 (0.0)	7 (4.3)
Catering	3 (3.4)	1 (1.3)	4 (2.5)
Soap making	1 (1.1)	1 (1.3)	2 (1.2)
Fashion designer	5 (5.7)	0 (0.0)	5 (3.1)
Barbing	0 (0.0)	1 (1.3)	1 (1.0)
Computer operator	0 (0.0)	4 (5.3)	4 (2.5)
Painting	0 (0.0)	1 (1.3)	1 (1.0)
Total	88 (100.0)	75 (100.0)	163 (100.0)

Source: Field survey, 2018

Characteristics of NDE training received

Participants' completion of NDE programme - The findings in Table 3 reveal that almost all the participants (99.3%) completed the training, the few participants that did not complete the training might have encountered some difficult situations in the course of the training such as unfriendly trainers. They may also abandon the training due to employment opportunities from another source.

Participants by take-off grant received - Table 3 further shows the distribution of respondents by take-off grants. About 88.9% of the participants were given take-off grants or materials. It is evident from the result that more participants (77.0%) were given take-off grant in Osun state compared to their counterparts in Ogun state (42.7%). Non-financial and financial supports are the most significant contributions to the success of any young entrepreneur. The provision of grants helps young entrepreneurs to guide their businesses, planning, registration and development. However, due to failure to assess funds for productive engagement, there has been a sustained prevalence of high youth unemployment rate in the country.

Participants' start-up businesses - Also as revealed in Table 3, 96.9% of the participants had been able to put the learnt skill to use in generating income in order to improve their welfare. This is similar to the findings of Adebisi and Oni (2012) who reported that 99.0% trainees responded that they would establish the jobs they were trained for while 100% ex-trainees responded that they were doing the jobs trained for under NDE. Hence the empowerment programme is still relevant.

Participants still in business - Majority (88.3%) of the respondents were still in business as shown in the result on Table 3. The goal of NDE is to ensure that unemployment is reduced to the barest minimum, therefore with the percentage of those who were trained and still in business it is an indication that NDE is achieving its goals.

Participants' diversification to other activities - The result of distribution of participants by diversification to other activities on Table4 indicates that more than half of the (57.1%) of the participants diversified into other livelihood activities to complement the skills learnt from NDE in order to improve their poverty status. Diversification is expected to open up opportunities for multiple sources of income for the participants which can enhance their poverty status.

Table 3: Distribution of respondents by characteristics of training received

Characteristics	Osun	Ogun	Total
Training Completed			
Yes	88(100.0)	64(85.3)	152(93.3)
No	0(0.0)	11(14.7)	11(6.7)
Take-off grant given			
Yes	68(77.0)	32(42.7)	100(87.6)
No	20(23.0)	43(57.3)	63(38.7)
Started business			
Yes	84(95.5)	74(98.7)	158(96.9)
No	4(4.5)	1(1.3)	5(3.1)
Still in business			
Yes	78(88.6)	66(88.0)	144(88.3)
No	10(11.4)	9(12.0)	19(11.7)
Diversified			
Yes	43(48.9)	50(66.7)	93(57.1)
No	45(51.1)	25(33.3)	70(42.9)
Total	88(100.0)	75(100.0)	163(100.0)

Source: Field survey, 2018

Extent of sustained utilisation of skills acquired from NDE

Sustained utilisation of skills acquired by respondents was determined using the completion of NDE programme, take-off grants given, and still in business. The result on Table 4 reflects a high level of sustained utilisation (73.4%) of acquired skills from NDE. The implication is that there was continuity in the application of the skills learnt by the participants. This is expected to improve their poverty status as a result of the earnings from the businesses and reposition them to the categories of self-employed in the country. This represents Chike-Obi (2012) opinion that entrepreneurship education focuses on equipping individuals with creative and innovative skills and information towards creating a sustainable life-style, sustainable future, self-reliance and development.

Table 4 Categorisation of participants by level of Sustained utilisation of skills acquired from NDE

Sustainability level	Frequency	Percentage	Mean± SD
Low extent (1.0-2.9)	65	26.6	2.9±0.9
High extent (3.0-4.0)	179	73.4	
Total	244	100.0	

Source: Field survey, 2018

CONCLUSION AND RECOMMENDATION

The study concluded that the entrepreneurial skills acquired from NDE was sustainably used. Participants engaged in grasscutter production, trading, fashion design, catering service, garri processing, computer repair, hair dressing, aluminium production and vucalnizing. Almost all the participants completed the training, many were given take-off grants and started business. Also majority of the participants were still in business, although many diversified into other activities such as okada riding, trading, sales of recharge cards, barbing, farming, and computer operator.It is recommended that the components that ensured sustainable utilisation of skills acquired from NDE be developed as a package and adapted by organisations engaging in similar training programmes.

REFERENCES

Adebisi, T. A. and Oni, C. S. (2012). Assessment of Relevance of National Directorate of Employment Training Programme to the Needs of the Trainees in South-West in Nigeria. *International Journal of Vocational and Technical Education*, 4(3) 29-37.

Chike-Obi, M. (2012). Sustainability as a key in Life, Business and Government. A lecture presented at the University of Nigeria,

Nsukka, during her 52nd Founders' Day Celebration held on October 4, 2012.

Nwangwu, I. O. (2007). Higher Education for Self-reliance. An Imperative for the Nigerian Economy. NEAP Publication p. 1-8.

Okonkwo, E. C., Emehute, V. C. and Nwosu, A. C. (2010). The Okada Phenomenon: Effect on Agricultural and Rural Development. Proceeding of the 44th annual Conference of Agricultural Society of Nigeria. Pp 278-279.

Omolayo, B. (2006). Entrepreneurship in Theory and Practice. In F. Omotosho, T. K. O. Aluko, O. I. Wale Awe and G Adaramola (eds). *Introduction to Entrepreneurship development in Nigeria*. Ado-Ekiti, UNAD Press.

Oviawe, J. O. (2010). Repositioning Nigerian Youths for Economic Empowerment through Entrepreneurship Education *European Journal of Educational Studies*, Vol. 2, No. 2, pp.113-118.

Toluwase, S. O. and Omonijo D. O. (2013). Evaluation of National Directorate of Employment (NDE) in Alleviating Poverty among Arable Farmers in Ekiti-State, South-West Nigeria.*Journal of Agriculture Economics and Rural Development* (2013) 8-25

Educators' perception on the choice of agriculture as a career among youth in Oyo state, Nigeria

[1]Badiru, I. O., [1]Obabire, F. F. and [2]Aina, A. S.

[1]Department of Agricultural Extension and Rural Development, University of Ibadan

[2]College of Agricultural Education, Tai Solarin College of Education, Omu-Ijebu

Correspondence details: bodebadru@gmail.com, +2348034660732

ABSTRACT

This study investigated the educators' perception on the choice of agriculture as a career among youths in Oyo State. Structured questionnaire was used to collect data from 207 respondents (teachers and parents) who were randomly selected for the study. Data were collected on respondents' personal characteristics, awareness of career options in agriculture, preferred occupation for wards, factors determining preference and perception of respondents on agriculture as a career choice. Data were analysed using frequency counts, percentage, mean and Pearson Product Moment Correlation (PPMC) at 0.05 level of significance. The mean age of the respondents was 36.8years. More of them (55.1%) were males, married (56.0%), had some form of tertiary education (82.1%) and employed in the education profession (43.5%). Many (54.6%) had high level of awareness of the career opportunities in agriculture and ranked agriculture as the second most preferred occupation for their wards ($\overline{x}$ =2.23) after medicine ($\overline{x}$=2.24). High income expectations ($\overline{x}$=1.63) ranked as the most important factor determining preference for any career and more of them (54.1%) had favourable perception of their wards taking up a career in agriculture. Significant relationship existed between awareness of career options in agriculture and perception of agriculture as a career choice (r=0.255, p≤0.05). Educators were favourably disposed to agriculture as a career choice for their wards, although considered second to medicine. Stakeholders should sustain the public awareness of the potentials of agriculture as a high income generating occupation.

Keywords: Educators' perception, youth-in-agriculture, career choice

INTRODUCTION

Agriculture, for decades, has been linked with the creation of basic food crops and livestock (Aluko, 2014). Nigeria as an agrarian country inherited at independence an economy dominated by a robust agricultural sector in income and foreign exchange earnings, and whose share in the Gross Domestic Product was 65.7% (Encyclopaedia of the Nations, 2010). One of the biggest problems facing the Nigerian youth is unemployment due to a variety of factors such as perceived low availability of employment opportunities and inadequacy of capital for start-ups among others. The agricultural sector comes in handy in tackling this identified problem especially when the youths are ready to channel their energy into the sector. This is because of the relative ease of starting up an agricultural enterprise, compared to other enterprises.

However, Wole-Alo, Falase and Agunloye (2016) asserted that the persistent drop in agricultural production over the years continues to be a serious concern to both state and federal governments. Meanwhile, National Economic Planning (NEP) (2012) reported that approximately 65 per cent of rural families involved in agriculture-based occupation are ageing men and women. This places the nation in dire straits to replace the elderly farming population in order to ensure sustainable agricultural production in Nigeria. The role of youths in salvaging the situation therefore becomes critical as custodians of the country's future. This is even more important since the changing socio-economic, political, environmental and climatic conditions in Nigeria and other emerging economies across the world have continued to worsen the standards of living of most families particularly those dwelling in the rural areas (Nwaogwugwu and Obele, 2017).

Reversing the trend requires deliberate efforts by concerned stakeholders at guiding the youth in choosing the right career path. It is an established fact that educators i.e. parents and teachers are part of the critical influencers of students' career choices (Dick and Rallis, 1991), (Morningstar, 1997); (Faitar and Faitar, 2013). Padunny (1994) stressed that typically, the higher the occupational status of the students' parents, the more positive their attitude towards science. This is to say that parents with higher occupational status would want their child to be doctors, engineers etc. In the same vein, teachers who express an interest in the career goals and aspirations of students sometimes serve as role models and have been shown to be influential in manipulating their career choices (Azubuike, 2011).

The youths generally seem to be less interested in going into agriculture as a life career choice/course of study (Wole-Alo *et al*, 2016). This seeming disinterest cannot be divorced from the influence of the society (comprising parents, teachers and peers etc.) on the youth. Among these categories of influencers, the roles of the parents and teachers are particularly critical because of the level of control they have over the youths. Hence, there is the need to ask some pertinent questions:

1. What are the personal characteristics of respondents?
2. Are respondents aware of career opportunities in agriculture?
3. Which profession would respondents prefer their wards to engage in?
4. What factors are responsible for the preferences in question 3 above?
5. What is the perception of respondents about agriculture as a career choice for their children/wards?

METHODOLOGY

This study was carried out in Oyo state. The population of the study comprised all parents and teachers of senior secondary schools students in Oyo state. A four-stage sampling procedure was used in selecting the respondents for this study.

Stage I: The 33 Local Government Areas (LGAs) of the state were stratified into urban, peri-urban and rural LGAs depending on the principal settlement pattern existing in each of the LGAs. As a result of this, we have 12 rural LGAs, 10 peri-urban LGAs and 11 urban LGAs (Oyo State Ministry of Local Governments and Chieftaincy matters, 2018).

Stage II: Ten percent of the LGAs were selected from each stratum to ensure their equal chance of being picked. Consequently, one (1) LGA was randomly selected from the rural, peri-urban and urban LGAs respectively.

Stage III: A total of 69 public secondary schools and 101 private secondary schools were in the selected LGAs, and five percent (5%) of schools from each of the selected LGAs were randomly selected making a total of 10 schools.

Stage IV: Proportionately, 12% of the teachers were selected for sampling. A cross-section of the students (twice the number of selected teachers) was also engaged so as to gain access to their parents.

A total of 252 questionnaires were administered, but 207 were returned giving 82% return rate.

Measurement of variables

Awareness of respondents on career options available in agriculture was measured by asking respondents to indicate YES or NO in response to some awareness statements which were assigned scores of 1 and 0 respectively. The scores were later aggregated and the mean used to categorise into low and high awareness levels.

Preferred profession was measured by listing various professions and asking respondents to pick their preferred options. Respondents were asked to indicate their preference for each of the professions by picking from the options of most preferred, preferred and least preferred which were assigned scores of 3, 2 and 1 respectively. Weighted mean values of the profession were then calculated and ranked in order of magnitude to take decision.

Respondents were equally asked to state the level of influence each of the factors identified has on a career choice. Each influencing factor was ranked using a 3-point rating scale of large extent, limited extent and not a factor, with scores of 2, 1 and 0 assigned respectively. Weighted mean values of the influencing factors were then calculated and ranked in order of magnitude to take decision.

Perception of respondents about agriculture as a career choice was measured by asking respondents indicate their opinions to perception statements which were rated on a Likert-type scale of Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD). These were scored 5, 4, 3, 2 and 1 respectively for positive statements and the reverse for negative statements. The maximum score was 158, while the minimum was 95. The mean score was 130.0725 and standard deviation 12.4163. Respondents who scored below the mean were classified as having an unfavourable perception of agriculture as a career while those who scored above the mean were classified as having a favourable perception of agriculture as a career choice for their wards.

RESULTS AND DISCUSSION

Personal characteristics

The results in Table 2 show that more of the respondents (41.5%) were between the age range of 30 and 37 years, and the mean age for these respondents was 36.8 years. These data imply that most of the respondents were adults just approaching or at middle age. Hence, they are likely in tune with the current realities about the employment market as they are still within the employable age. The Table also shows that the respondents were fairly distributed along gender lines (55.1 %: 44.9 %). Hence, the responses could be adjudged gender-balanced. Meanwhile, most (56.0%) of the respondents were married. This

implies that respondents are mature adults who are responsible and would only act in the best interests of their children or wards.

Furthermore, the more (35.7%) of the respondents had B.Sc. or HND certificate, 21.3% had a Master's degree, 15% had NCE. These data suggest that most (82.1%) of the respondents had tertiary education. This implies a high level of literacy of the respondents. They are therefore expected to be able to enhance the skill and quality of individuals under their care. This could be because most people in the study area see a need to get educated, as they feel it will make them better people and will in turn

lead to development of individuals and society at large. This in line with Williams, Fenely and Williams (1984)'s assertion that education is an important factor for development.

The Table also shows that more (43.5%) of respondents were involved in education related occupation, 27.5% were part of a corporate organisation or another, 22.2% were into business, 5.8% were into agriculture and 1.0% was otherwise employed.Padunny (1994) stressed that typically, the higher the occupational status of the students' parents, the more positive their attitude towards science.

Table 2: Distribution of respondents based on their personal characteristics, N=207

Variable	Frequency	Percentage	Mean
Age			
21 – 28	32	15.5	36.8
29 – 36	86	41.5	
37 – 44	65	31.4	
45 – 52	21	10.1	
52 and above	3	1.4	
Sex			
Male	114	55.1	
Female	93	44.9	
Marital status			
Married	116	56	
Single	72	34.8	
Widowed	8	3.9	
Separated	7	3.4	
Divorced	4	1.9	
Highest educational attainment			
No formal education	6	2.9	
Primary certificate	13	6.3	
SSCE	18	8.7	
OND	8	3.9	
NCE	31	15.0	
HND/B.Sc.	74	35.7	
Masters	44	21.3	
PhD	13	6.3	
Occupation			
Education	90	43.5	
Business	48	22.2	
Corporate	57	27.5	
Agriculture	12	5.8	
Others	2	1.0	

Source: Field Survey, 2018

Awareness of career options in agriculture

The result in Table 3 shows that more (54.6%) of the respondents had a high level of awareness of the career options available in agriculture. The mean score was 13.6 ± 2.8. This implies that a majority of the respondents were aware of career options available in agriculture and its implications

for the economy at large. This therefore shows that there is a high level of awareness of the career options available in agriculture among respondents, going against the findings of the Food Economy Task Force (2015) which reported that the awareness of career options in the agriculture and food business is low. Even though the data suggest

high awareness levels across board, there are some negative responses however, that can still be improved upon by the better spread of information on career options in agriculture. The media has a major role to play in this case, as well as teachers and parents.

Table 3: Distribution of respondents based on the level of awareness of career options available in agriculture (N=207)

Statements	Yes	Percent
Are you aware that agriculture is a lucrative business?	206	99.5
Are you aware that genetic engineering (improvement of plant and animal breeds) is a part of agriculture?	194	93.7
Are you aware of agricultural technology (the development of machines and technology to enhance production) as a part of agriculture?	192	92.8
Are you aware that livestock production is a subset of agriculture?	181	87.4
Are you aware that an agricultural extension graduate could work in the community relations/outreach department of oil companies such as Shell?	115	55.6
Are you aware that an agriculturist could work in a bank?	134	64.7
Horticulture involves the art of garden cultivation and management, are you aware that this is an agricultural field that is very lucrative?	191	92.4
Are you aware that agrochemical production, marketing and sales is a part of agribusiness which is a part of agriculture?	177	85.5
Are you aware that contract farming is a form of agribusiness which is a part of agriculture?	165	79.7
Are you aware that value chain addition is a part of agribusiness?	115	55.1
Are you aware that crop production is only a subset of agriculture?	176	85.0
Are you aware that agricultural extension agents could work in (NGOs)?	182	87.9
Are you aware that there are job opportunities available for an agriculturist at the World Bank?	136	65.7
Are you aware that range and pasture management is a subset of agriculture which deals with the development and management of pasture for the production of livestock?	174	84.1
Are you aware that biotechnology (which involves the use of living organisms to make useful chemicals) is a part of agriculture?	164	79.3
Are you aware that there are job opportunities available at the World Health Organisation (WHO) for agriculturists?	144	69.6

Source: Field Survey, 2018

Table 3a: Categorisation of respondents based on level of awareness of career options in Agriculture

Level	Frequency	Percent	Mean	Std. Dev
Low (3-13)	94	45.4		
High (14-17)	113	54.6	13.59	2.82
Total	207	100		

Source: Field Survey, 2018

Level of preference for selected career choice

As shown in Table 4, Medicine with mean score of 2.24 ranks first in the list of preferred career choice followed closely by agriculture with a mean of 2.23. This implies that majority of respondents prefer agriculture to other careers such as teaching. This contrasts the findings of Prince, Adebimpe and Abiola (2002) who opined that teaching as a profession is preferred by more of the population as compared to agriculture. This could be due to the recent attention paid by the Nigerian government to the agricultural sector through intervention programmes and media campaigns.

Table 4: Distribution of respondents based on their level of preference for selected careers (n=207)

Career choice	Most preferred	Preferred	Least preferred	Mean	Rank
Medicine	89 (43.0)	78 (37.7)	40 (19.3)	2.24	1st
Agriculture	79 (38.2)	96 (46.4)	32 (15.5)	2.23	2nd
Engineering	76 (36.7)	80 (38.7)	51 (24.6)	2.12	3rd
Education	71 (34.3)	75 (36.2)	61 (29.5)	2.05	4th
Banking	47 (22.7)	112 (54.1)	48 (23.2)	2.00	5th
Law	58 (28.0)	78 (37.7)	71 (34.3)	1.94	6th
Architecture	37 (17.9)	100 (48.3)	70 (33.8)	1.84	7th
Accounting	46 (22.2)	74 (35.7)	87 (42.0)	1.80	8th
Military	29 (14.0)	81 (39.1)	97 (46.9)	1.67	9th
Law enforcement	31 (15.0)	71 (34.3)	105 (50.7)	1.64	10th

Source: Field Survey, 2018

Factors affecting choice of preferred occupation

Table 5 shows that high income expectations ($\overline{x}$=1.63) was the most important factor affecting educators choice of preferred occupation for their wards. Other factors in descending order of importance are high employment prospects ($\overline{x}$= 1.58), expectation of high standard of living ($\overline{x}$= 1.56) and good public image ($\overline{x}$=1.41). This implies that economic returns and benefits greatly influence educators' decisions on choosing occupation for their wards.

Table 5: Distribution of respondents based on the factors affecting their choice of preferred career, n=207

Career choice	Large extent	Limited extent	Not a factor	Mean	Rank
High income expectations	141 (68.1)	55 (26.6)	11 (5.3)	1.63	1st
High employment prospects	136 (65.7)	55 (26.6)	16 (7.7)	1.58	2nd
Expectation of high standard of living	131 (63.3)	61 (29.5)	15 (7.2)	1.56	3rd
Good public image	120 (58.0)	51 (24.6)	36 (17.4)	1.41	4th
High family prestige	95 (45.9)	81 (39.1)	31 (15.0)	1.31	5th
Societal approval	98 (47.3)	63 (30.4)	46 (22.2)	1.25	6th
High social status	86 (41.5)	79 (38.2)	42 (20.3)	1.21	7th
Favourable geographical location	79 (38.2)	81 (39.1)	47 (22.7)	1.15	8th
Less risk to life	73 (35.3)	92 (44.4)	42 (20.3)	1.14	9th
Favourable government policies	72 (34.8)	89 (43.0)	46 (22.2)	1.12	10th
Tradition	32 (15.5)	63 (30.4)	112 (54.1)	0.61	11th

Source: Field Survey, 2018

Perception of respondents towards agriculture as a career choice

The distribution of respondents in Table 6 shows that more (54.1%) of the respondents had favourable perception of agriculture as a career choice for their wards. This implies that respondents perceived agriculture as a good career choice for their wards, in line with the findings of Wachenheim and Rathge (2000). This favourable disposition could be a fall out of the current economic situation in Nigeria. The economic diversification efforts of the government are hinged on agriculture.

Further breakdown of the results in the Table shows a positive appreciation of most of the attitudinal statements. For instance, majority of the respondents opined that agriculture is lucrative (86.5%), could be regarded as the backbone of a nation's economy (85.5%) and felt agriculture science should be made compulsory for secondary school students (82.6%). However, about half of respondents (50.3%) viewed agriculture as a stepping stone to other careers, while up to 41.5% of the respondents viewed it as a career of last resort for their wards when faced with unemployment. Also, many respondents (56.1%) opined that the media had not portrayed agriculture in a positive way. This may be one of the reasons hindering them from considering it as a preferred career choice for their wards.

Table 6: Distribution of respondents based on their perception of agriculture as a career choice, n=207

Statements	SA	S	U	D	SD
Agriculture is the last resort for my ward if/when faced with unemployment	16.9	24.6	11.6	30.9	15.9
Agriculture could be a dangerous career to encourage my ward(s) to engage in	1.4	8.2	3.9	27.2	49.3
Family and friends will make jest of me if discovered that my child is child is into agriculture	3.9	9.2	10.1	32.4	44.4
My ward will be interested in building his/her career in agriculture	15.5	30.4	41.1	8.7	4.3
A Career in agriculture is limited to crop farming alone	1.4	6.3	7.7	29.5	55.1
Agriculture is a backbone in the economy of any nation	59.4	26.1	6.3	6.3	1.9
Agriculture is a career I will not encourage my ward to engage in	2.4	7.7	15.0	33.3	41.5
Agricultural science as a subject should be made compulsory for all secondary students	49.3	33.3	7.2	5.8	4.3
The media has not portrayed agriculture in a positive light therefore I won't consider it	15.5	40.6	17.4	20.3	6.3
The Federal Government hasn't shown any interest in the agricultural sector thereby discouraging me from advising my ward(s) to pursue it	13.5	23.2	12.1	37.7	13.5
A career in agriculture is limited to livestock farming only	1.9	4.3	5.3	36.2	52.2
I will encourage my ward to pursue a career in agriculture	14.0	40.6	37.7	5.3	2.4
Agriculture is a stepping stone to other careers	15.0	35.3	18.8	23.7	7.2
Someone with a degree in agriculture can work a white-collar job	35.7	44.4	12.1	4.8	2.9
Gaining access to agricultural inputs is relatively easy	5.8	31.9	19.8	22.2	20.3
Agriculture is a good entrepreneurial career	66.7	28.5	2.9	1.4	0.5
Only youths in the rural areas should pursue a career in agriculture	3.9	6.8	5.3	33.3	50.7
Someone with a degree in agriculture can't work in an office	7.7	25.8	5.8	26.6	54.1
There are other career options available in agriculture apart from farming	60.9	32.9	3.9	1.9	0.5
Farmers live in mud houses in dirty areas and untidy environments	4.8	9.2	6.8	21.3	58.0
The Federal Government's interest in agriculture is a good thing	12.1	40.1	27.1	15.5	5.3
It is difficult getting land for agriculture	18.4	35.3	13.5	24.2	8.7
My ward has no intention of building a career in agriculture	10.1	11.1	53.1	19.8	5.8
My Raising capital for farming is difficult	19.8	38.6	17.4	15.0	9.2
Agriculture is a poor man's job	5.8	8.2	2.9	24.6	58.5
Agriculture is a safe career for my kids to consider	12.6	38.2	35.3	7.7	6.3
Agriculture should be scrapped from secondary school curriculum as not good subject	5.8	2.4	4.8	23.2	63.8
My friends and family consider agriculture a good job to engage in	15.0	52.2	21.7	9.7	1.4
A nation can become a developed one without developing its agricultural sector.	6.3	8.2	7.7	32.4	45.4
Farmers live good lives with access to basic amenities like potable water and electricity	30.0	36.7	15.5	13.0	4.8
With a degree in agriculture, my child is equipped to go into agricultural practice	26.6	41.5	20.8	10.1	1.0
Youths should pursue a career in agriculture	35.7	47.8	11.1	4.8	0.5
The media portray agriculture as a very lucrative business	1.0	17.4	23.2	43.0	15.5
Agriculture is a lucrative activity which can sustain families	48.3	38.2	17.2	4.8	1.4

Source: Field Survey, 2018

Table 6a: Categorisation of respondents based on their perception of agriculture as a career choice

Level	Frequency	Percentage	Mean	Standard deviation
Unfavourable (95 - 130.0724)	95	45.9	130.0725	12.41630
Favourable (130.0725 - 158)	112	54.1		
Total	207	100		

Source: Field Survey, 2018

Relationship between respondents' personal characteristics and perception of agriculture as a career choice for their wards

Chi-square analyses in Table 7 reveal that there was no significant relationship between respondents' sex (x^2=3.139, p=0.726), marital status (x^2=2.005, p=0.735) as well as occupation (x^2=7.339, p=0.119) and perception of agriculture as a career.

In addition, PPMC analysis in the same table shows that age of respondents (r=-0.002, p=0.742) was not significantly related to their perception of agriculture as a career choice for their wards. However, respondents' educational attainment (r=0.228, p=0.001) and their perception of agriculture as a career choice were significantly related. This could imply that the higher the educational attainment of respondents, the more favourable their perception of agriculture as a career choice for their wards. This could be due to the fact that education liberates the mind and therefore makes those who acquire it exposed to varieties of opportunities not easily noticed by the uneducated.

Table 7: Test of relationship between respondents' characteristics and perception of agriculture as a career choice

Variables	χ^2 value	df	p-value	Remarks
Sex	3.139	1	0.726	Not significant
Marital Status	2.005	4	0.735	Not significant
Occupation	7.339	4	0.119	Not significant
Variable	**r-value**		**p-value**	**Remarks**
Age	-0.023		0.742	Not significant
Educational attainment	0.228		0.001	Significant

Source: Field Survey, 2018

Relationship between respondents' awareness of available opportunities in agriculture and perception of agriculture as a career choice for children/wards

Table 8 shows that there is a significant relationship between respondents' awareness of available opportunities in agriculture and perception of agriculture as a career choice for their wards (r=0.255, p=0.000). This could suggest that the more aware educators are of agriculture and the opportunities available in the sector, the better informed they are in their outlook of the sector as a career choice for their wards.

Table 8: Correlation between level of awareness and perception of agriculture as a career

Variable	r-value	p-value	Remarks
Level of awareness and perception of agriculture as a career	0.255	0.000	Significant

Source: Field Survey, 2018

Test of difference between educators' perception of agriculture as a career choice for their children/wards

From the findings in Table 9, there is no significant difference in the educators' perception of parents and teachers on youths' choice of agriculture as a career. Considering this along with the findings in Table 6, both parents and teachers generally have favourable perception of agriculture as a career choice for their children/wards.

33

Table 9: T-test analysis showing difference in perception of educators

Variable	Mean	N	SD	t-value	p-value	Remarks
Teachers	130.93	84	10.62	0.819	0.414	Not significant
Parents	129.49	123	13.52			

Source: Field Survey, 2018

CONCLUSION

From the study, it can be concluded that educators were favourably disposed to their children or wards taking up agriculture as a career choice. They also ranked agriculture high on their list of preferred occupations for their wards. This trend was noticed more among educators with more awareness on available opportunities in agriculture and those with higher educational attainment. Therefore, the government and relevant stakeholders in the sector should collaborate more with the media to portray agriculture in a positive light, while highlighting the various opportunities available in the field of agriculture to enhance the public perception of the sector. The government should also review its current position on the status of agriculture science as an optional subject at the secondary school level.

REFERENCES

Adebo, G. M and Sekumade, A. B (2013). Determinants of career choice of Agricultural profession among the students of the Faculty of Agricultural Sciences in Ekiti State University, Nigeria. *Journal of Agricultural Extension and Rural Development,* 5(11): 249-255.

Aluko, B. (2014). Teachers' perception of the effect of the new school curriculum on students' career choice of agriculture in Oyo State, Nigeria. M.Sc project submitted to the department of Agricultural Extension and Rural Development, University of Ibadan, Ibadan

Azubuike, O. C. (2011). Influential factors affecting the attitude of students towards vocational or educational subjects in secondary schools in Southeastern Nigeria. *Journal of Educational and Social Research,* 1(2): 49-55

Dick, T. P. and Rallis, S. F. (1991). Factors and influences on high school students' career choices. *Journal for Research in Mathematics Education*, 22(4): 281-292

Encyclopaedia of the Nations (2010) Retrieved from www.nationsencyclopedia.com/economies /Africa/Nigeria-AGRICULTURE.html on the 8th of March, 2018 at 16:57.

Faitar, G. M. and Faitar, S. L. (2013). Teachers' influence on students' career choices. *American International Journal of Social Science*, 2(5): 10-16.

Food Economy Task Force (2015). Attitudes and perceptions of careers in the Agriculture and Food Sector. Retrieved on the 6th of July, 2018 from https://www.google.com.ng/url?sa=t&source=web&rct=j&url=http://www.ncub.co.uk/index.php%3Foption%3Dcom-docman%26view%3Ddownload%26category_slug%3Dreports%26aliast%3D218-attitudes-and-perceptions-of-careers-in-the-food-sector%26Itemid%3D2728&ved=ZahUKEwj_8Zf72IncAhWlB8AKHZCCCNMQFjANegQIAhAB&usg=AOvVaw36Bbn5TUbnedAa7gOYRR0u at 6:10 PM.

Irohibe, I. I. and Agwu, A. E. (2014), Assessment of Food Security Situation among Farming Households in Rural Areas in Kano State, Nigeria. *Journal of Central European Agriculture*, 15(1): 94-107.

Morningstar, M. E. (1997). Critical issues in career development and employment preparation for adolescents with disabilities. *Remedial and Special Education*, 18(5):307-320.

Nwaogwugwu, O. N and Obele, K. N (2017) Factors limiting youth participation in agriculture based livelihoods in Elemo Local Government Area of the Niger Delta, Nigeria. *ScientiaAgriculturae*, 17(3). Retrieved on 23rd February, 2018 from www.pscipub.com/SA at 19:12.

Olaosebikan, O. I. and Olusakin, A. M. (2014) Effects of Parental Influence on Adolescents' Career Choice in Badagry Local Government Area of Lagos State, Nigeria. *IOSR Journal of Research and Method in Education (IOSR-JRME)*, 4(4): 44-57.

Oyo State Government (OYSG) (2018) Retrieved 7th March, 2018 from

https://oyostate.gov.ng/about-oyo-state/#1496321925542-d2c83f38-c8fe at 20:26.

Padunny (1994). Youth and vocational or technical training in Nigeria. Studies in technical education.

Prince, F. I., Adebimpe, O. U. and Abiola, A. (2002). Sectoral and career preferences of accounting students: Predisposing factor influencing their choices. Review of Business and Finance: 4(1) 22.

Wachenheim, C. and Rathge, R. (2000). Societal Perceptions of Agriculture. *Agribusiness and Applied Economics Report* 449

Williams S.K., Fenley J.M. and Williams C.E. (1984). A manual for Agricultural Extension Workers in Nigeria. Les Shyraden, Ibadan, Nigeria. 117-151.

Wole-Alo, I. F., Falase, O. E. and Agunloye, T. O. (2016). Assessing the future of agriculture in the hands of rural youth in Oriade Local Government Area of Osun state, Nigeria. *International Journal of Agricultural Extension*: 4(2) 105-110. http://www.escijournals.net/IJAE

Factors influencing market choices for uptake of agricultural commodities among patrons at open-air and modern markets in Ibadan metropolis, Nigeria

Fadairo, O. S., Adetunji, T. and Adejumo, A.

Department of Agricultural Extension and Rural Development, University of Ibadan, Ibadan, Nigeria

Correspondence details: dairom2@yahoo.com

ABSTRACT

The study explored factors that influence market choices for uptake of agricultural commodities among patrons in open air and modern markets in Ibadan metropolis, Nigeria. One hundred and eighty-two respondents, comprising 94 and 88 patrons from modern markets (MM) and open-air markets (OAM), respectively were purposively sampled based on availability, willingness to participate in the survey and frequency of patronage at sampled markets within a period of one month prior to the time of study. Data collected using semi-structured interview schedule were summarised using mean, frequency counts and percentages. Patrons at both market types were generally young and middle-aged adults with mean ages of 30.3±6.7 and 27.9±9.2 years for OAM and MM respondents, respectively. More than half of respondents (71.6% and 51.1% for OAM and MM, respectively) were female. More respondents with higher income patronized the MM than the OAM. Availability of wide range of sellers of same commodity (3.7±2.3) and opportunity to bargain prices (3.6±2.0) ranked highest of the motivating factors among the OAM patrons, while clean and conducive environment (3.7±2.1) and the opportunity to make payments using Point of Sale Service (3.5±1.8) were major motivating factors for MM patrons. Majority of respondents from both OAM and MM, respectively, preferred to purchase tubers (90.0% and 87.2%) and grains (81.8% and 73.4%) from open air markets. Similarly, 50.0% and 78.7% of respondents from OAM and MM, respectively preferred to uptake animal protein from modern markets. Dirty and unhygienic environment (2.6±0.6), unavailability of parking spaces (2.5±0.7) and poor protection from extreme weather conditions (2.5±0.8) rated as more severe constraints faced by respondents in OAM. Long queues at payment counters (2.6±0.9) and need to drop off baggage at entry points (2.2±0.7) were major constraints faced by MM patrons. The study concludes that shift in patrons' preference between open air and modern markets is dependent on types of agricultural commodities to buy.

Keywords: Market choice, Agricultural commodities, Open-air markets, Modern markets.

INTRODUCTION

Agriculture has been adjudged as being critical for both human welfare and economic growth in Africa. However, poor households are more in agricultural occupation and participation in agriculture is found to be more predominant in rural areas where majority are small-holder farmers. Corroborating this assertion, FAO (2006) reported that about two-thirds of the population in sub-Saharan Africa live in rural areas and are dependent on agriculture for their livelihoods, yet they live by less than $1/day. Sequel to this, Diao, Hazell, and Thurlow (2010) opined that the ability of African farmers to create pathways out of poverty and contribute in an active capacity to the growth process depends on improving infrastructure, distributing key technologies and inputs as well as promoting producer and marketing organizations that link small farmers to new market chains. Agricultural practices aimed at achieving high yield and ultimately less food insecurity and more cash in bank without deliberate focus on the means (value chain or supply chain) via which the yields are turned over is more or less like a wasted effort. This is because like any other business, it is not enough to produce and take the back seat without putting effort to market, promote or advertise as the case may be; the outcome of the production.

Marketing in Agriculture is summarized by Asogwa and Okwoche (2012) as the services involved in moving an agricultural product from the farm to the consumers. Marketing is defined as a process of satisfying human needs by bringing products to people in the proper form and at a proper time and place. Marketing has economic value because it gives form, time, place, utility to products and services. Ikioda (2013), described market places as the major sales points for locally manufactured produce and food crops, which provide a vital link between rural producing areas and urban areas as well as; sustaining farmers and supporting local economies. Ibadan being a metropolitan city brings luxuries and opportunities which are not found in the rural areas. These attractions have resulted in high influx of people as well as more demand for food thus, giving rise to a number of open and modern markets. Traditional markets play a very important role in the socio-economic development of a city in terms of job creations for the less privileged who could not afford tertiary education to have a source of

livelihood. They also help in meeting the need of human survival in terms of provision of food for consumption, social gathering and many others. It is also noteworthy that in Ibadan metropolis, agricultural food systems from processing to packaging to its marketing and distribution is gradually taking a new course with the establishment of massive, well stock-up modern markets or retail stores across the city in the last five to ten years with the presence of pre-cooked, pre-cut, and even ready-to-eat foods thus saving consumers time and energy irrespective of the cost difference.

The existence of these markets has given rise to competitiveness: allowing consumers to have the buying choices to purchases product whether from open air market or modern market. In relation to this, North and Kotze (2004) opined that the existence of both markets have an attribute on peoples buying and shopping choices thereby determining when, how and where to purchase product. Similarly, Betz and Farmer (2016) opined that food choices are replete with values about how society produces; processes; distributes; and consumes food. Consumers act upon these value-based food choices on a daily basis by choosing what food to buy, where to buy it, and how much to spend. Among these choices, the increasing visibility of shopping agricultural produce requires research effort considering the fact that rural farmers produce the bulk of our food yet remain poor or financially handicapped. It is a challenge that needs to be tackled to ensure that they are financially independent and less reliant on government or private institutions for almost all their activities and personal family issues.

Austin Associates (2010) in a report submitted to the Sustainable Agriculture Group of the World Bank asserted that even with all the successes of many African exporters in selling to new markets, without further improvements to their business environments and to the competitiveness of their export commodities, many Sub-Saharan African countries are at a risk of being trapped into producing low-skill, low-value products and services, struggling to obtain a significant value-added share in global trade. It only adds up that raising the productivity and increasing the efficiency of agricultural value chains are fundamental to the success of rural economies in Sub-Saharan Africa and to the growth of incomes of the rural people. The value chain concept as expatiated in the report, acknowledges that production must be linked to demand and the critical role of organizing the flow from farmer to consumer. Meng *et al*. (2014) also asserted that irrespective of the consumer's importance in the food supply chain; the consumer's role has often

times been undermined judging from past studies. Though, market choice and patronage have been widely studied across the world, these studies were however centered more on modern retail store formats which may not necessarily reflect the preferences of various store attributes by Nigerian consumers. Unfortunately, studies in the retail sectors of the under-developed countries have been scarce. Corollary to this is the fact that very few researchers have examined the changing retail outlets from the viewpoint of the consumer.

It is believed that the interests of consumers which are widely responsible for market expansions would help provide important feedback to the farmers through extension agents in order to assist farmers understand the necessary kind of value addition required for maximum profitability. It is against this background that this study explored the market choices for purchase of agricultural commodities among urban households in Ibadan metropolis, Nigeria. The specific objectives of the study were to:

1. ascertain the motivating factors for respondents' market choices,
2. investigate the market preference for purchasing selected agricultural commodities,
3. investigate the constraints faced by respondents in patronizing open-air or modern markets; and
4. identify the socio-economic characteristics of the respondents.

Definition of terms

For the purpose of this study, the following terms as used in the study are defined as follows:

Modern Markets (MM) refer to enclosed organized market environment or an assortment of interesting and quirky stores surrounded by huge asphalt parking lots and access to parks, walking trails, and other attractions where bargaining on the prices of commodities are absolutely disallowed.

Open-air Markets (OAM) refer to a square, a street, or a whole neighborhood of pushcarts, temporary booths, and occasional storefronts, displaying a variety of fresh food items and other goods and usually in open environments where the prices of commodities can be bargained and several business owners market their produce.

Uptake is an act of buying the goods offered for sale at open-air or modern markets.

Patron is a person who buys the goods offered for sale at open-air or modern markets.

Concept of consumer behaviour consists of ideas, feelings, experiences and actions of consumers with additional environmental factors like prices, adverts and recommendations. It is a dynamic process due to the continuous changes in ideas, perception and activities of consumers as individuals or groups (Peter and Olson, 2008). Literature (Blackwell *et al*, 2001; Solomon, 2006; Peter and Olson, 2008) established the following as possible factors underlining behaviour of consumers:

Family structures: marriages and divorce rates in several countries have effects on consumption habits. For instance, couples with children purchase more health concerned food than singles that prefer junky food. On the other hand, children can change the buying decision of their parents when shopping in a supermarket; therefore, advertisements are more relevant in some countries with young population.

Demographic characteristics: Change in population size, gender distribution, age, birth rates amongst others are of interest to marketers as those also affect the behaviour of consumers.

Socioeconomic status: wealth distribution is important to determine the purchasing power and market potential of specific customers.

Culture: Consumers purchase products and expect them to satisfy their needs even though these needs are differentiating between cultures. For instance, a German company 'Meile' that produces electrical machines introduced a washing machine with high performance and longevity in Europe, Asia and North America. A good sales result was obtained in the first two continents at a high selling price; however, the opposite was the case in the North American market. This is related to the American culture; with a mobile society and continuous change of houses, they do not want to spend too much on this machine category instead they prefer rather cheaper and less efficient ones (Blackwell *et al.*, 2001).

Personal Lifestyle: the lifestyle of an individual is a pointer for purchasing habits and is equally a crucial explanation for how consumers spend money, time and the manner in which a person shows off consumption choice and personal values (Solomon, 2006).

Health awareness: Another trend in developed countries is the alteration of eating habits. Many societies now choose healthier diets especially those containing balanced nutritional benefits. This "health awareness" is a movement that has boomed natural and organic foods on supermarket's shelves (Peter and Olson, 2008).

Consumer Decision Process

The buying decision of a consumer starts with need recognition and concludes with divestment process. These processes of purchase behavior enable marketers to understand the buyer in one of these steps and even change his or her decision. Blackwell *et al.* (2001) identified the following as the stages a consumer undergoes from before and after buying a good or service:

Need recognition: Needs emerge from individual cause such as physical necessities or from the person's environment such as adverts. Manufacturers, business owners and marketers have to constantly trace the needs and challenges of consumers. Otherwise, even the most successful companies can make the mistake of introducing wrong products to the market, whereby almost no demand is raised.

Information search: On recognizing the consumer's need, marketers should begin seeking for information in external areas. There may be information in a person's mind and/or a person may be very close to the targeted item. Hence in this case, a consumer instead of searching, probably purchases the product. On the other hand, some consumers prefer to go shopping and spend time inquiring. In many cases, searches take short times and consumers' actions depend on their memories of a brand or a price or they just repeat an old purchase.

Pre-purchase evaluation of alternatives: Before purchasing, a consumer asks the question about what his/her alternatives are and try to select the best. Mostly consumers relied on the stored information in their memories for evaluation in terms of; price, brands, or services and choose between them. Consumers evaluate the market place and choose between various offers that best fit their needs. Most times, consumers are sensitive to price, size and changes in quantity and even quality of preferred brands.
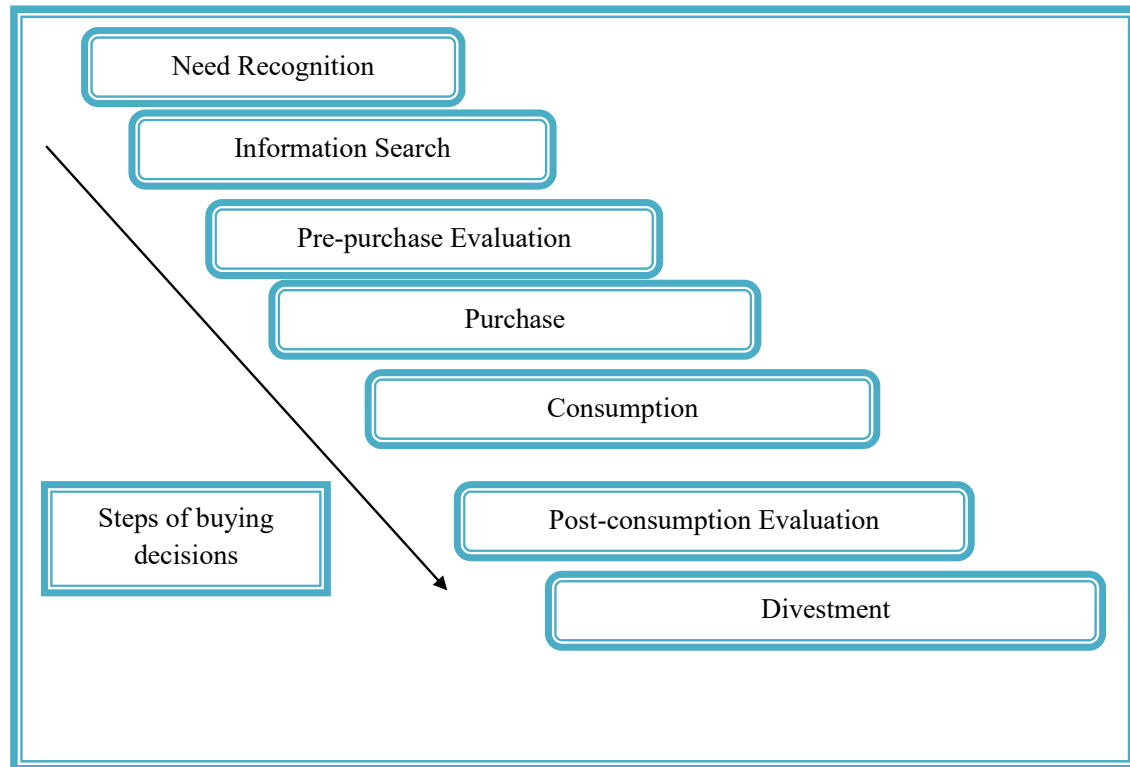
Fig. 1: Consumer Decision Process. Source: Blackwell et al., 2001, page 71

Purchase: After evaluating the different products, a consumer comes up with a decision to purchase. The decision to purchase however could be altered by factors such as; someone else's recommendation of another product or brand as being better, or unexpected changes during the purchase. For example, a brand could decrease its prices relatively on a particular day so that the consumer can change his mind in the market or a consumer may be constrained to narrow options as a result of consumer traffic on particular products.

Consumption: The consumer utilises the product to achieve its desired ends.

Post consumption evaluation: This starts as consumers begin to compare their purchased products to their habits. There are numerous research outcomes that reveal that consumer satisfaction is declining across many sectors. When dissatisfaction arises, there is change in attitude and behavior towards that product or service; thus affecting future consumption negatively (Solomon, 2006). Sometimes, dissatisfaction occurs due to high expectations of the product or exaggerations about the product's worth.

Divestment: This is the last stage in the consumer decision process. Here, the consumer can choose to do anything with the produce after purchase such as recycling, disposing off or even re-selling; although, this depends on the kind of product as well as the environmental consciousness of the consumer.

METHODOLOGY

The study area was Ibadan which is the capital of Oyo State and third largest populated metropolis after Lagos and Kano in Nigeria. The study population comprised of all consumers patronizing the major open air and modern markets to purchase agricultural products. Purposive sampling technique was used to select three modern and three open-air markets within the metropolis based on popularity, volume of patronage as well as availability of alternate type of market within the same catchment areas. The modern markets included: Shoprite, Foodco, and Zartech; while the open-air markets included: Bodija, Dugbe and Molete markets. Due to the nature of the study and unavailability of a possible sampling frame, respondents for the study were sampled based on their availability and willingness to participate in the survey. A preliminary screening was conducted on those pre-selected to identify only those who have visited the markets at least once in a week within the last one month for inclusion in the survey. Others who did not meet this criterion were not regarded as patron and were therefore

excluded. Thus, a total of 182 respondents comprising 94) and 88 patrons from modern and open-air markets, respectively were selected for the study. Data were collected through the use of a semi-structured interview schedule on respondents motivating factors for market choice, type of market preference for uptake of selected agricultural produce and what they considered as discouraging factors (constraints) for patronizing open-air and modern markets for purchase of agricultural produce.

Motivating factors for market choices were determined by generating a list of possible factors from initial interactions held with patrons at both market types during the field reconnaissance. Sampled respondents reacted to these factors on a four-point scale of large extent, moderate extent, limited extent and no extent. The responses were scored as 4,3,2 and1, respectively. The mean value for each factor was determined and used to compare the influence of the various factors on patrons from both market types. Market preference for uptake of selected agricultural produce was determined by asking patrons from each of the market type to indicate their preference between open-air and modern markets for purchasing each of the listed produce. Discouraging factors or constraints for patronizing open-air and modern markets for purchase of agricultural produce was measured by asking respondents to freely mention why they are less motivated to patronize each of the market types for obtaining their agricultural produce. The respondents afterwards ranked each of the constraints mentioned as severe or mild. Scores of 2 and 1 were awarded to the responses respectively. The mean values for each of the constraint item provided the basis for ranking these items according to their severity as perceived from the survey findings. Data collected were analysed and summarised using descriptive statistics such as frequency distribution, percentage and mean.

RESULTS AND DISCUSSION

Socioeconomic characteristics

Table 1 shows that respondents sampled from the two market types had mean ages of 30.3±6.7 and 27.9±9.2 years from OAM and MM, respectively.

Similarly, the age distribution reveals that higher proportions of the respondents (71.3% and 81.9% from OAM and MM, respectively) were between ages 16-35 years. One can infer from this finding that the patrons at both market types were generally young and middle-aged adults. In addition, the closeness in age distribution between the patrons sampled from both market types disagrees with Boro, Kalra and Kawatra's (2013) opinion that more young people have preference for modern markets and vice versa for the open air markets.

Sex distribution of respondents shows that higher proportions of patrons at both markets were female (71.6% and 51.1% for OAM and MM, respectively). This is in line with *apriori* expectation giving the cultural conceptualization of the role of a girl child in the kitchen as paramount and needing to restrict a male child to car washing rather than shopping for foodstuff and doing household chores in most African societies. Interestingly, data further shows that fewer males patronized the OAM (28.4%) than the MM (48.9%). This is probably due to the unregulated pricing of commodities in the OAM which therefore leads to haggling; a situation where women are reported to be more likely than men to negotiate a better price (Tuttle, 2013).

Majority of the respondents from OAM and MM, respectively were unmarried (55.7% and 69.1%) and had tertiary level education (81.8% and 73.4%). The overwhelming proportions of patrons with tertiary education at both market types suggests that the assumption that level of education play a differentiating role in market choices of individuals might not always be true. Data on respondents' average monthly income however shows that more respondents with higher income patronized the MM than the OAM. For instance, about 69.3% of the OAM patrons earned less or equal to ₦50,000 monthly while almost half of the MM patrons (44.7%) earned above ₦50,000 per month. This agrees with the position of Boro, Kalra and Kawatra (2013) that there are people, especially the rich and the super-rich, who do consider social implications places, market inclusive before visiting them.

Table 1: Distribution of respondents according to their socio-economic characteristics

Variables	Open-air Market (OAM)		Modern Market (MM)	
	F (%)	Mean	F (%)	Mean
Age (years)		30.3±6.7		27.9±9.2
16-25	41 (46.4)		47 (50.0)	
26-35	22 (24.9)		30 (31.9)	
36-45	17 (19.2)		10 (10.7)	
46-55	7 (7.9)		6 (6.5)	

Variables	Open-air Market (OAM)		Modern Market (MM)	
	F (%)	Mean	F (%)	Mean
56-65	0 (0)		1 (1.1)	
66-75	1 (1.1)		0 (0)	
Sex				
Male	25 (28.4)		46 (48.9)	
Female	63 (71.6)		48 (51.1)	
Marital Status				
Unmarried	49 (55.7)		65 (69.1)	
Single parent	6 (6.8)		2 (2.1)	
Widowed	0 (0)		2 (2.1)	
Separated	3 (3.4)		4 (4.3)	
Married	30 (34.1)		21 (22.3)	
Educational Achievement				
Primary	1 (1.1)		0 (0)	
Secondary	15 (17.0)		25 (26.6)	
Tertiary	72 (81.8)		69 (73.4)	
Average monthly income				
Less than 20,000	44 (50.0)		35 (37.2)	
20-50,000	17 (19.3)		17 (18.1)	
51-100,000	13 (14.8)		17 (18.1)	
Above 100,000	14 (15.9)		25 (26.6)	

Motivation for market choices

Table 2 a reveals that factors such as availability of wide range of sellers of same commodity (3.7±2.3), opportunity to bargain prices ($\overline{x}$=3.6±2.0) and the classless nature of the market (3.5±2.1) ranked highest among the motivating factors for the open-air market patrons in the study area. On the other hand, factors such as clean and conducive environment (3.7±2.1) and the opportunity to make payments using Point of Sale Service machine known as POS (3.5±1.8) were major motivating factors for patrons sampled at modern markets (Table 2b). It is noteworthy to mention that the process of haggling between buyers and customers over commodity pricing which is noted as a discouraging factor for efficient marketing system (Terwiesch, Saving, and Hann, 2005) was actually the interest of most patrons at open air markets as observed in this study. One possible explanation for this is the cultural psyche of people, especially the lower income earners, which is wired to feel cheated when denied the opportunity to bargain prices of goods and services even when they are fair in the real sense, and at the same time derive satisfaction of having better value for his/her money on goods purchased after they must have haggle to reach a compromise on pricing with sellers even when prices agreed was not fair. Also, the finding on availability of POS as a major driver of patronage at modern markets lend credence to the cashless economic policy of the government; an indication that the people, mostly the higher income earners are buying into the policy and derives satisfaction from it. It also supports the argument that the cashless economic policy facilitates business transactions (Omotunde, Sunday and John-Dewole, 2013).

Table 2a: Respondents' motivating factors for choice of market (OAM patrons)

Statements	Large extent	Moderate extent	Limited extent	Not a factor	Mean
One is allowed to bargain prices of commodities	60 (68.2)	23 (26.1)	3 (3.4)	2 (2.3)	3.6±2.0
One can sample or taste some commodities like Garri, Rice, and Fruits etc. before purchasing	37 (42.0)	29 (33.0)	12 (13.6)	10 (11.4)	3.1±1.9
There is a wide range of sellers of the same commodity to purchase from	69 (78.4)	15 (17.0)	2 (2.3)	2 (2.3)	3.7±2.3
Freshness of the commodity purchased	39 (44.3)	40 (45.5)	8 (9.1)	1 (1.1)	3.3±2.4
Warm reception from sellers to be purchased from	24 (27.3)	38 (43.2)	14 (15.9)	12 (13.6)	2.8±2.1

Statements	Large extent	Moderate extent	Limited extent	Not a factor	Mean
Familiarity with the market terrain and sellers	36 (40.9)	33 (37.5)	11 (12.5)	8 (9.1)	3.1±1.8
Cheaper costs of commodities	43 (48.9)	37 (42)	5 (5.7)	3 (3.4)	3.4±2.0
The market is for everyone regardless of class or status, so one is free from sizing up	56 (63.6)	21 (23.9)	4 (4.5)	7 (7.9)	3.5±2.1

Table 2b: Respondents' motivating factors for choice of market (MM patrons)

Statements	Large Extent	Moderate Extent	Limited Extent	Not a Factor	Mean
Prices are clearly stated on the commodities so one is saved the stress of bargaining.	50 (53.2)	32 (34.0)	5 (5.3)	7 (7.4)	3.3±2.3
It is convenient to walk between aisles in the market.	42 (44.7)	41 (43.6)	11 (11.7)	0 (0)	3.3±1.9
Clean and conducive environment.	72 (76.6)	20 (21.3)	2 (2.1)	0 (0)	3.7±2.1
Freshness of the commodity purchased.	45 (47.9)	37 (39.4)	10 (10.6)	2 (2.1)	3.3±2.0
Guaranteed quality of commodity purchased.	40 (42.6)	41 (43.6)	11 (11.7)	2 (2.1)	3.3±2.0
Variety of types of commodity to choose from.	40 (42.6)	38 (40.4)	11 (11.7)	5 (5.3)	3.2±2.1
Provision of receipt after payment for produce.	45 (47.9)	33 (35.1)	9 (9.6)	7 (7.4)	3.2±2.2
Goods bought are refundable if not found in good condition.	27 (28.7)	27 (28.7)	30 (31.9)	10 (10.6)	2.8±2.3
Payment can be made using POS	58 (61.7)	27 (28.7)	5 (5.3)	4 (4.3)	3.5±1.8

Market preference for major agricultural commodities

Table 3 gives an insight to the market type the respondents preferred to purchase specific classes of agricultural produce or items. Firstly, the response distribution on the table reveals that most of the respondents patronize both of the market types intermittently; the decision on which market type to patronize at each time of which is determined by the type of agricultural item to buy. Generally, for the eight broad classes of agricultural commodities investigated in this study, shift in patrons' preference between open air and modern markets for uptake of agricultural commodities were pronounced for food items classified as tubers, grains and animal protein. For instance, it was observed that a vast majority of respondents sampled from both open and modern markets, respectively preferred to purchase tubers (90.0% and 87.2%) and grains (81.8% and 73.4%) from open air markets. On the other hand, a considerable proportion of the respondents from open and modern markets (50.0% and 78.7%, respectively) expressed the preference for purchasing their household animal protein such as egg, chicken, beef etc. from the modern market. The foregoing suggests that open air markets in the study area have competitive advantage over the modern markets for tubers and grains while the modern markets are more competitively advantageous than the open air market for animal protein agricultural items.

Table 3: Distribution of respondents sampled from OAM and MM by their market preference for specific agricultural commodities

Agricultural Commodities	OAM Respondents		MM Respondents	
	MM	OAM	MM	OAM
Tubers such as; Yam, Potatoes, Cassava etc	08 (9.1)	80 (90.9)	12 (12.8)	82 (87.2)
Vegetables such as; Cabbage, Spinach, Onions, Cucumber, Lettuce, Peppers, Carrot, Okro, Garden eggs, Mint, Parsley, etc.	14 (15.9)	74 (84.1)	54 (57.4)	40 (42.6)
Fruits such as; Citrus (Oranges, Lemons, Lime), Nuts (Groundnut, Cashewnut), Apples, Pears, Pineapples, Watermelon, Date, Kiwi, Grapes, Bananas, Pawpaw,	28 (31.8)	60 (68.2)	63 (67)	31 (33)

Agricultural Commodities	OAM Respondents		MM Respondents	
	MM	OAM	MM	OAM
Butternut, Pumpkin, Plum etc.				
Grains such as; Rice, Maize, Beans, Millet etc.	16 (18.2)	72 (81.8)	25 (26.6)	69 (73.4)
Animal Protein such as; Eggs, Turkey, Chicken, Beef, Fish, Snail, Shrimps, Crab, Mushroom, Prawn, Gizzard, Pomo, Lamb, Pork, Goat Meat, Ox etc.	44 (50.0)	44 (50)	74 (78.7)	20 (21.3)
Spices such as; Ginger, Garlic, Tumeric, Curry, Thyme, Basil, etc.	35 (39.8)	53 (60.2)	75 (79.8)	19 (20.2)
Oils such as; Palm oil, Groundnut oil, Soya oil, Olive oil, Palm Kernel oil etc.	32 (36.4)	56 (63.6)	56 (59.6)	38 (40.4)
Flours such as; Yam flour, Poundo yam, Rice flour, Wheat, *Semo*, Plantain flour, Cassava Granules, Cassava flour (fufu), Beans flour etc.	29 (33.0)	59 (67)	48 (51.1)	46 (48.9)

Constraints faced by respondents

The result from Table 4a indicates that dirty and unhygienic environment (2.6±0.6), unavailability of parking spaces (2.5±0.7) and unavailability of protection or coverage from extreme weather conditions such as rainfall (2.5±0.8) were rated as more severe constraints faced by respondents in open air market. On the other hand, the respondents did not consider inability to return items after purchase (1.6±1.2) and the produce prices uncertainties (2.1±1.0) as serious barriers. Respondents rating of produce prices uncertainties as low on the constraints scale is consistent with the findings in Table 2 a where this factor was rather considered as a motivation by majority of patrons at open air market. The finding that unhygienic environment was a major challenge in open air markets is in consonance with the position of Boro, Kalra and Kawatra (2013) who reported that open markets often lack the cleanliness that exists in shopping malls.

Furthermore, the constraints faced by those who patronized modern markets were slightly different due to the nature of the market. Table 4b reveals that long queues at payment counters when paying for goods bought (2.6±0.9) and need to drop off baggage at entry points (2.2±0.7) were major constraints faced by respondents who patronized modern markets. On the contrary, that prices are fixed ($\bar{x} =$ 1.7±0.6) or security men demand for tips ($\bar{x} =$ 1.6±0.7) were rated low on the constraints scale. The foregoing suggests that fixed commodity prices serves as both an encouraging and discouraging factor for market patronage between open air and modern market patrons in the study area.

Table 4a: Constraints faced by patrons in open-air markets

Statements	Severe Constraint	Mild Constraint	Not a Constraint	Mean
Dirty and unhygienic environment.	55 (62.5)	31 (35.2)	2 (2.3)	2.6±0.6
Unavailability of parking spaces.	51 (58.0)	27 (30.7)	10 (11.4)	2.5±0.7
Aggressive nature of sellers that could lead to insults.	38 (43.2)	44 (50.0)	6 (6.8)	2.4±0.6
Uncertainty of the actual prices of commodities.	24 (27.3)	52 (59.1)	12 (13.6)	2.4±0.7
High chance of being cheated if one cannot bargain well.	42 (47.7)	36 (40.9)	10 (11.4)	2.4±0.6
Not enough variety of commodities to choose from.	8 (9.1)	36 (40.9)	44 (50.0)	1.6±1.2
No protection from extreme weather conditions.	52 (59.1)	27 (30.7)	9 (10.2)	2.5±0.8
Poor lighting facilities for night patronage.	49 (55.7)	24 (27.3)	15 (17.0)	2.4±0.5
No proof of payment to allow for commodities to be returned after purchase	48 (54.5)	28 (31.8)	12 (13.6)	2.1±1.0

Table 4b: Constraints faced by patrons in modern market

Statements	Severe Constraint	Mild Constraint	Not a Constraint	Mean
Long queues at the payment counter.	48 (51.1)	41 (43.6)	5 (5.3)	2.6±0.9
Payment for parking vehicles within the premises.	25 (26.6)	39 (41.5)	30 (31.9)	1.9±0.6
Unclear directions to where commodities are placed.	10 (10.6)	43 (45.7)	41 (43.6)	1.7±0.5
Prices cannot be negotiated.	41 (43.6)	27 (28.7)	26 (27.7)	1.7±0.6
Security staff asking for tips	9 (9.6)	34 (36.2)	51 (54.3)	1.6±0.7
Few staff to show customers around	16 (17.0)	45 (47.9)	33 (35.1)	1.8±1.8
Saucy attitude of staff	17 (18.1)	47 (50.0)	30 (31.9)	1.9±0.9
Poor network service for POS mode of payment	20 (21.3)	49 (52.1)	25 (26.6)	1.9±0.6
Baggage drop at point of entry	13 (13.8)	36 (38.3)	45 (47.9)	2.2±0.7

CONCLUSION AND RECOMMENDATIONS

The study concludes that most of the respondents patronise both market types intermittently; the decision on which market type to patronise at each time of which is determined by the type of agricultural item to buy. Generally, shift in patrons' preference between open air and modern markets for uptake of agricultural commodities were pronounced for food items classified as tubers, grains and animal protein. In addition, fixed commodity prices serve as both an encouraging and discouraging factor for market patronage between open air and modern markets in the study area. While the open-air markets have largely thrived and remains relevant in the society due to income disparity among the people, hence difference in purchasing power; rapid expansion and growth in the modern markets has been largely driven by the cashless economic policy of the government. Price regulation measures and utilisation of cashless transaction channels for payment settlement in open air markets could boost patron's preference for open market shopping.

REFERENCES

Asogwa, B. C. and Okwoche, V. A. (2012). Marketing of agricultural produce among rural farm households in Nigeria: The case of sorghum marketing in Benue State. *International Journal of Business and Social Science,* Vo.3. No. 3: 269-277.

Austin, J. E. (2010). Using value chain approaches in agribusiness and agriculture in sub-Saharan Africa: a methodological guide. 206p. A report prepared for the Sustainable Agriculture Group of the World Bank. Accessed October 2, 2016 from http://www.technoserve.org/files/downloads/vcguidenov12-2007.pdf

Betz, M. E. and Farmer, J. R. (2016). Farmers' market governance and its role on consumer motives and outcomes. *Journal of Local Environment* DOI: 10.1080/13549839.2015.1129606. pp1-15.

Blackwell, R. D., Miniard, P. D., and Engel, J. F. (2001). Consumer Behaviour. 9th edition. Harcourt College Publishers, USA.

Boro, K., Kalra, S. S. and Kawatra, N. (2013). Energy Audit: Shopping malls versus open markets. Accessed October 2, 2016 from http://www.slideshare.net/kangkanboro/energy-auditshopping-malls-vs-open-markets.

Diao, X., Hazel, P. and Thurlow, J. (2010). The role of agriculture in African development. *World Development,* Vol. 38. No. 10: 1375-1383.

FAO (2006). The state of food insecurity in the world. FAO, Rome: 42p.

Ikioda, F. O. (2013). Modern markets in Lagos, Nigeria. *Geography Compass* Vol 7: *517-526.*

Meng, T., Florkowski, W. J., Sarpong, D. B., Chinnan, M. S., Resurrection, V. A. (2014). Consumer's food shopping choice in Ghana: Supermarket or traditional outlets? *International Food and Agribusiness Management Review* Volume 17:107-129.

North, E. J. and Kotze, T. (2004). Customers' perception of the attractiveness of shopping centers in Pretoria. *SouthernAfrican Business Review, Vol.* 8. No. 1: 30-38.

Omotunde, M., Sunday, T. and John-Dewole A. T. (2013). Impact of cashless economy in Nigeria. *Greener Journal of Internet, Information and Communication Systems*, Vol. 1 No. 2: 40-43.

Peter, J. P. and Olson, J. C. (2008). Consumer behaviour and marketing strategy. 8th International Edition, McGraw Hill Companies Inc, New York Radman, M.

Solomon, M. R (2006). Consumer behaviour: buying, having and being. 7th edition. Pearson Prentice Hall, New Jersey, USA.

Terwiesch, C., Saving, S. and Hann, I. (2005). Online haggling at a Name-Your-Own-Price Retailer: theory and application. *Management Science* Vol. 51, Issue 3: 339-351.

Tuttle, B. (2013). Women at the auto repair shop: better at haggling, yet more likely to get ripped off. Accessed October 2, 2016 from http://business.time.com/2013/07/05/women-at-the-auto-repair-shop-better-at-haggling-yet-more-likely-to-get-ripped-off/

Residents' perceived effects of ecotourism development in Ibodi monkey forest, Osun state, Nigeria

Adetola B. O., Ofuya, E. E., Ogunjemite, B. G. and Olawale, F. E.

Department of Ecotourism and Wildlife Management, School of Agriculture and Agricultural Technology, Federal University of Technology, PMB 704, Akure, Ondo State, Nigeria

Correspondence details: boadetola@futa.edu.ng

ABSTRACT

Ecotourism has been recognized as a strategic highway for increased growth and development without harming the ecosystem. The potential for ecotourism development in Ibodi Monkey Forest (IBMF) was assessed from the perspectives of the host communities in this study. Residents' perceived impacts of ecotourism development in IBMF, their acceptance of visitors and willingness to support ecotourism and factors influencing the attitude and perception of the residents towards the development of ecotourism were determined. The study made use of questionnaire to elicit information from respondents from five communities (Iremo, Iroye, Isua, Odolede, Ayetoro) in Ibodi. Data obtained were analyzed using frequencies, mean, percentages, standard deviation and Chi-square.

The result indicates that 96.0% of the residents were willing to accept tourists and support ecotourism development (95.0%) in IBMF as it was perceived to have positive economic impacts; employment opportunities (24±1.49), improved standard of living (4.14±1.46), pride of being host community (4.11±1.47) and benefit from recreational and infrastructural facilities created for visitors (4.10±1.51) as positive social impacts. Increase in local culture awareness (4.16±1.47) and preservation of cultural identity (4.11±1.46) were positive cultural impacts, while environmental impact was perceived as the preservation of natural beauty and tranquility (3.91±1.43). Age, marital status and religion had significant effect (p< 0.05) on the attitude towards ecotourism development in IBMF. However, there were some perceived negative impacts which included disruption in traditional/cultural belief, possibility of damage to historic sites and traffic/parking congestion. The awareness of residents of the positive economic, social, cultural and environmental impact through ecotourism development in IBMF informed their positive attitude and support towards its development.

Keywords: Perception, Ecotourism, Communities, Impacts, Attitude

INTRODUCTION

Ecotourism is a form of tourism widely considered as an opportunity for local people to derive positive socioeconomic benefits from tourism development whilst conserving forests. According to Aseidu (2002), rural ecotourism development can help sustain viable rural communities and at the same time meet the needs of tourists. This is because unlike conventional tourism, ecotourism thrives in relatively untouched natural environments commonly found in rural areas and does not make huge demands on investments in facilities and infrastructure. It has therefore been proposed as a viable economic activity that can minimize negative impacts on wildlife habitat and provide an incentive to preserve natural areas. Ecotourism promotes conservation, has low visitor impact, and allows for beneficially active socio-economic involvement of local populations (Jaafar and Maideen, 2012) and have widely been promoted in many countries and regions as a sustainable development tool that contributes to the dual goals of conservation of threatened ecosystems and sustainable development (Lindsay, 2003). However, successful management of ecotourism often require local people's support for conservation which is strongly influenced by perception of the conservation impacts that are experienced by the local communities (Sekhar, 2003).Therefore, for tourism development to be successful in a given region, it is essential to involve a broad range of stakeholders (Ribeiro *et al*, 2013; Imran *et al*, 2014), including residents of the nucleus of the destination.

Eshliki and Kaboudi (2012) stated that the degree of host community's participation in tourism is strongly related to the perceived tourism effects and Hanafiah *et al*. (2013) concluded that participation is connected to personal benefits obtained from tourism. If costs are greater than the perceived benefits to be obtained, residents will oppose tourism activity, but if they can benefit from this activity without substantial cost, they are most likely to support it (Lee, 2013). This theory was tested among many communities around the world where tourism activities exist, using the three main pillars of sustainability: economic, socio-cultural, and environmental (Presenza *et al.*, 2013; Stylidis *et al.*, 2014).This approach is actually the essence of the social exchange theory applied in

tourism, which explains the community attitude and involvement based on the benefits obtained, whether they are economic, socio-cultural or environmental (Andereck *et al*., 2005).

Despite the growing influence of ecotourism and its potential to boost local, regional and national economy in developing countries and all over the world, there has been paucity of reliable data and the information on existing tourism assets especially in developing countries (Bisong, 2002). So, understanding the impact of tourism on the local communities is becoming a major topic for researchers, while being the key element in building sustainable and long-term tourism strategies (Presenza *et al*., 2013; Abdollahzadeh and Sharifzadeh 2014; Almeida-Garcia *et al*., 2016). Thus, this study assessed residents' perceived effects of ecotourism development in

Ibodi Monkey Forest (IBMF) Osun State, Nigeria. The specific objectives were to determine residents' willingness to support tourism development, their acceptability of tourists into IBMF and the perceived effects of ecotourism development. Association between demographic characteristics of residents and their support for ecotourism and acceptance of tourists were tested.

METHODOLOGY

The study area is situated within Ibodi, Osun State, Southwest Nigeria (Figure 1). It lies between latitude 7^0 34 60° North of the equator and longitude 4^0 34'60^0 east of the Greenwich meridian. Ibodi town is bounded in the East by Ilesha, Odoigbo and Irogbo, in the West by Iferawa. Iwara, Itagunmodi, in the South by Osu and Iloba, while it is surrounded in the North by Ila, Oke Osin and Iregun (Fapounda, 2005).
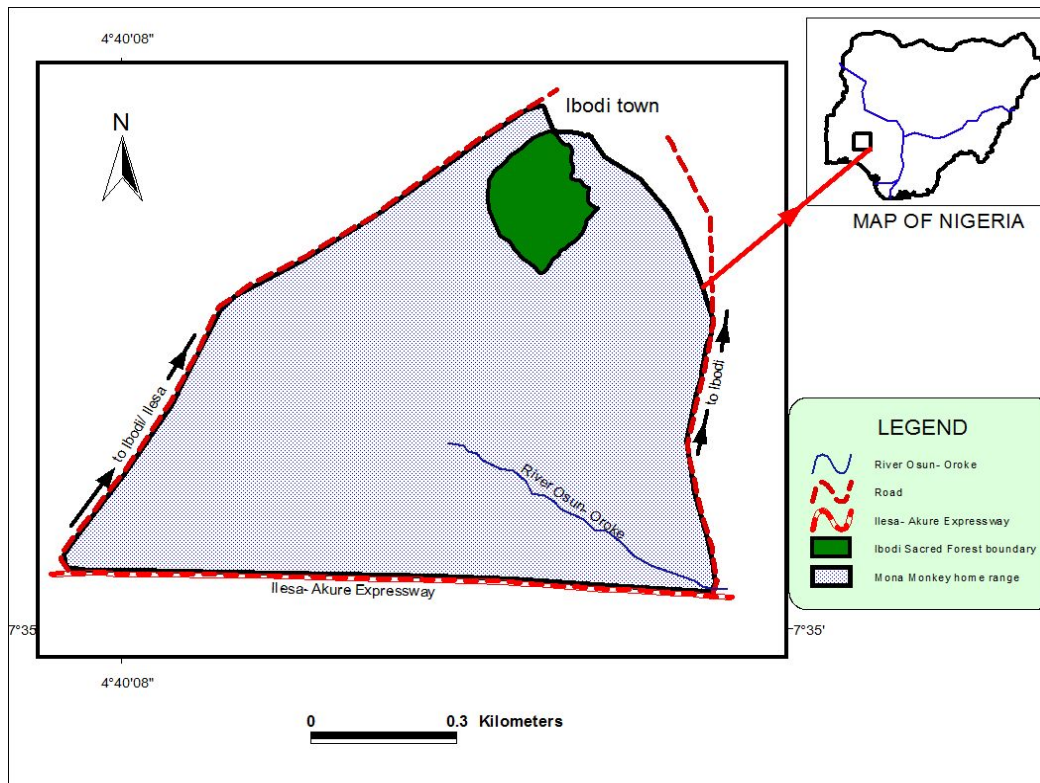
Figure 1: Location of Ibodi Monkey Forest in Osun State, Nigeria

Source: Fayenuwo, 2014

Quantitative data were used in this study. The primary data involved the use of questionnaire which was self-administered. The five communities in Ibodi (Iremo, Iroye, Isua, Odolede, Ayetoro)

were purposively selected and 20 questionnaires were randomly distributed among the residents in each of the five communities. In all, 100 questionnaires were administered.

The data collected were analyzed using descriptive (frequencies, mean, percentages, standard deviation) and inferential (Chi-square) statistical tools.

RESULTS AND DISCUSSION

The sociodemographic characteristics of the respondents as presented in Table 1 shows that there were more male (57.4%), than female in the study area. Also, most (59.0%) were between 21-40years which suggests that majority of the respondents were in their active age. This is in tandem with Nigeria's age distribution in 2008 that indicated that the dominant age group was 15-64 years (NMEC, 2008). The married respondents were more (46.7%), as others were single (38.6%), divorced (5.9%) and widowed (7.9%). Also, 34.0% had primary and secondary school education, while 15.0% attained tertiary level of education, and 17.0% had no formal education. Christianity (51.0%) and Islam (42.0%) were the major religion of the respondents with just few Traditional worshippers (7.0%). The occupation of majority of the respondents was trading (28.7%) while others were students (19.8%), artisans (16.8%), farmers (15.8%), livestock rearers (10.9%), fishermen (1%), hunters (3.0%) and civil servants (3.0%).

Figure 2 presents the resident's willingness to support tourism development in Ibodi Monkey Forest (IBMF) as majority (95.0%) of the residents indicated willingness to support ecotourism development; while only 5.0% of the respondents were not willing to support ecotourism development in the forest. The residents' acceptability of tourists into IBMF as presented in Fig 3 shows that majority (96%) of the respondents expressed their willingness to accept the proposal to turn IBMF to Ecotourism destination and accept tourists, while only 4% rejected the entering of tourists into the forest. Moreover, Age, marital status and religion had significant effect (p< 0.05) on the attitude towards ecotourism development in IBMF (Table 2). This implies that since majority are in their active age, married with significant responsibilities and with religious inclination which permit tourist, these positively influence the adoption of innovation that will enhances diversification of their livelihood options through ecotourism development.

As revealed in Table 2, residents perceived employment opportunities (mean=4.24±1.49), improved standard of living (mean =4.14±1.46) and increased income (mean=4.06±1.44) and business opportunities (mean=4.06±1.46) as positive economic impact. On the other hand, some negative economic impact such as little or no access to natural resources within IBMF (mean=0.47±1.42), minimal involvement of local residents in the management of IBMF, increased cost of living and increased economic instability were also indicated by respondents. Gjerald, (2005) stated that ''in order to see how tourism affects small local communities, one has to look into the residents own perceptions of the tourism impacts'' which is consistent with the findings of Aref, (2011) who opined that ecotourism had a major impact on the quality of life of the local residents. As regards factors which influence the perception of the benefits and costs of tourism, Royo and Ruiz (2009) cited dependency on tourism, the level of local development, the use of public resources by the local community, feelings toward the community, and commitment to the community. These factors or determinants vary the intensity or the perceived sense of the impact, be it positive or negative. This is consistent with this study as the residents of IBMF communities perceived employment opportunities), improved standard of living, as positive economic impacts of ecotourism to their community as host communities generally perceive tourism activities positively within their region, especially because of the economic benefits, including job opportunities, which are, by far, the most important (Hanafiah *et al*., 2013; Jaafar and Bakri 2015).Residents pride for being the host community of IBMF (mean=4.11±1.47) and the benefits from recreational and infrastructural facilities created for visitors (mean=4.10±1.51) are positive social impacts . However, they also highlighted negative social impacts which include the disruption in their traditional/cultural belief (mean=0.42±1.29), loss of native language (mean=0.35±1.18) and tourism intensified labor burdens (mean= 0.34±1.07). Moreover, increase in local cultural awareness (means=4.16±1.47), preservation/strengthening of cultural identity of hosts (mean=4.11±1.46) and increased demand in local arts and crafts (mean4.10±1.45) were seen as positive cultural impacts. . Improvements in the appreciation of local culture were cited as benefits by residents in IBMF which corroborates the findings of Besculides *et al*. (2002) as tourism enhances pride and cultural identity, cohesion, the exchange of ideas, and knowledge of the local culture as it creates opportunities for cultural exchange and the revitalization of local traditions, increased quality of life and an improved image of the community.

The environmental component of the social exchange theory is often perceived by the host community in negative terms, because of some the costs brought on by tourism development like pollution, crowding, destruction of natural habitats, noise, etc. (Naidoo and Sharply, 2015) which is in tandem with results from this study that indicated perceived negative environmental impacts to be

over-crowding, increased pollution and increased traffic caused by tourism development in IBMF while the natural beauty and tranquility was opined as positive environmental impact.

The perceived economic, social, cultural and environmental impacts from the development of ecotourism in Ibodi community provided a satisfactory ground for their willingness to allow tourist into IBMF and supports ecotourism development.

Table 1: Distribution of Ibodi residents by their demographic information

| Variable	Frequency (N=100)	Percentage
Gender		
Male	58	58.0
Female	42	42.0
Age		
<20 years	20	20.0
21-30 years	33	33.0
31-40 years	26	26.0
41-50 years	13	13.0
>50 years	8	8.0
Marital Status		
Single	39	39.0
Married	47	47.0
Divorced	6	6.0
Widowed	8	8.0
Religion		
Christianity	51	51.0
Islam	42	42.0
Traditional	7	7.0
Household Size		
1-5	68	68.0
6-10	32	32.0
Occupation		
Farming	16	16.0
Fishing	1	1.0
Hunting	3	3.0
Rearing of livestock	11	11.0
Trading	29	29.0
Artisan	17	17.0
Civil Servant	3	3.0
Students	20	20.0
Education		
No formal education	17	17.0
Primary education	34	34.0
Secondary education	34	34.0
Tertiary education	15	15.0
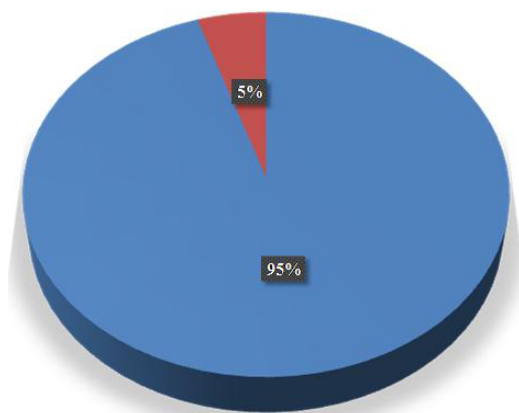
Figure 2: Resident's willingness to support ecotourism development in Ibodi monkey forest
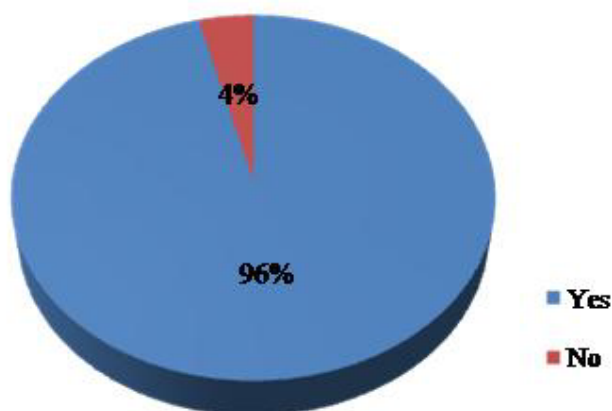

Figure 3: Resident's acceptability of tourists and the proposal to turn IBMF to ecotourism destination

Table 2: Distribution of Residents by Perceived Effects of Ecotourism Development in Ibodi Monkey Forests

Perceived effects	SA	A	U	D	SD	Mean	SD
Positive Economic Impacts							
Employment Opportunities	65	24	0	0	0	4.24	1.492
Increased Income	46	44	0	0	0	4.06	1.441
Improve Standard of living	54	36	0	0	0	4.14	1.463
Road system and infrastructure improvement	49	41	0	0	0	4.09	1.450
Better economic condition for the poor from low-paying/business opportunities	49	38	0	0	0	4.06	1.462
Negative Economic Impacts							
Increased cost of living	3	7	1	0	0	0.46	1.329
Increased economic instability	0	4	3	0	0	0.33	1.006
Local resident's minimal or no involvement in the management	7	3	0	0	0	0.47	1.425
Little or no access to natural resources within IBMF	7	3	0	0	0	0.47	1.425
Positive Social Impacts							
Greater pride in community as host	53	35	2	0	0	4.11	1.470
Opportunity to understand and communicate among people of diverse backgrounds	46	39	5			4.01	1.460
A possibility of public space creation for the	53	32	5	0	0	4.08	1.482

community							
Benefit for local people from recreational and infrastructural facilities created for visitors	90	10	0	0	0	4.10	1.508
Negative Social Impacts							
Disruption in tradition/cultural belief	4	5	1	0	0	0.42	1.296
Loss of native language	4	3	3	0	0	0.35	1.184
Tourism lead to loss of authenticity	2	7	1	0	0	0.32	1.024
Tourism intensifies labour burdens	0	6	3	1		0.34	1.066
Tourism destroys community relationship/character	3	1	3	1	2	0.32	1.072
Positive Cultural Impacts							
Local cultural awareness increases	56	34	10	0	0	4.16	1.468
Increased demand in local arts and crafts	50	40	10	0	0	4.10	1.453
Preservation/strengthen cultural identity of host	51	39	10	0	0	4.11	1.456
Revenue creation from tourism for preservation of archeological sites, historic buildings and districts	91	9	0	0	0	3.50	1.534
Negative Cultural impacts							
A possibility of damage in historic sites	3	0	2	0	1	0.30	1.010
Long-term damage to cultural traditions and erosion of cultural values	3	0	0	4	3	0.26	0.939
Positive Environmental Impacts							
Natural beauty and tranquility	37	47	6	10	0	3.91	1.429
Negative Environmental Impacts							
Increased pollution	1	8	0	0	1	0.38	1.187
Overcrowding	4	5	1	0	0	0.43	1.312
Over-harvesting	3	6	1	0	0	0.42	1.281
Traffic and parking congestion	7	3	0	0	0	0.47	1.425
Crushing out clearance of vegetation	3	0	0	6	1	0.28	0.968

Table 3: Chi-Square test of association between demographic characteristics of respondents and their support for ecotourism development and acceptance of tourists

Variable	χ^2	p-value	Remark
Support for ecotourism			
Age	10.121	0.038	*
Marital status	10.564	0.014	*
Religion	23.810	0.000	*
Occupation	11.452	0.120	Ns
Education	3.571	0.312	Ns
Acceptance of visitors			
Age	110.859	0.018	*
Marital status	13.749	0.003	*
Religion	29.936	0.000	*
Occupation	7.829	0.348	ns
Education	5.025	0.170	ns

*Significant at 0.05 level of significance

CONCLUSION

Ecotourism can develop a destination economically, socio-culturally and environmentally. It is evident from this study that residents were aware of the possibility for positive economic, social, cultural and environmental impacts through ecotourism development in Ibodi Monkey Forest which informed the positive attitude of majority of the respondents towards the development of ecotourism in IBMF. However, if not properly managed tourism development may also have negative socio-cultural effects on traditional family values and purchasing power between the host community and tourists which can lead to socio-cultural conflicts. Therefore, it is essential for the active participation and involvement of local people if ecotourism development is to be sustained in the destination.

REFERENCES

Abdollahzadeh, G. and Sharifzadeh, A. (2014). Rural Residents' Perceptions toward

Tourism Development: A Study from Iran. *Int. J. Tour. Res*. 2014, 16, 126–136.

Andereck, K. L., Valentine, K. V., Knopf, R. C., Vogt, C. A. (2005). Residents' perceptions of community tourism impacts. Ann. Tour. Res. 2005, 32, 1056–1076.

Almeida-García, F., Pelaez-Fernandez, M. A., Balbuena-Vazquez, A. and Cortes-Macias, R. (2016) Residents' perceptions of tourism development in Benalmadena (Spain).Tour.Manag. 2016, 54, 259–274.

Asiedu, A.B. (2002). Making ecotourism more supportive of rural development in Ghana. *West African Journal of Applied Ecology*, 3: 1-16.

Besculides, A., Lee, M., and McCormick, P. (2002): "Residents' perceptions of the cultural benefits of tourism", Annals of Tourism Research, 29, 303-319.

Eshliki, S.A. and Kaboudi, M. (2012) Community Perception of Tourism Impacts and Their Participation in Tourism Planning: A Case Study of Ramsar, Iran. Proc. Soc. Behav. Sci. 2012, 36, 333–341.

Hanafiah, M.H.; Jamaluddin, M.R. andZulkifly, M.I. (2013) Local Community Attitude and Support towards Tourism Development in Tioman Island, Malaysia. Proc. Soc. Behav. Sci. 2013, 105, 792–800.

Imran,S.; Khorshed, A., and Beaumont, N. (2014): "Environmental orientations and environmental behavior: Perceptions of protected area tourism stakeholders", Tourism Management, 40, 290-299.

Jaafar, M.; Bakri, N.M. and Rasoolimanesh, S.M. (2015) Local Community and Tourism Development: A Study of Rural Mountainous Destinations. Mod. Appl. Sci. 2015, 9, 399–408.

Lee, T.H. (2013) Influence analysis of community resident support for sustainable tourism Development. Tour Management, 34, 37–46

Lindsay, H. (2003). Eco-tourism: the Promise and Perils of Environmentally-Oriented Travel. Available Online at URL http://www.csa1.co.uk/hottopics/ecotour/oview.html (November 5, 2013.

Naidoo, P. and Sharpley, R. (2015) Local perceptions of the relative contributions of enclave tourism and agritourism to community wellbeing: The case of Mauritius. J. Destin. Mark. Manag. 2015, 5, 16–25.

Presenza, A.; Del Chiappa, G.; Lorn, S. (2013) Residents' Engagement and Local Tourism Governance in Maturing Beach Destinations: Evidence from an Italian Case Study. J. Dest. Market.Manag. 2013, 2, 22–30.

Ribeiro, M. A; Do Valle, P. O., and Silva, J. A. (2013): "Residents' attitudes towards tourism development in Cape Verde islands", Tourism Geographies, 15(4), 654-679.

Royo, M., and Ruiz, M. E. (2009): "Actitud del residentehacia el turismo y el visitante: factores determinantes en el turismo y excursionismo rural-cultural", Cuadernos de Turismo, 23, 217-236.

Sekhar, N. (2003).Local people's attitudes towards conservation and wildlife tourism around Sariska Tiger Reserve, India. *Journal of Environmental Management*, 69, 339–347

Stylidis, D.; Biran, A.; Sit, J.; Szivas, E.M. (2014) Residents' support for tourism development: The role of residents' place image and perceived tourism impacts. *Tour.Manag.* 2014, 45, 260–274

Capacity building needs on standard practices for cocoa export among farmers in Cross River state, Nigeria

[1]Balogun, K. S., [2]Adisa, R. S., [2]Daudu, A. K., [1]Awoniyi, O. A. and [3]Atibioke, O. A.

[1]Lower Niger River Basin Development Authority, P.M.B. 1529, Ilorin, Nigeria

[2]Department of Agricultural Extension and Rural Development, University of Ilorin, PMB 1515, Ilorin, Nigeria

[3]Nigerian Stored Products Research Institute, PMB 1489, Ilorin, Kwara State

Correspondence details: kaypearl2006@yahoo.com; +2348032467126

ABSTRACT

Use of traditional farming practices is the major reason for the production of low quality cocoa beans by farmers in cocoa producing countries, including Nigeria. This study therefore identified capacity building needs on standard practices for cocoa export among farmers in Cross River State, Nigeria. A three-stage sampling technique was used to select 336 registered members of Cocoa Farmers Association of Nigeria in Cross River State. Data were collected through questionnaire and analyzed with both descriptive and inferential statistics including frequency counts, percentages, means, standard deviations, and weighted discrepancy score (WDS) and Pearson Product Moment Correlation. Results reveal that mean age of the farmers was 48 years while 78.6% had one form of formal education or the other. Capacity building was perceived to be mostly needed in the areas of sorting of dried beans (0.51), packaging of dried beans (0.48), and timely pod harvesting (0.39). There was a significant relationship between cocoa farmers' farm size (r=0.137, p=0.012), income (r=0.151, p=0.006) and extension contact (r=0.121, p=0.027) and their capacity building needs on standard practices for cocoa export. The study concluded that cocoa farmers required capacity building on standard practices for cocoa export. It is therefore recommended that farmers should be trained on the identified areas of training needs in order to improve their knowledge and the quality of beans for export.

Keywords: Capacity building needs, Cocoa farmers, Standard practices, Cocoa export

INTRODUCTION

Cocoa is one of the fastest selling and most desirable agricultural commodities in both the local and international markets across the globe. Africa remains the largest cocoa producing region in the world, accounting for 72% of the global cocoa output, while production from the Americas and Asia and Oceania accounts for 18% and 10%, respectively (International Cocoa Organization, 2017). Cocoa has particularly gained popularity in Nigeria due to the benefits from its earnings and its contribution to the Gross Domestic Product as the highest foreign exchange earner among all agricultural commodities. Though cocoa only represents 2% of national exports of Nigeria, the commodity is the country's third largest export after crude oil and petroleum gases (Observatory of Economic Complexity, 2017).

Cocoa is a perennial crop that can survive for decades once planted and cocoa farmers are expected to get returns for a very long time. Cocoa has a high food value because it contains as much as 20% protein, 40% carbohydrate and 40% fat. It is also mildly stimulating because of the presence of theobromine, which is an alkaloid that is closely related to caffeine (ICCO, 2012). However, about 80% of the cocoa produced in the country is exported as cocoa beans while the other 20% is processed into powder, butter, cake and liquor before being exported Proshare (2017). This suggests that Nigeria is yet to fully capitalize on cocoa value addition initiatives as most of the beans are still sold unprocessed. This situation may not be unconnected with the fact that most of the processing factories in the country are non-functional and abandoned.

According to the National Cocoa Development Committee, 14 out of the 36 States in Nigeria produce cocoa and they are grouped into three categories based on their level of production. The groups are: high producing States (Ondo, Cross River and Osun); medium producing States (Edo, Ogun. Oyo, Ekiti, Abia, Delta and Akwa-Ibom) as well as low producing States (Kwara, Kogi, Taraba and Adamawa). However, Ondo, Cross River and Osun States are reported to contribute approximately 68% of Nigeria's annual cocoa output which reached a climax of 350,000 metric tonnes in 2014(Nigerian Investigative Reporting Project, 2015)when the Ministry of Trade and Industry also reported a revenue of US$1.3 billion from cocoa export. Cross River accounts for about 20-30 percent of the country's cocoa production (Bloomberg, 2016) and produces one of the finest cocoa quality in the country (Cross River Watch, 2015).

The two main aspects of quality usually considered in cocoa export are methods of producing quality beans and how to properly assess the bean quality (World Cocoa Foundation, 2012). According to the ICCO (2017), the quality requirements for cocoa beans can only be met by sound agronomic management, favourable soil and weather characteristics as well as good post-harvest practices which include fermentation, drying, packaging and storing (pre-sales) practices. As spelt out in the manual published at the end of the nineteenth meeting of the Consultative Board on World Cocoa Economy which took place in Moscow in 2009, cocoa of merchant quality must be: properly fermented, thoroughly dry, free from smoky beans, free from abnormal or foreign odours and free from any evidence of adulteration (ICCO, 2009). In addition, high quality cocoa must be uniform in size, reasonably free from broken beans, fragments and pieces of shell, and be virtually free from foreign matter. Therefore, cocoa farmers may likely require adequate capacity building in the usage of these practices in order to improve the quality of beans produced for export.

Capacity building is defined as a process through which individuals, groups, organizations and societies enhance their ability and meet development challenges (Catholic Relief Services, 2013). The United Nations Development Program explained that capacity building is a continuous development process involving many stakeholders; who among others include governmental, non-governmental organizations, local communities and academics that steer development. The process of capacity building includes strengthening of skills and competencies, training of individuals, and infrastructural development of research and development institutions (ACP Science and Technology Programme, 2012). Adisa *et al.* (2018) argued that farmers must acquire new skills, ideas and techniques in order to get profit from their enterprises through production of quality products.

The study therefore assessed the capacity building needs of cocoa farmers on standard practices for cocoa export in the study area. Specifically, it described the socioeconomic characteristics of cocoa farmers, identified the level of importance of the standard practices and competency level of cocoa farmers on standard practices required for producing quality cocoa beans for export.

The hypothesis of the study is as stated below;

There is no significant relationship between some selected socioeconomic characteristics of cocoa farmers and their capacity building needs on standard practices for cocoa export.

METHODOLOGY

The study was carried out in Cross River State, Nigeria. The State lies between latitudes 4^0 and 5^0 North of the equator and longitudes 7^0 and 9^0 East of the Greenwich Meridian. It shares boundary with Benue State to the West, Abia State to the South and the Atlantic Ocean to the East. Humid tropical climate of 1300-3000mm rainfall and 30^0 C mean annual temperature prevail over the State except on the Obudu Plateau where the climate is sub-temperate with temperatures of 15^0 C-23^0 C.The vegetation ranges from Mangrove Swamps, through rainforests to derived Savannah and Montane Parkland. The main crops grown in the State are tree crops like cocoa, oil-palm, banana and plantain. The total land area of the State is 23,074 square kilometres distributed over 18 Local Government Areas (LGAs). The State has a population of 3.3 million people (National Population Commission, 2011), spread across three agricultural zones namely southern, northern and central. Cocoa is mainly produced in the southern and central zones of the State.

The population for this study comprised all registered members of Cocoa Farmers' Association of Nigeria (CFAN) in Cross River State, Nigeria.
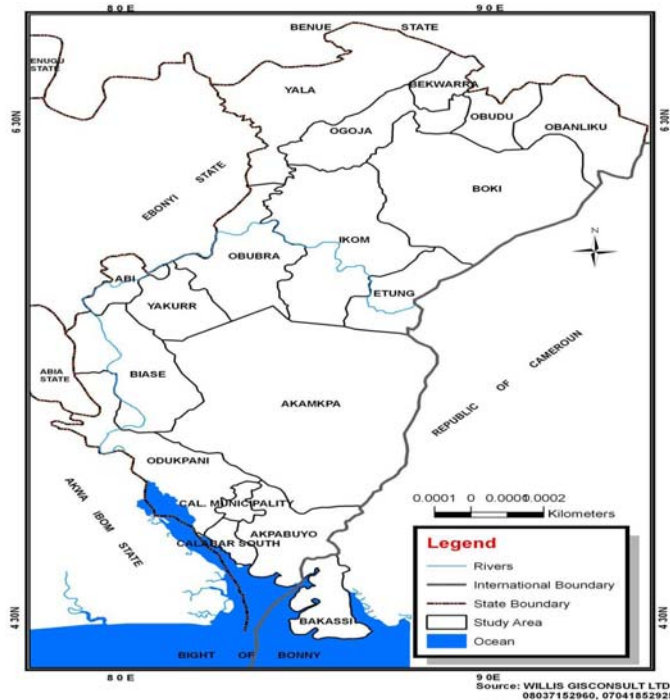
Fig. 1: Map of Cross River State showing Local Government Areas

Source: Willis Gisconsult Ltd.

Three-stage sampling technique was used to select 336 registered members of CFAN in Cross River State. The first stage involved purposive selection of Central zone of Agricultural Development Project in the State where the highest number of cocoa farms is located. The second stage involved purposive selection of 3 major cocoa producing Local Government Areas (LGAs) in the zone. The third stage was a random selection of 45% members of the association from each of the 3 LGAs. Data were collected through questionnaire and analyzed with both descriptive and inferential statistics including frequency counts, percentages, means, standard deviations, Weighted Discrepancy Scores (WDS) and Pearson Product Moment Correlation (PPMC) analysis.

Measurement of variable

Borich Needs Assessment Model was used to assess the areas of capacity building needs of farmers on standard practices for cocoa export. This model proposed by Borich (1980) is one of the most widely used models in agricultural education and agricultural extension with regard to need assessment of agricultural teachers, extension agents, and farmers. According to this model, Weighted Discrepancy Score (WDS) was calculated using formula for evaluating and ranking farmers' training needs. To this end, the

discrepancy score of each eligible was first calculated individually (Equation 1) and then the weighted discrepancy score was calculated for each individual job competence (Equation 2). Finally, by summing weighted discrepancy scores and dividing it by the number of standard practices examined, Mean Weighted Discrepancy Score (MWDS) was calculated (Equation 3) and 20 competences were ranked in relation to MWDS.

i.e.

Discrepancy Score = $(I - C)$……… Equation 1

Weighted Discrepancy Score = $I(I - C)$…………. Equation 2

Mean Weighted Discrepancy Score = $\sum I(I - C)/n$………… Equation 3

Where; I = Importance level, C = Competency level and n = Number of standard practices

A three point Likert-type scale was employed in the measurements of both the respondents' perceived level of importance and level of competence on standard practices for cocoa export. The scale was graded as follows:

Perceived level of importance on standard practices for cocoa export: Respondents were

asked to tick the option that best describes their situation and were rated as very important (2), not so important (1)and not important (0)

Perceived level of competence on standard practices for cocoa export: Respondents' competences on the listed skills were rated as very competent (2), not so competent (1) and not competent (0)

RESULTS AND DISCUSSION

Socioeconomic characteristics of respondents

The result of the socio-economic characteristics of respondents is presented in Table 1. It was reveals that the mean age of respondents was 48.2±9.7 years. This suggests that most of the respondents are still in their productive phase and may be willing to use standard practices for cocoa export. This result aligns with that of Daudu *et al.* (2019) that smallholder farmers in Kwara State of Nigeria are still in their economic active age to make positive contribution to agricultural production. Also in Table 1, about thirty-three percent of the respondents (32.7%) had secondary education while 31.3% had tertiary education. This implies that cocoa farmers in the study area are well educated which may likely aid the usage of standard practices for cocoa export. This result agrees with earlier finding by Oluyole & Sanusi

(2009) that more graduates were being involved in cocoa production in Cross River State. Findings from Table 1 reveal that the mean household size of the respondents was 7 people. This implies that farmers would have advantage of family labour which may be crucial for the tedious farming operations in cocoa production. The result of this study is consistent with the submission of Akinnagbe (2017) that large household size is typical of the Nigerian cocoa farmers. The mean farming experience of the respondents was17.5±5.8 years. This suggests that respondents have been farming for a considerable period of time in line with the submission of Uwagboe *et al.* (2016) and this could be crucial for their involvement in using standard practices for producing quality cocoa beans. Furthermore, the mean farm size of the respondents was 2.2±1.3. This implies that cocoa cultivation is still in the hands of small scale farmers in the study area. This result aligns with the report of Omoare *et al.* (2016) that majority of cocoa farmers in South West Nigeria are smallholder farmers. Also, Table 1reveals that the average income generated by the respondents from cocoa sale per hectare was637,721.9±93,919.9.This is relatively low compared to the total cost of production as explained by the respondents during group discussion. This result support earlier finding by Adeogun *et al.* (2015) that the income generated by cocoa farmers was low in Cross River State, Nigeria.

Table 1: Percentage distribution of respondents by socioeconomic characteristics (n=336)

Category		Percentage	Mean (±SD)
Age (Years)	≤30	4.5	48.2±9.7
	31-40	25.0	
	41-50	37.2	
	51-60	20.2	
	.>60	13.1	
Level of education	No formal education	21.4	
	Primary education	14.6	
	Secondary education	32.7	
	Tertiary education	31.3	
Household size	1-5	43.8	7.0±3.0
	6-10	49.7	
	11-15	5.3	
	>15	1.2	
Farming experience (years)	≤10	4.5	17.5±5.8
	11-20	74.1	
	21-30	18.8	
	>30	2.6	
Cocoa farm size (hectare)	≤1.9	56.3	2.2±1.3
	2.0-3.0	36.3	
	>3.0	7.4	
Cocoa Income (Naira/hectare)	≤250	0.6	637,721.9±93,919.9
	251–500	3.9	
	501–750	87.5	
	>750	8.0	

Source: Field survey, 2018, SD = Standard Deviation

Extension services delivery to respondents

It was discernable from Table 2 that almost all the respondents, 97.0% and 93.8% sourced information on standard practices for cocoa export from fellow farmers and friends and neighbours, respectively. This suggests that there might be some level of closeness and trust among the farmers. The result from this study agrees with the findings of Omoare *et al.* (2016) that majority of cocoa farmers in South West Nigeria got information on good cultural management practices from non-institutional sources. It was further revealed that 76.2% and 57.1% got information on standard practices for cocoa export from Cocoa Association of Nigeria (CAN) and Cocoa Farmers Association of Nigeria (CFAN), respectively which are non-

governmental organizations. The least sources of information were Cross River State Agricultural Development Project (CRSADP) (42.9%), Cocoa Certification Agencies (39.6%) and Cocoa Research Institute of Nigeria (CRIN) (36.9%). This is an indication that governmental extension organizations were poorly accessed for information on standard practices for cocoa export. This result agrees with that of Omoare *et al.* (2016) that CRIN was a rare source of information to cocoa farmers on good cultural management practices in South West Nigeria. Furthermore, 31.0% of the respondents indicated that they had contact with extension agents once every 3 months. This suggest that extension agents did not visit the cocoa farmers regularly, which may result to low usage of standard practices for cocoa export.

Table 2: Distribution of respondents by extension services received (n=336)

Extension services delivery to cocoa farmers	Frequency	Percentage*
Sources of information		
CRSADP	144	42.9
CRIN	124	36.9
CFAN	192	57.1
Media (radio, television and newspapers)	168	50.0
Licensed Buying Agents	160	47.6
Cocoa certification agencies/organizations	133	39.6
Fellow farmers	326	97.0
Friends and neighbours	315	93.8
CAN	256	76.2
Contact with extension agents		
Weekly	3	0.8
Fortnightly	51	15.2
Monthly	78	23.2
Quarterly	104	31.0
Yearly	100	29.8

Source: Field survey, 2018
*Multiple responses

Level of importance of standard practices for cocoa export by respondents

The need to evaluate technical competence of cocoa farmers on standard practices for producing quality cocoa beans and consequently identify areas where capacity building is needed is essential for cocoa development as a whole and cocoa export in particular. The result of the level of importance of standard practices for cocoa export by respondents is presented in Table 3. The standard practices were ranked in order of importance using the mean score and standard deviation obtained. Practices that showed highest level of importance were choice of planting material (1.99±0.12), fertilizer application (1.97±0.18), removal of damaged and diseased pods before breaking (1.92±0.28), farm pruning (1.90±0.29) and shade for cocoa plants (1.89±0.32), ranking 1st, 2nd, 3rd, 4th and 5th, respectively. This implies that farmers placed more importance or priority on these

practices than other activities towards the production of high quality cocoa beans for export. A closer observation on aforementioned practices shows that most of these practices were pre-harvest activities in cocoa production. This also affirms the earlier assumption that pre-harvest activities equally play important role in the production of quality cocoa beans. Another implication of this finding is that farmers in the study area needed urgent training in the pre-harvest activities involved in cocoa production such as stock selection, soil improvement, crop protection, shade management and pruning. However, low level of importance was observed in practices such as turning of beans while drying (1.69±0.46), storage of beans above ground level and away from the wall (1.64±0.49), adequate ventilation in the store (1.62±0.49), storage of beans away from strong odours (1.53±0.53) and control of store pests and diseases (1.43±0.50). Most of these practices are under storage of beans. This suggests that farmers

rate storage activities as less important in the production of quality cocoa beans for export. The implication is that farmers may skip some of these practices or inadequately implement them; thereby

resulting to a decline in the quality of the processed beans. Thus, farmers may need to be enlightened on the importance of storage activities in a bid to presenting quality cocoa beans for export.

Table 3: Distribution of respondents by importance level on standard practices for cocoa export (n=336)

Level of Importance of Standard Practices for cocoa export among Cocoa Farmers	Frequency of category				
	Very important (%)	Less important (%)	Not important (%)	Mean±SD	Rank
Choice of planting material	98.5	1.5	0	1.99±0.12	1st
Shade for cocoa plants	88.7	11.3	0	1.89±0.32	5th
Fertilizer application	96.7	3.3	0	1.97±0.18	2nd
Control of field pests and diseases	81.5	18.5	0	1.81±0.37	11th
Pruning of the farm	90.2	9.8	0	1.90±0.29	4th
Timely pod harvesting	86.6	13.4	0	1.87±0.34	6th
Removal of damaged and diseased pods before breaking	91.7	8.3	0	1.92±0.28	3rd
Time of pod breaking	86.3	13.7	0	1.86±0.34	7th
Covering of fermenting beans	83.3	16.7	0	1.83±0.37	9th
Time of fermentation	81.8	18.2	0	1.82±0.39	10th
Turning of fermenting beans	83.6	16.4	0	1.84±0.37	8th
Raised slab for bean drying	75.3	24.7	0	1.75±0.43	14th
Turning of beans while drying	69.3	30.7	0	1.69±0.46	16th
Sorting of dried beans	74.0	25.0	1.0	1.76±0.43	13th
Packaging of dried beans	79.2	19.6	1.2	1.79±0.41	12th
Use of clean jute bags for storage	69.6	30.4	0	1.70±0.46	15th
Storing beans above ground level and away from the wall	61.6	38.4	0	1.64±0.49	17th
Storing beans away from strong odours	54.5	43.8	1.8	1.53±0.53	19th
Adequate ventilation in the store	61.9	38.1	0	1.62±0.49	18th
Control of store pests and diseases	43.2	54.6	2.2	1.43±0.50	20th

Source: Field Survey, 2018; SD= Standard Deviation; Mean score < 1.0 (less important), mean score = 1.0 (moderately important) and mean score >1.0 (highly important)

Competence level of respondents on standard practices for cocoa export

The result of the competency level of respondents on standard practices for the production of quality cocoa beans is presented in Table 4. Using the mean score and standard deviation, the standard practices were ranked in order of competence as indicated by the respondents. Farmers showed very high level of competence on practices such as use of improved cocoa variety (1.97±0.17), use of appropriate dose of fertilizer (1.86±0.35), provision of adequate shade for cocoa plants (1.85±0.36), removal of damaged and diseased pods before breaking (1.79±0.41), and pruning of the farm (1.77±0.42) ranking 1st, 2nd, 3rd, 4th and 5th respectively. From the finding, it was evident that use of improved cocoa variety, use of appropriate dose of fertilizer and removal of damaged and diseased pods before breaking were perceived by farmers as areas where they were highly competent in the production of high quality cocoa beans for export as they ranked highest. This impliesthat the farmers may need less training on the

aforementioned practices which involve choice of planting material, shade management and pod breaking. On the other hand, farmers showed low level of competence on practices such as use appropriate dose of agrochemicals on stored beans (1.58±0.48), store beans above ground level (1.56±0.50), provide adequate ventilation in the store (1.52±0.50), packaging of dried beans (1.52±0.49), and sorting of dried beans (1.47±0.47), ranking 16th, 17th, 18th, 19th and 20th respectively. From the finding, it was evident that use appropriate dose of agrochemicals on stored beans,store beans above ground level and packaging of dried beanswere perceived by farmers as areas where they were less competent in their involvement in the production of high quality cocoa beans for export as they ranked lowest. This means that the farmers may need more training on the aforementioned practices which involve storaging, sorting, and packaging. This suggests that farmers relatively needed training on post-harvest handling of cocoa for an improvement in the quality of the processed beans. The resultsalso reveal that the order of the perceived level of

importance of the standard practiceswas not the same as the order of the perceived level of competence on those practices. This is an indication that there is a gap between what the farmers know and their actual performance. This also suggests that there is need to identify areas of the standard practices where farmers needed capacity building in order to produce high quality cocoa beans for export.

Table 4: Distribution of respondents by competency level on STPs for cocoa export (n=336)

Competency Level on standard practices for cocoa export among cocoa farmers	Frequency of category			Mean (±SD)	Rank
	Very competent	Less competent	Not competent		
Use improved cocoa variety	97.0	3.0	0	1.97±0.17	1st
Provide adequate shade for cocoa plants	85.1	14.9	0	1.85±0.36	3rd
Use appropriate dose of fertilizer	0	34.0	66.0	1.86±0.35	2nd
Use appropriate dose of agrochemicals on field plants	74.1	25.9	0	1.74±0.44	8th
Pruning of the farm	10.2	23.2	66.6	1.77±0.42	5th
Timely pod harvesting	26.0	20.8	53.2	1.66±0.41	15th
Remove damaged and diseased pods before breaking	78.9	21.1	0	1.79±0.41	4th
Break pods not later than 5 days after harvesting	71.1	28.9	0	1.71±0.45	10th
Cover fermenting beans from rain and/or cold	69.9	30.1	0	1.69±0.46	12th
Ferment beans for 6-7 days	75.9	24.1	0	1.76±0.43	7th
Turn fermenting beans once every 48 hours	23.1	31.5	45.4	1.76±0.59	6th
Dry fermented beans on a raised slab	67.9	32.1	0	1.68±0.47	13th
Turn drying beans	70.8	29.2	0	1.72±0.46	9th
Sorting of dried beans	20.5	32.2	47.3	1.47±0.47	20th
Packaging of dried beans	10.3	41.4	48.3	1.52±0.49	19th
Use clean jute bags for storage	67.9	32.1	0	1.67±0.47	14th
Store beans above ground level	56.2	43.8	0	1.56±0.50	17th
Store beans away from strong odours	27.9	40.4	41.8	1.69±0.51	11th
Provide adequate ventilation in the store	51.8	48.2	0	1.52±0.50	18th
Use appropriate dose of agrochemicals on stored beans	2.3	35.4	62.3	1.58±0.48	16th

Source: Field Survey, 2018; SD= Standard Deviation

Bench mark: Mean score < 1.0 (less competent), mean score = 1.0 (moderately competent) and mean score >1.0 (highly competent)

Areas of capacity building needs of respondents on standard practices for cocoa export

The results of the areas of capacity building needs of farmers on standard practices for cocoa export are presented in Table 5. It was revealed that farmers needed capacity building in 8 out of the 20 standard practices examined. These practices were: sorting of dried beans (0.51), packaging of dried beans (0.48), timely pod harvesting (0.39), breaking pods not later than 5 days after harvesting (0.28),covering of fermenting beans from rain and/or cold (0.26),removal of damaged and diseased pods before breaking (0.25), pruning of the farm (0.25), and use of appropriate dose of fertilizer (0.22). This finding indicates that the identified areas of capacity building needs of respondents are very relevant to knowledge and skills required for the production of high quality cocoa beans for export. Precisely, farmers mostly needed capacity building in the areas of sorting of dried beans, packaging of dried beans and timely pod harvesting as they were ascribed highest mean values. This result further showed that farmers were relatively lacking technical know-how on post-harvest handling of cocoa beans in the study area particularly in the areas of harvesting, sorting and packaging of dried beans.

Table 5: Distribution of respondents by their capacity building needs on standard practices for cocoa export (n=336)

Standard Practices for cocoa export	Mean score		Discrepancy score (I-C)	WDS = [I(I-C)]	Remark (Capacity building)
	Importance (I)	Competence (C)			
Use of improved cocoa variety	1.99	1.97	0.02	0.04	Not needed
Provision of adequate shade for cocoa plants	1.89	1.85	0.04	0.08	Not needed
Use of appropriate dose of fertilizer	1.97	1.86	0.11	0.22	Needed
Use of appropriate dose of agrochemicals on field plants	1.81	1.74	0.07	0.13	Not needed
Pruning of the farm	1.9	1.77	0.13	0.25	Needed
Timely pod harvesting	1.87	1.66	0.21	0.39	Needed
Removal of damaged and diseased pods before breaking	1.92	1.79	0.13	0.25	Needed
Breaking pods not later than 5 days after harvesting	1.86	1.71	0.15	0.28	Needed
Covering of fermenting beans from rain and/or cold	1.83	1.69	0.14	0.26	Needed
Fermentation of beans for 6-7 days	1.82	1.76	0.06	0.11	Not needed
Turning of fermenting beans once every 48 hours	1.84	1.76	0.08	0.15	Not Needed
Drying of fermented beans on a raised slab above the ground surface	1.75	1.68	0.07	0.12	Not needed
Turning of beans regularly while drying	1.69	1.72	-0.03	-0.05	Not needed
Sorting of dried beans	1.76	1.47	0.29	0.51	Needed
Packaging of dried beans	1.79	1.52	0.27	0.48	Needed
Use of clean jute bags for storage	1.7	1.67	0.03	0.05	Not needed
Storage of beans above ground level and away from wall	1.64	1.56	0.08	0.13	Not needed
Storage of beans away from strong odours	1.53	1.69	-0.16	-0.24	Not needed
Provision of adequate ventilation in the store	1.62	1.52	0.10	0.16	Not needed
Use of appropriate dose of agrochemicals on stored beans	1.43	1.58	-0.15	-0.21	Not needed
Sum of WDS=∑[I(I-C)				*3.11*	
MWDS= {∑[I(I-C)/n]}				*0.16*	

Source: Data Analysis, 2018

WDS=Weighted Discrepancy Score, MWDS= Mean Weighted Discrepancy Score

Benchmark: WDS > MWDS Simplifies that capacity building is required while WDS < MWD Simplifies that capacity building is not needed.

Hypothesis Testing

Table 6 reveals the results of correlation analysis of the relationship between some selected socioeconomic characteristics (age, household size, farm size, farming experience and income) of respondents and their capacity building needs on standard practices for cocoa export. It was revealed that farm size (r=0.137, p=0.012) and income (r=0.151, p=0.006) were positive and significant at 5% level and 1% level, respectively. The implication is that respondents with large farm size will require more capacity building than those with small farm size and those with higher income will most likely be able to attend capacity building programme to acquire knowledge on how best to produce quality cocoa beans for export. This result aligns with the finding of Daudu *et al.* (2019) that farm size and income were positively significant to the capacity building needs of smallholder arable crop farmers on soil fertility management practices in Kwara State of Nigeria.

Table 6: Results of correlation analysis showing the relationship between some selected socioeconomic characteristics of cocoa farmers and their perceived capacity building needs on standard practices for cocoa export

Variables	r-value	p-value
Age	0.011	0.846
Household size	0.009	0.867
Years of cocoa farming	-0.006	0.909
Farm size	0.137*	0.012
Income	0.151**	0.006

*Correlation significant at 0.05 level (2-tailed)

**Correlation significant at 0.01 level (2-tailed)

Source: Data Analysis, 2018

CONCLUSION

Based on the findings from this study, the need for capacity building of the cocoa farmers in the postharvest handling of cocoa particularly in areas of harvesting, sorting and packaging of dried beans, seem to account for the low involvement in the production of quality cocoa beans for export. The study therefore recommended an urgent need to package a robust training programme and advisory services by extension and other relevant agencies for cocoa farmers on areas of capacity deficiencies indicated for quality bean production.

REFERENCES

ACP Science and Technology Programme (2012). Shifting from Outreach to Engagement: Transforming Universities' response to current development trends in agricultural research and training in Eastern, Central and Southern Africa.http://www.acp-st.eu/content/shifting-outreach-engagement-transforming-universities-response-current-development-trends-a (Accessed July 3, 2012)

Adeogun, S. O., Fapojuwo, E. O., Oyeyinka, R. A., Adamu, C. O. and Abiona, B. J. (2015). Training needs assessment of cocoa farmers' association members on soil management techniques in Cross River State of Nigeria. *Ethiopian Journal of Environmental Studies and Management,* 6(5): 551-560

Adisa, R. S., Mustapha, A. M., Balogun, K.S., Ibrahim, H. K. and Oloyede, W. O. (2018). Analysis of Farm Management Extension Services Performed By Extension Agents of Agricultural Development Projects in Southwest Nigeria. *International Journal of Agricultural Science, Research and Technology in Extension and Education Systems (IJASRT in EESs),* 8(1):7-15

Akinnagbe, O. M. (2017). Determination of factors influencing adoption of Cocoa Resuscitation Programme in Southwest Nigeria. *Asian Journal of Agricultural Extension, Economics and Sociology*, 20(3): 1-9

Bloomberg (2016). Nigeria's Cross River state to expand cocoa land, boost export. An article written by Tolani Awere and published in the Bloomberg, 15th February, 2016. https://www.bloomberg.com/newa/articles/2016-02-15/nigeria-s-cross-river-state-to-expand-cocoa-land-boost-output(Accessed June 29, 2017)

Borich, G. D. (1980). A needs assessment model for conducting follow-up studies. *Journal of Teacher Education*,32(3): 39-42

Catholic Relief Services (2013). Giving hope to a world of work. www.crs.org/capacitybuilding (Accessed May 12, 2019)

Cross River Watch (2015). Why Ayade's proposal to build cocoa factory in Cross River is a welcomed development. An article published in CrossRiverWatch Newspaper, June 23, 2015. www.CrossRiverWatch.com (Accessed May 10, 2016)

Daudu, A. K., Oladipo, F. O. and Kayode, A. O. (2019). Gender capacity building needs on soil fertility management practices among smallholder arable crop farmers in Kwara State, Nigeria. *Journal of the Saudi Societyof Agricultural Sciences*. DOI:

http://dx.doi.org/10.1016/j.jssas.2017.06.003

International Cocoa Organization (2009). Guidelines on best known practices in the cocoa value chain. Consultative Board on the world cocoa economy, nineteenth meeting, Moscow. 13pp. www.icco.org (Accessed January 14, 2018)

International Cocoa Organization (2012). Quarterly Bulletin of Cocoa Statistics, London. http://www.icco.org (Accessed August 15, 2018)

International Cocoa Organization (2017). Production of cocoa beans. Quarterly Bulletin of Cocoa Statistics, London. http://www.icco.org(Accessed August 15, 2018)

National Population Commission (2011). Population Figure. Federal Republic of Nigeria, Abuja. URL http://www.citypopulation.de/php/nigeria-admin.php?adm1id=NGA009 (Accessed July 25, 2016)

Nigerian Investigative Reporting Project (2015). Cocoa: A farmer's nightmare crop.http://nirp.icirnigeria.org/cocoa-a-farmers-nightmare-crop/. (Accessed June 10, 2018)

Observatory of Economic Complexity (2017). Nigeria's top ten exports. www.oec.world/en/resources/about/ (Accessed July 24, 2018)

Oluyole, K. A. and Sanusi, R. A. (2009). Socio-Economic Variables and Cocoa Production in Cross River State, Nigeria. *Journal of Human Ecology*, 25(1): 5-8

Omoare, A. M., Oyediran, W. O. and Fakoya, E. O. (2016). Comparative assessment of cocoa farmers' knowledge and attitude to trainings on good cultural management practices in Ogun and Ondo States, Nigeria. *International Journal of Agricultural Extension and Rural Development Studies*, 3(3): 36-51

Proshare (2017). Reviving the cocoa industry in Nigeria. www.proshareng.com (Accessed July 31, 2018)

Uwagboe, E. O., Meludu, N. T. and Agbebaku, E. E. O. (2016). Adoption of Integrated Pest Management among Cocoa Farmers in Cross River and Osun States of Nigeria. *Journal of Agricultural Extension*, 5(3): 188-201

World Cocoa Foundation (2012). Cocoa market update. URL http://worldcocoafoundation.org/wp-content/uploads/Cocoa-Market-Update-as-of-3.20.2012.pdf (Accessed February 24, 2017)

Assessment of the cultivation of underutilised indigenous vegetables among youth farmers in Osun state, Nigeria

[1]Alao O. T., [1]Adelokun, I. A., [1&2]Oladipo, F. O. and [3]Adekunmi, A. O.

[1]Deparment of Agricultural Economics and Extension, Osun State University, Ejigbo Campus

[2]Deparment of Agricultural Extension and Rural Development, University of Ilorin, Nigeria

[3]Deparment of Agricultural Economics and Extension Services, Ekiti State University, Ado-Ekiti

Correspondence details: oluwagbenga.alao@uniosun.edu.ng; 08035844257

ABSTRACT

Nigeria is known for her diversity in nutritional and economical indigenous vegetables that a traditional meal without it is assumed to be incomplete. Some of these traditional and indigenous vegetables are under-cultivated and going into extinction. These underutilised-indigenous vegetables (UIVs) could generate revenue, provide employment, and give adequate nutritional benefits if properly utilised. However, low cultivation, deforestation and indiscriminate burning have affected their yields and utilisation. This study, therefore, focused on the assessment of the cultivation of UIVs among youth farmers in Osun State, Nigeria. It identifies the personal characteristics, determine the level of cultivation of UIVs and examine the constraints militating against engagement of youths in its cultivating. A multi-stage sampling procedure was used to select 180 youth vegetables farmers from three Agricultural Development Programme zones of the state. Data were collected through interview schedule and subjected to descriptive (mean, frequency and percentage) and inferential (Pearson Product Moment Correlation) statistics. Findings show that majority (70.0%) of the young vegetable farmers was male; 98.3% had farm size below one hectare of land; 68.3% leased their farmland and 60.8% of them were between 28 and 32 years. The study also shows a low level of cultivation of UIVs among youth farmers ($\overline{x}$=5.8889). Poor market ($\overline{x}$=1.95), inadequate finance ($\overline{x}$=1.93) and pest and disease attack ($\overline{x}$=1.82) were the main constraints affecting the cultivation of UIVs in the State. The study concluded that level of cultivation of UIVs was low and recommended the need for youths to be motivated into vegetable cultivation with the provision of subsidized inputs and investment in programmes that gear up publicity campaign on the nutritional and economic importance of UIVs.

Keywords: Vegetable farmers, Underutilised-indigenous vegetables, Youth farmers

INTRODUCTION

Nigeria is well known for her diversity in many nutritional and economical indigenous vegetables which in past years have helped in so many ways, some of which are; employment opportunities for many peasant farmers, nutritional use, and medicinal purposes. For instance, pumpkin is well known for increasing blood in the body. The vegetable has between 30 and 50 percent of iron and vitamins A in resource-poor diet (Badmus and Yekinni, 2011). Other merits of these indigenous vegetables include; income for farmers and producers of food.

Vegetables are an important feature of Nigerians diet that a traditional meal without it is assumed to be incomplete. Despite this, in developing countries, the consumption of vegetables is generally lower than Food and Agricultural Organization (FAO) recommendation of 75kg per year and (206g per day) (Badmus and Yekinni, 2011). Adebooye, Ogbe and Bamidele (2003) identified an expanded list of twenty-four indigenous leafy vegetables that are eaten in southwestern Nigeria, while Odhav, Beekrum, Akula, and Baijnath (2007), noted that indigenous vegetables and fruits serve as inexpensive but highly nutritious food sources for the poor segment of the population. This means that if given quality attention these numerous UIVs will meet to a great extent the nutritional needs of not just the less privileged but the entire populace at large.

The term underutilised refers to categories of wild and cultivated plants which in general, involve species whose potentials have not been fully realized and utilised. It may also mean plants currently abandoned by farmers or in declined but which could be revived through specific interventions such as adding value to marketing (Pudulosi, and Hoeschle-zeledon, 2004). Indigenous Vegetables can also be simply defined as "those crops, which are part of a larger biodiversity portfolio, once more popular and today neglected by user's group for vary of agronomic, genetic, economic, social and cultural factors''. According to Padulosi and Hoeschle-Zeledon, (2004), orphan, abandoned, niche, promising,

underdeveloped and other terms are often used as synonyms for underutilised species.

Some of the underutilised indigenous vegetables in Osun State are listed in Table 1.

Table 1: Names of Underutilised Indigenous Vegetables in Osun State

S/N	Botanical name	English name	Yoruba name
1.	*Telfairiaoccidentalis*	Fluted pumpkin	Apiroko/Iroko/Ugu
2.	*Solanumnigrum*	African nightshade	Odu
3.	*Solanummacrocarpon*	African eggplant	Igbagba/Igbo
4.	*Solanumscabrum*	Scarlet eggplant	Ogunmo
5.	*Trichosanthescucumerina*	Snake tomato	Tomato elejo
6.	*Veronica omygdalina*	Bitter leaf	Ewuro
7.	*Curcubita pepo*	Field pumpkin	Elegede
8.	*Seneciobiafrae*		Woorowo
9.	*Crassocephalumcrepidoides*	Fireweed	Ebolo
10.	*Amaranthusviridis*	Amaranth	Teteatetedaye
11.	*Corchorusolitorus*	Corchorus	Ewedu
12.	*Ocimumgratissimum L*	Scent leaf plant	Efinrin
13.	*Talinumtriangulare*	Water leaf	Gbure
14.	*Lactucataraxacifolia*	Wild lettuce	Yanrin
15.	*Ocimumgrattisimum*L.	Scent leaf	Efirin
16.	*Celosia argentea*L.	Plumed cockscomb	Soko
17	*Solaniumaethiopicum*		Osun

Source: NI-CAN Vegetable project, 2012

Over the years, the diversity of these indigenous vegetables is being seriously eroded as a result of the multiplicity of environmental and socio-cultural factors. Evidence of this is the fact that most of these vegetables are very scarce to come by nowadays. These vegetables have been so underutilised that their nutritional and economic strength is going to oblivion especially among youths who seem not to know much about these vegetables. The need is therefore for youths to be encouraged to take up the cultivation of these underutilised-indigenous vegetables so that we can prevent them from extinction due to their great benefits of these vegetables.

Adebooye and Opabode (2004), stated the following as common features UIVs:

i.   These vegetables have contributed to income generation, food security and nutrition of the places of origin
ii.   Associated with cultural heritage of their local origin
iii.   Are mainly grown in the wild with little or no documentation
iv.   Have little or no formal link for seed supply
v.   Have traditional uses in their places of origin
vi.   They are mostly not planted but collected in the wild
vii.   Researchers, extension services, farmers, policy and decision makers, technologist and consumers do not pay attention to these vegetables and
viii.   May be having high medicinal, vitamins and mineral values

However, the cultivation level of these vegetables is alarming. Despite all the economic and nutritional benefits of these vegetables, it is still a known fact that most of them are only being gathered from the wild from time immemorial, and those being cultivated are on a very small scale by few peasant farmers, and the problem of deforestation, indiscriminate burning, and spraying of herbicides has adversely affected these indigenous vegetables (Mofeke, Ahmada and Mudiane, 2003).

The transformation of Nigeria's agricultural sector back to its rightful position as Nigeria's leading sector in terms of revenue generation and employment amidst other reasons has been receiving attention from successive governments of the country, albeit little success. A lot of factors could be responsible for this, one of which is government's failure to focus on grass root agriculture, which is practiced by peasant farmers who take close to 80% of the population of Nigerian farmers (Okuneye and Ayinde, 2011), and are mainly involved in vegetable cultivation. Another factor that could lead to the non-participation of youth in agriculture which has left our food production in the hands of ageing farmers

who are moving away from active and productive ages, as Mofeke, Ahmada and Mudiane (2003), reported that Vegetable production in Nigeria is highly characterised by use of crude implements, non-availability of inputs, illiteracy, expensive and complex technologies.

In spite of the nutritional, medicinal, cultural and diverse resource value of the Underutilised Indigenous Vegetables (UIVs) and their immense contributions to food security and economic growth in Nigeria which were highlighted by Iniaghe, Malomo and Adebayo (2009), who stated that non-starchy vegetables are rich sources of dietary fibre used in the treatment of obesity, diabetes, cancer, and gastrointestinal disorders. Adebooye, Ogbe and Bamidele (2003) who also reported that in addition to serving as vegetables, some plants are also used in preparing of traditional medicine in Africa, it is still observed that many of them have been under-cultivated and the little cultivation/gathering is done by the aged farmers. This has led to the majority of these vegetables going to extinction. There is, therefore, an urgent need for a critical look into the cultivation of these UIVs; its current status vis-a-vis ways to save them from going into extinction and human populace missing out on their numerous benefits.

Specifically, this study identifies the personal characteristics of youth vegetable farmers in Osun state, determine the level cultivation of UIVs by youth vegetable farmers in the study area, and examine the constraints militating against youths cultivating UIVs in the study area.

METHODOLOGY

Primary data was used for this study. Data were collected with the aid of a structured interview schedule. The study was conducted in the three (3) Agricultural Development Programme (ADP) zones of Osun state, namely, Osogbo, Iwo, and Ife/Ijeshazones. A multistage sampling procedure was used to select a sample for the study. In the first stage, 2 Local Government Areas (LGAs) was purposively selected from each of the 3 Agricultural Development Programme (ADP) zones, based on their involvement inthe cultivation of indigenous vegetables, making six LGAs. In the second stage, random sampling was used to select 4communities from each LGA where vegetable cultivation is predominantly practiced, making a total of 24 communities. Finally, the estimated number of youth vegetables farmers were gathered from each community and 5% of farmers randomly selected from the list, this gave a total of 198young

vegetable farmers from the three ADP zones of Osun State, but only 180 questionnaires were analyzed for this study.The data collected were subjected to descriptive statistics such as mean, frequency and percentage, and inferential statistics was measured with Pearson Product Moment Correlation (PPMC).The level of cultivation of UIVs was measured thus;

A list of the 10 underutilised indigenous vegetables was presented. The farmers were asked to indicate whether they cultivate the vegetables or not with response option of Yes and No which were scored as 1 and 0, respectively.

Total score was 10 and maximum score obtainable for each farmer was 10while minimum was 1 point. To determine the level of cultivation, the mean and the standard deviation was calculated. Mean plus standard deviation gave the High level of cultivation, mean minus standard deviation equalled low level of cultivation. The difference between High and low gave the medium level of cultivation.

RESULTS AND DISCUSSIONS

Socioeconomic characteristics

Results in Table 2 reveals that the mean age of the youth farmers was 28 years, the majority were male (70.0%), single (55.8%), had between 1 and 2 persons as household size (55.8%) and practiced Islam (55.0%). This is contrary to the general belief that vegetable cultivation is dominated by female, as they were predominantly male, agile and fit (physically and mentally) for agricultural work, with small family size that suggests they will be able to focus on vegetable cultivation as they may not have a large family to feed. The result also shows that 47.5% of the youth farmers had secondary education with only 3.3 % not having any form of formal education. This implies that majority of the respondents have the basic form of education and this is similar to the findings of Adebisi-Adelani, Olajide-Taiwo, Adeoye and Olajide Taiwo (2011), who found out that 43.8% of Fadama vegetable farmers in Oyo state have secondary school education. Majority of the youth farmers (68.3%) leased their farmlands, this implies that the youth do not have any personal land for farming and this will affect their use of the land as the owner can take the land away from them anytime. Government at all levels therefore need to do more to help the young farmers to have direct access to land so as to reduce the burden of rent paid on leased land and thereby increase production cost available to the farmers.

Table 2: Distribution of the respondents according to their socio-economic characteristics (n =180)

Variables	Frequency	Percentage
Sex		
Male	126	70
Female	54	30
Age		
18-22	12	6.7
23-27	24	13.6
28-32	109	60.8
>32	35	19.2
Mean	28	
Marital status		
Single	100	55.8
Married	80	44.2
Educational level		
No formal education	6	3.3
Primary school	54	30
Secondary school	85	47.5
Post-Secondary school	35	19.2
Religion		
Christianity	81	45
Islam	99	55
Household size		
1.2	100	55.8
03-Apr	32	17.5
05-Jun	48	26.7
Land acquisition		
Inheritance	39	21.7
Purchase	14	7.5
Gift	5	2.5
Leased	122	68.3
Farm size		
Less than a hectare	177	98.3
A hectare	3	1.7

Level of cultivation of underutilised indigenous vegetables

The result in Figure 1 shows that majority (76.7%) of the respondents were at a low level of cultivation, 8.9 percent were at a medium level of cultivation while 10 percent were at a high level of cultivation. This implies that UIVs are not well cultivated by youth farmers in Osun State and if care is not taken, the vegetables might be heading for extinction.
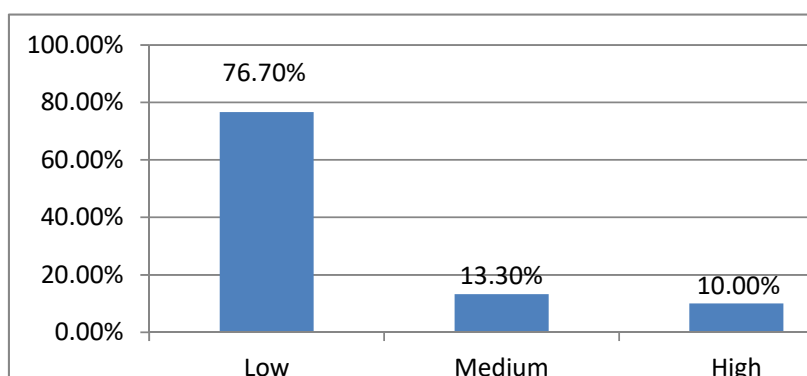
Figure 1: Level of cultivation of UIVs

Constraints to Underutilised Indigenous Vegetables production

Table 3shows the distribution of youth farmers based on the constraints facing UIVs cultivation in the study area. According to the youth farmers, poor market ($\overline{x}$=1.95), inadequate finance ($\overline{x}$=1.93) and pest and disease attack ($\overline{x}$=1.82) were the major constraints facing the cultivation of UIVs in Osun State. This implies that youth vegetable farmers like every other group of farmers in Nigeria are faced with the problem of finance which limits their input purchase, productivity and

also affects their ability to transport their produce to big markets where they would make good remuneration. There is a link between these constraints and the low level of cultivation of UIVs recorded by the farmers as inadequate finance coupled with pest and disease infestation and the poor market will discourage increased production.

This result is similar to the findings of Adebisi-Adelani, Olajide-Taiwo, Adeoye and Olajide-Taiwo (2011), who identified the inability to hire labour, lack of credit and livestock disturbance as major constraints to vegetable production in Oyo state, Nigeria.

Table 3: Distribution of respondents according to the constraints faced

Constraints	Severe constraint	Mild Constraint	Not a Constraint	$\overline{x}$	Rank
Poor market	95.8	3.3	0.8	1.95	1st
Inadequate finance	93.3	6.7	0.0	1.93	2nd
Pest and diseases attack	82.5	17.5	0.0	1.82	3rd
Seed unavailability	68.3	30.0	1.7	1.67	4th
The high cost of production	55.0	41.7	3.3	1.52	5th
Poor access to extension service	35.0	63.3	1.7	1.33	6th
Unavailability of land	15.8	80.8	3.3	1.12	7th
Perishability	26.7	55.0	18.3	1.08	8th
Low demand for UIVs	4.2	58.3	37.5	0.67	9th
Inadequate knowledge of harvesting	6.7	46.7	46.7	0.60	10th

Relationship between constraints and level of production of underutilised indigenous vegetables

Table 4 reveals that a negative and significant relationship existed between constraints such as unavailable land (r= -0.196, p<0.05), inadequate finance (r= -0.259, p<0.05), low demand for UIVs

(r= -0.221, p<0.05), pest and disease attack (r= -0.413, p<0.05), poor market (r= -0.345, p<0.05)and the level of cultivation of UIVs among youth vegetable farmers.

This result connotes that the higher the constraints faced by farmers, the lower the level of cultivation of UIVs.

Table 4: PPMC relationship between constraints and level of cultivation

Constraints	r-value	p-value	Decision
High cost of production	0.008	0.95	Not Significant
Unavailability of land	-0.196	0.042	Significant
Inadequate knowledge on harvesting	0.026	0.700	Not Significant
Seed unavailability	0.101	0.124	Not Significant
Inadequate finance	-0.259	0.007	Significant
Poor access to extension service	-0.003	0.98	Not Significant
Pest and diseases attack	-0.413	0.000	Significant
Poor market	-0.345	0.000	Significant

Conclusion and recommendations

The study concludes that majority of the young farmers were male, single and had a formal level of education; they had access to land through lease

and faced some challenges that reduce the cultivation of UIVs which lead to low level of UIVs cultivation among youth farmers.

Based on the findings of the study, it is recommended that female youths should be motivated into vegetable cultivation and subsidized inputs such as grants, pesticides and seeds should be provided by government, Non-governmental organizations and individuals to UIVs farmers. Also, Extension programmes geared toward the publicity of the nutritional and economic importance of underutilised indigenous vegetables should be embarked upon by governments and relevant institutions for both farmers and consumers in order to increase the demand for UIVs in the market.

REFERENCES

Adebisi-Adelani, O., Olajide-Taiwo, F. B., Adeoye I. B., and Olajide-Taiwo L. O. (2011). Analysis of Production Constraints Facing Fadama Vegetable Farmers in Oyo State, Nigeria. *World Journal of Agricultural Sciences.* 7 (2): 189-192.

Adebooye, O. C., Ogbe, F. M. D. and Bamidele J. F. (2003). Ethnobotany of indigenous leaf vegetables of Southwest Nigeria.Delpinoa, University of Naples, Naples, Italy: 45

Adebooye, O. C. and Opabode, J. T. (2004). "Status of conservation of the indigenous leaf vegetables and fruits of Africa", *African Journal of Biotechnology.* 3 (12), 700-705.

Badmus, M. A. and Yekinni, O. T. (2011). "Economic Analysis of Exotic Vegetable Production among Urban Fadama Women Farmers in Akinyele Local Government Area, Oyo State, Nigeria".*International Journal of Agricultural Economics and Rural development* 4 (1) 78-87.

Inieghe, O. M., Malomo, S. O., Adebayo, J. O. (2009). Proximate composition and phytochemical constituents of leaves of some *Acalypta spp. Pakistan Journal of Nutrition.* 8(3): 256-258.

Mofeke, A. L. E., Ahmada, A. and Mudiane, O. J. (2003). "Relationship between yield and seasonal water use for tomatoes, onions, and potatoes grown under Fadama irrigation". *Asset Series A.* 3:35-46.

Nigeria bureau of Statistics (NBS). 2017 Demographic Statistics Bulletin. Retrieved, June 4, 2018, from;https://www.google.com/search?q=osun+state+projected+population+in+2013&ie=utf-8&oe=utf-8&client=firefox-b-ab

Odhav, B. Beekrum, S. Akula U. Baijnath H. (2007). Preliminary assessment of nutritional value of traditional leafy vegetables in KwaZulu-Natal, South Africa. *Journal of Food Composition and Analysis,* 20: 430- 435.

Okuneye, P. A. and Ayinde, I. A. (2011). The Nigerian Agricultural Policy Inadequacy: The Way Forward. *Nigerian Journal of Agricultural Economics.* 2(1), 1-16

Padulosi S., and Hoeschle-Zeledon I., (2004). Underutilised plant species: what are they? LEISA Magazine. March, 2004. Accessed at: https:///scholar.google.com/scholar?hl=en&as_sdt=0,5&q=stefano+padulosi,+Irmgard+hoeschle-zeledon,+2004Accessed date: 13/07/2013