COMMUNICATION, GOVERNANCE, AND INSECURITY IN RURAL NIGERIA

PROCEEDINGS

of the

30th ANNUAL NATIONAL Congress

of the

RURAL SOCIOLOGICAL ASSOCIATION OF NIGERIA (RuSAN)

held at

FEDERAL UNIVERSITY OF AGRICULTURE, ABEOKUTA

Between

4th - 8th October, 2021

TRANSFORMING RURAL ENVIRONMENT: THE SOCIOLOGICAL PERSPECTIVE

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GENERAL INFORMATION

The Nigerian Rural Sociological Association (NRSA) was formed on January 7, 1981. Its inaugural congress was held from November 7 to 11, 1983 with the theme "Agriculture and Social Development in Nigeria".

NRSA is a broad-based professional association with membership cutting across universities, agricultural research institutes and other agricultural/rural development agencies both from the public and private sectors. Membership is open to all professionals who are interested in advancing the development of the rural folks.

This volume is the proceeding of the 30th Annual National Congress held at the Federal University of Agriculture, Abeokuta between 4th and 8th October 2021. The plenary papers contained herein were peer reviewed before publication.

The association gratefully acknowledges the moral and financial contributions of many organisations and individuals to the success of the congress.

Year	Theme	Editor-in-Chief	Venue/Location
2020	Emancipation of the Rural Family in Contemporary Nigeria	Prof. Kolawole Adebayo	Landmark University, Omu Aran, Kwara State
2019	Transforming Nigeria's Rural Environment: The Sociological Perspective	Prof. Kolawole Adebayo	Obafemi Awolowo University, Ile-Ife
2018	Rural Social Fortification and Development in Nigeria	Prof. Kolawole Adebayo	Ahmadu Bello University, Zaria
2017	Grassroots Development and Dividend of Democracy	Prof. Kolawole Adebayo	Michael Okpara University of Agriculture, Umudike
2016	Conflict, Peace Building and Rural Development	Prof. F. A. Kuponiyi	Federal University of Oye-Ekiti, Oye-Ekiti
2015	Changing Social Values, Transparency and Sharp Practices – Impacts on Agricultural and Rural Development	Prof. F. A. Kuponiyi	Ladoke Akintola University of Technology, Ogbomoso
2014	Social Engineering on Sustainability of the Agricultural Transformation Agenda	Prof. F. A. Kuponiyi	University of Benin, Benin
2013	Perspectives on changing rural social organisations, structures and institutions and implications for agricultural development strategies in sub-Saharan Africa	Prof. F. A. Kuponiyi	University of Uyo, Uyo

Year	Theme	Editor-in-Chief	Venue/Location
2012	Challenges and Approaches to Sustainable Rural Development in sub-Saharan Africa	Prof. F. A. Kuponiyi	University of Ibadan, Ibadan
2011	Socioeconomic Analysis of Entrepreneurial Education Food security Poverty alleviation Linkages in Nigeria	Prof. F. A. Kuponiyi	Fed Coll of Agric Produce Tech, Hotoro, Kano
2010	Approaches towards the Transformation of Rural and Agricultural Economy in Nigeria	Prof. A. A. Ladele	University of Agriculture, Makurdi
2009	Globalization of the Socio-Political Economy of Rural Development	Dr. A. A. Ladele	Akure
2008	Policy Advocacy Role in Agricultural and Rural Transformation in Nigeria	Dr. A. A. Ladele	Umudike
2007	Powering Agricultural Rural Transformation Process in Nigeria.	Dr. A. A. Ladele	BOWEN, Iwo
2006	Unlocking the Agricultural and Rural Potentials of Nigeria	Dr. A. A. Ladele	UNAD, Ado-Ekiti
2005	Promoting Rural and National Economic Transformation through Agricultural Revolution	Prof. A. A. Jibowo	OOU, Ago-Iwoye

CONTENT

INVITED PAPERS

KEYNOTE ADDRESS DELIVERED BY THE DEAN COLAMRUD PROF E. O. FAKOYA AT THE 30TH ANNUAL CONGRESS OF THE RURAL SOCIOLOGICAL ASSOCIATION OF NIGERIA (RuSAN) HELD ON 4TH – 8TH OCTOBER, 2021 IN THE FEDERAL UNIVERSITY OF AGRICULTURE, ABEOKUTA

The Vice-Chancellor Sir,
Deputy Vice-chancellor Development,
Deputy Vice-chancellor, Academic,
Deans of other Colleges,
Head of Departments,
Chairman Local Organising Committee (LOC),
Members of the Local Organising Committee,
Distinguished Guests,
Ladies and Gentlemen,
Great FUNAABITES.

I am glad to warmly welcome the entire members of Rural Sociological Association of Nigeria (RuSAN) to the Federal University of Agriculture, Abeokuta. It also gives me real satisfaction that RuSAN considered the Department of Agricultural Extension and Rural Development, FUNAAB worthy of hosting your 30th Annual Congress 2021 in collaboration with the Livelihoods Support and Development Centre (SLIDEN AFRICA). I believe that this will be a memorable one that will mark a turning point for greater things to come for the Rural Sociological Association of Nigeria (RuSAN). Rural Sociology as a discipline has become more prominent over the years because it is a field of Sociology that is traditionally associated with the study of rural social life, social structure and conflicts in rural areas. Rural sociology research focuses on

1 Environmental wellbeing
2 Sustainable Development
3 Social and Community quality of life
4 Diffusion and Impacts of Technology
5 Social and Environmental Outcomes that Create Positive Change.
6 Information and Management for participatory Research in Rural Areas
7 Group Dynamics and Farmers Group in Rural Areas

The theme for this year Congress **COMMUNICATION, GOVERNANCE AND INSECURITY IN RURAL NIGERIA.** This theme is very crucial at this moment when everyone desires an instant solution to the various challenges of insecurity in rural Nigeria. Gone are the days that everyone could go to sleep with his /her two eyes closed. We have varying forms of insecurity in rural areas today ranging from 1 Drug abuse and addiction, 2 Rape 3 Disobedience to constituted authorities 4 Cultism 5 Kidnapping for ransom 6 Killer herdsmen 8 Terrorism and different behaviours which resulted from our deviation from norms and value of our society. While we will all agree with me that security and peace are crucial for good living of our rural farmers without which the society is a failure.

To structure your deliberation, I understand that the papers will be presented on the following sub themes.

1 Communication Strategies for Good Governance and Conflict Resolution
2 Democracy, Local Administration, Government Policy and Security Issues.
3 Promoting Sustainable Rural Livelihoods, Interventions and Coping with Insecurity
4 Gender and Youth Consideration in securing Rural Areas
5 Climate Change as a Determinant of insecurity in Rural Areas
6 Insecurity, Food System and Governance Triads

We have over 100 participants. ome will be joining physically and some virtually. We all know the reason behind the emergence of virtual conferences which is as a result of COVID 19 Pandemic which started last year. We pray that God will heal our land and the entire World I have no doubt in your ability to harness the various perspectives that will be presented at this Congress. It is my hope, however, that they will be made available in practical and understandable form to the larger society. Indeed, they should make life more meaningful to rural farmers. From the programme, I realise that you have a very busy schedule I do hope that in spite of this schedule you will find time to visit some places within the University and the larger city of Abeokuta. Let me end this address by thanking the Vice Chancellor for creating enabling environment for hosting this Congress

Ladies and gentlemen, again I welcome you to the FUNAAB the Best University of Agriculture in Nigeria. Wishing you very successful deliberations.
Thank you and God Bless.

Prof. E. O. Fakoya
Dean, COLAMRUD

PRESENTED PAPERS

EFFECTS OF AGRO-DEALERS NETWORK ON FARMER'S ACCESSIBILITY TO INFORMATION IN EKITI STATE, NIGERIA

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ABSTRACT
Farmers' accessibility to adequate information is a critical segment for agricultural development and contributes to increased adoption of improved technologies, reduction of starvation and scarcity of food, which in turn has impact on agricultural productivity. This article assessed the effects of agro-dealer network on farmer's accessibility to information in Ekiti State, Nigeria. Multi-stage sampling technique was used to source for two hundred and forty (240) farmers in Ekiti State. Data for this study were elicited through a well-structured questionnaire and Focus Group Discussion (FGD). Data were described through descriptive statistics. Majority (57.9%) of the respondents were in the age group of 41-50 years with mean age of 46 years. Results also revealed that farmers cover within 5km distance (54.0%), within 10km distance (33.0%), within 15km distance (8.0%) and within 20km distance (5.0%) to agro-dealers' shops. The farmers deemed agricultural input information given to them by agro-dealers as reliable (53.8%), very reliable (29.2%), unreliable (10.0%) and no opinion (7.1%). In conclusion, agro-dealers are closer to the farmers who are ultimate user of agricultural inputs sold by agro-dealers. During the course of selling agricultural inputs to farmers, information about newly improved seeds and crop protection products that gives high yield is usually disseminated across to them.
Keywords: Agro-dealers network, farmers' accessibility, Information

INTRODUCTION
Over the past decade, a number of Sub-Sahara African (SSA) countries have seen an upsurge in agricultural productivity (measured as yield per unit of area) driven by increased usage of higher-yielding seed, fertilizer and other inputs, along with better agronomic practices (Gerstenmeir and Choho, 2015). A study by Sekumade *et al* (2019) revealed that when farmers have access to improved seed and fertilizer, there is greater chance of profiting from the use of these modern seed and fertilizer which in turn improve food security and farm productivity in Nigeria. Farmers' accessibility to adequate information is a critical segment for agricultural development, and contributes to increased adoption of improved technologies, reduction of starvation and scarcity of food which in turn has impact on agricultural productivity. Farmers source for information on how to get quality farm inputs from cooperative members, fellow farmer, extension agents, and agro-dealers for prime farm productivity.

Agro-dealers are farm input retailers or trained and certified stockists of agricultural inputs through whom farm inputs such as improved seeds, crop protection products, equipment and knowledge about their safe and efficient use are channeled to smallholder farmers (Bamigboye, 2020). The role of agro-input dealers in agricultural development goes beyond input distribution; they impart knowledge to farmers. Camillione *et al* (2020) identified various agricultural extension programs implemented in Nigeria from colonial era to the present day to boast economic development, rural livelihoods, food security and trade relations; nevertheless, funding and staffing levels in agricultural extension remain low compared to Nigeria's farming population. In the past years, the performances of extension agent availability to give farmers information have been rated low (Akinfenwa, 2018; Camillione *et al*, 2020; Davis *et al.,* 2019).

Farmers source for agricultural inputs from agro-dealers and ask for information about the products purchased from these agro-dealers (Bamigboye, 2021). Very few studies however, have looked at the effect of agro-dealers network on farmers' accessibility of information. Therefore, there is need to assess these agro-dealers on how reliable information given to smallholder farmers. And the positive effect with farmers acknowledging the advice they are getting from agro-dealers is informative and beneficial. The study aimed at analyzing the effect of agro-dealers network on farmers' accessibility to information in Ekiti State, Nigeria through investigating the sources of information on agricultural inputs to farmers, distance covered by farmers to agro-dealers shop and investigating the reliability of information given to farmers on agricultural inputs by agro-dealers.

METHODOLOGY
The study was conducted in Ekiti State, Nigeria. Multi-stage sampling technique was used to source for two hundred and forty (240) farmers in Ekiti State. The first stage involved the random selection of zones I and II (Aramoko and Ikere) from the three zones in the study area. The second stage involved the selection of two blocks from each of the zones- Ado, Igede, Emure and Ise Ekiti. The third stage involved the selection of two cells from each of the blocks (Ago, Oke Osun, Aba Ebira, Ajebamidele, Eporo, Owode, Orun and

Bolorunduro) and 30 contact farmers were selected from each cell. A total of 240 farmers were randomly selected for the study. Data for this study were elicited through a well-structured questionnaire and Focus Group Discussion (FGD). Discussants used for farmers were purposively selected as those who have above 10 years of farm experience which was conducted during the monthly All Farmers Association of Nigeria (AFAN), Ekiti State Chapter. The discussion guide focused on the reliability of information given to farmers on agricultural inputs by agro-dealers. Data from the study were described using frequency counts, percentages and mean score.

RESULT AND DISCUSSION

Information agencies for farmers

Table 1 showed that 89.2% of the farmers from Ekiti State were informed from the Agro-dealers. This implies that farmers get access to reliable information from agro-dealers while selling agricultural inputs to farmers. Also, 81.3% of the respondents got information on agricultural inputs from television /radio. Study from Adebayo *et al*., (2018) revealed that majority of the farmers listened to programmes aired on television /radio about farming practices. Contrarily, the response was low on availability of extension agent/ADP, Internet, newspaper/magazine, research centres and billboards/poster as information sources. Wiggins and Keats (2013) revealed that the few-funded rural extension agents in Nigeria often don't reach poor farmers with the necessary information or inputs and distribution channels for fertilizer are often corrupted.

Table 1: Information source on agricultural inputs used by farmers

S/N	Information source on agricultural inputs*	Frequency	Percentage (%)
1	Agro-dealers	214	89.2
2	Television/Radio	195	81.3
3	Fellow farmers	170	70.8
4	Workshops/seminars	156	65.0
5	Extension Agent/ADP	109	45.4
6	Internet	43	17.9
7	Newspaper/ magazine	33	13.8
8	Research centres	21	8.8
9	Billboards/posters	9	3.8

*Multiple responses
Field survey (2020)

Distance covered by farmers to agro-dealers shop

The figure 1 illustrated the agro-dealers shop distance to farmers. Findings revealed that 54% of the farmers cover within 5km distance to agro-dealers shop. The result implies that agro-dealers are closer to the farmers who are ultimate user of agricultural inputs sold by agro-dealers. Although, Focus Group Discussion with the farmers in the study area revealed that majority of these agro-dealers are concentrated in the urban centres (Ado-Ekiti, the State capital) but there are still some agro-dealers within their rural environment that sells agricultural inputs to them. And during this course, information about newly improved seeds and crop protection products that gives high yield is usually disseminated across to them.

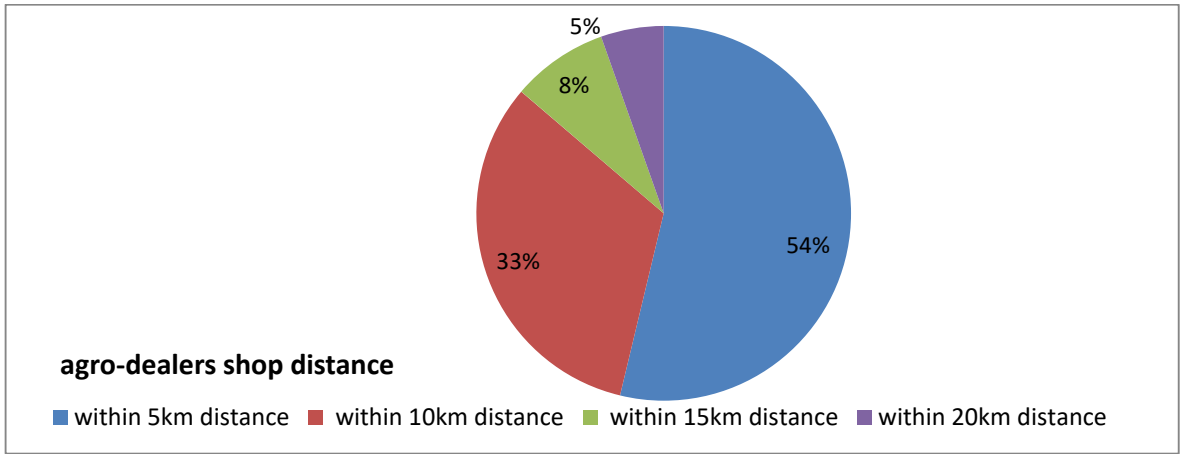

Figure 1: agro-dealers shop distance

Reliability of information given to farmers on agricultural inputs by agro-dealers

The figure 2 illustrated the reliability of information given to farmers on agricultural inputs by agro-dealers. Findings revealed that the farmers deemed agricultural input information given to them by agro-dealers as reliable (53.8%), very reliable (29.2%), unreliable (10.0%) and no opinion (7.1%). Information on agricultural inputs used by farmers is very critical for agricultural development, farmers contact agro-dealers who are readily available to them.

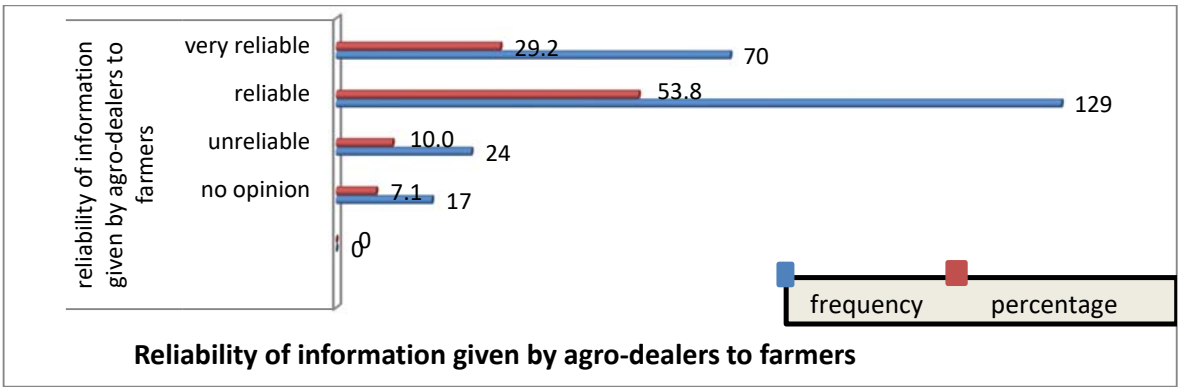

Figure 2: Reliability of information given to farmers on agricultural inputs by agro-dealers

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AGRICULTURAL EXTENSION AND CLIMATE CHANGE ADAPTATION AMONG RURAL FARMING HOUSEHOLDS IN EKITI STATE NIGERIA

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ABSTRACT
All round the globe, change in climate is being acknowledged and climate governing bodies have documented the means through which it is manifesting itself. Adaptation makes farmers to guard against losses resulting from climate change. Adaptation depends on the stock of knowledge of farmers as a result of exposure to media, other farmers and especially extension agents. This research seeks to determine the role of agricultural extension in building adaptive capacity of farmers to ensure their livelihood. A sample of 160 farmers and 5 extension agents in Ekiti State of southwest region of Nigeria were administered questionnaires. From the tables, simple descriptive statistical tools were used such as: frequency table and percentage. Some adaptation measures outlined by farmers were change in variety of crop, agro-forestry, treatment of suckers with chemical, replanting failed farms, use of fertilizer and picking up black pods and capsids of cocoa. The adaptation measures were mostly learned from other farmers as farmers affirmed that extension was not assisting them in adaptation. Also, absence of seminars or workshops for capacity building of agents limits their knowledge on adaptation measures to disseminate to farmers in regard to the different climate change indicators.
Keywords: Climate change, Extension and Adaptation

INTRODUCTION
All over the world, change in climate is being acknowledged and climate governing bodies have documented the means through which it is manifesting itself (Ugwoke *et al*. 2012). Adaptation measures help farmers guard against losses due to rise in temperature, fall in precipitation, increasing sunshine intensity, drought, flood and prevalence of pests and diseases (Obiora, 2013). However, adaptation depends on the stock of knowledge of farmers as a result of exposure to media, other farmers and especially extension agents. The modern concept of extension process is working with rural people through informal education for achieving total community development covering several activities, agriculture being the most important. Agricultural extension is considered to be a special branch of rural extension dealing with several economic and social aspects of farming community. Extension's major activities over time has been dissemination of useful information from research to farmers and taking farmer's problems to researchers and this is even more important in the light of climate change and its impact on agriculture (Obiora, 2013). Exposure to extension services influence the capacity of farmers to adapt to climate change because they educate farmers for example on how to develop and disseminate local cultivars of drought resistant crop varieties with information about the crops' advantages and disadvantages. Climate change and its associated uncertainties implies that agricultural extension services need to regularly access new knowledge and disseminate it in an adequate and timely manner to the farmer (Maponya and Mpandeli, 2013). The main aim of this study is to identify the role of agricultural climate change adaptation among rural farming households in Ekiti State, Nigeria.

METHODOLOGY
The study was conducted in Ekiti State in southwestern Nigeria. Ekiti State is located 7825^0 – 8820^0 N, 5800^0 6800^0 E in the rainforest belt of southwestern Nigeria (Ekiti State Government (EKSG) 1997) and lies south of Kwara and Kogi States, east of Osun State and bounded by Ondo State in the east and south (EKSG, 1997).

A multi-staged sampling technique was used in identified respondents for the study. The first stage involved the purposive selection of Ekiti state among the state in the south west region of the country. This was followed by purposively selection of all the sixteen local government areas in the state. Ten respondents were selected each from the administrative headquarters of all the sixteen local government respectively making a total of 160 respondents selected for this study.

Primary data were collected with the aid of well-structured questionnaire on the socioeconomic characteristics of the farmers and the extension agents such as age, sex, and education level etc. knowledge on climate change, adaptation strategies and their perceptions about climate change.

The study employed simple descriptive statistics such as frequency, table and percentage in analysing the data obtained for the study.

RESULT AND DISCUSSION
Social characteristics of the respondents
Social characteristics of farmers and extension agents are presented on tables 1 and 2. Male and female composition of farmers was 70% and 30% respectively. The extension agents were 80% male and 20% female. Regarding academic qualification of farmers, majority (50%) had primary school qualification. On the other hand, 80% of agents had agricultural higher diploma. Moreover, 45% of the farmers had farming

experience for 20 years and above. For working experience of agents, majority (60%) had been working for 1- 15 years.

Table 1: Social characteristics of the farmers

Variables	Frequency	Percentage
Sex		
Male	112	70
Female	48	30
Level of education		
No formal education	16	10
Primary	80	50
Secondary	48	30
Post- secondary	16	10
Farming experience		
< 10 years	40	25
10- 19 years	48	30
20 years and above	72	45

Source; field survey, 2020

Table 2: Socioeconomic characteristics of the extension agents

Variables	Frequency	Percentage
Sex		
Male	4	80
Female	1	20
Level of education		
Higher Diploma in agricultural extension	4	80
Bachelor in agricultural extension	1	20
Working experience		
1-15 years	3	60
More than 15 years	2	40

Source: Field survey, 2020

Role of agricultural extension in farmers' adaptation to climate change impacts

Role of extension in adaptation was captured by asking farmers to mention the different climate change adaptation measures employed, the source of knowledge of the adaptation measure and whether or not extensions was assisting them in adaptation process. Gbetibouo (2009) pointed out that despite the fact that most farmers perceived climate to have changed, very few have actually taken measures to adapt to the changes.

The source of knowledge on adaptation measures related to selected crop cultivated in the study area are shown on Table 3, which reveals that just 20% of farmers mentioned they learned the adaptation measures regarding plantain from extension agents. Majority (50%) learned the coping strategies from other farmers 60% of farmers learned the measure from other farmers for cassava.

Table 3: Source of adaptation knowledge on plantain

Crop	Source of adaptation measure	Frequency	Percentage
Plantain	Extension agent	32	20
	Farmer to farmer	80	50
	Personal experience	48	30
Cassava	Extension agent	16	10
	Farmer to farmer	96	60
	Personal experience	48	30
Cocoyam	Extension agent	16	10
	Farmer to farmer	80	50
	Personal experience	64	40
Cocoa	Extension agents	64	40
	Farmers field training	80	50
	Farmer to farmer	8	5
	Personal experience	8	5

Source: Field Survey, 2020

The adaptation measures regarding cocoyam were mostly learned from other farmers (50%). The principal source of adaptation knowledge regarding cocoa was farmer filed school as stated by 50% of farmers. Information diffusion channels have been self-help groups and meeting houses. Maddison (2006) noted that on the basis of what they observe their neighbors doing and the success that they have, farmers can update their own farm practice. Farmers were further asked if extension was assisting them in adaptation. To this effect, in table 4, 80% affirmed that extension agents were not assisting farmers as expected in climate change adaptation.

Table 4: Extension assistance to farmers on climate change adaptation

Extension assisting farmers in climate change adaptation	Frequency	Percentage
Yes	32	20
No	128	80
Total	160	100

Source: Field Survey, 2020

CONCLUSION AND RECOMMENDATION

Despite the negative impacts of climate change on crops, many farmers have not taken measures to adapt. Common adaption measures were change in planting dates, agroforestry, and change crop variety, treatment of suckers with chemical before sowing, increasing land under cultivation and replanting failed farms. Farmers were categorical that extension was not assisting them in climate change adaptation as they over-emphasized learning the adaptation measures out of experience. Farmer to farmer extension emerged to be the principal actor in information dissemination. Education of extension agents on the adaptation measures for specific climate change parameters. This can only be feasible if government develops its programme and specifies actions to be taken relative to a climate change parameter.

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ANCHOR BORROWERS' PROGRAMME IN NIGERIA: AN OVERVIEW OF INNOVATIVE AGRICULTURAL VALUE CHAIN FINANCING

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ABSTRACT
Inadequate financing has been one of the factors of poor performance in the Nigerian agriculture sector. The value chain financing of the Anchor Borrowers' Programme (ABP) of the Central Bank of Nigeria (CBN) was initiated to bridge the gap in finances for smallholder farmers. This study assessed the innovation and potentials of the programme in lifting the country out of the current food crises. A desktop review and in-depth interview with key informants were carried out for this study. Issues surrounding innovation, performance and shortfalls of the programme formed the focus of this research. The results revealed that the ABP displays innovation in the areas of finance models, distribution models and risk mitigation. The performance of the programme was noted in the areas of coverage and loan repayment. Meanwhile, issues, such as sharp practices among financial institution officials and multiple stakeholders, were observed as deficiencies in the programme's implementation. It is therefore recommended that a special purpose vehicle should be initiated by the CBN to accommodate the stakeholders as a crucial part for ease of implementation.
Keywords: Anchor Borrowers' Programme, Innovation, Nigerian agriculture, Value chain financing,

INTRODUCTION

The Nigerian agriculture has not been able to perform to its full potentials due to low financial provisions to the sector among other factors. Obviously, little finance is provided by Nigerian financial institutions to agricultural value chain. For instance, 1.7 percent of total commercial bank loans were advanced to the sector in comparison with other developing countries like Kenya and Brazil which registers 6 percent and 18 percent respectively (Sanusi, 2011 as cited in Okoro and Nwali, 2017). Financial institutions do not lend to agriculture due to its long gestation period, lack of prerequisite skills by smallholder farmers and lack of collateral facility (Stears Business, 2018). Moreover, small-scale farmers are unable to secure credit from formal sources (these include commercial banks, insurance companies and microfinance banks) largely due to high transaction cost and stringent conditions for loan application which are very difficult for the small-scale farmers to meet (Bassey, Edet and Agom, 2016).

Agricultural value chain financing involves flows of funds and financial services to and among various links in an agricultural value chain (Onumah and Meijerink, 2011). The value chain is an innovative approach which is holistic in nature and emphasises competitiveness and risk management of the entire chain (Kevin *et al.,* 2015). Thus, from the perspective of financing, the product market orientation of the value chain can be assumed to be a substitute for physical collateral and a means to overcome lending risks (Meyer, 2007; Casuga *et al.,* 2008; Shwedel, 2010; Miller and Jones, 2010; International Finance Corporation, 2012; Narayanan, 2012). Financial institutions often confront the problem of information asymmetry, leading to adverse selection, higher transaction costs and lending risks. The value chain actors, on the other hand, are better-informed about the businesses and relationships of one another, and the financial institutions can utilise this network to overcome the problem of asymmetric information and design financial products and/or services for different chain actors (Miller, 2012). Chain-based financing is thus considered an effective means for financial institutions to improve their business prospects in agriculture.

Thus, for sustainable growth within smallholder agriculture in Nigeria, there is need for a paradigm shift in which support services, especially financing, are provided to the farmers. Such an approach, as found in the Anchor Borrowers' Programme (ABP) of the Central Bank of Nigeria (CBN), involves a systematic value chain that links farmers to markets and gives access to finance. The programme thrust of the ABP is provision of farm inputs in kind and in cash for farm labour to smallholder farmers to boost crop production, stabilise inputs supply to agro processors and address the country's negative balance of payments on food. At harvest, the farmer supplies his/her produce to the agro-processor (Anchor) who pays the cash equivalent to the farmer's account. In addressing the foregoing, the study was guided by the following questions: What is innovative in the ABP? How has the ABP fared in addressing inadequate agricultural financing and what are the implementation challenges of the ABP? The study proceeded with the methodology adopted; elements of innovation in the ABP as well as performance/deficiencies of the programme were examined. Conclusion was drawn and recommendations were made.

METHODOLOGY

Explorative research design was adopted for this study. The study relied mainly on desktop review of relevant literature on the programme.

This method was chosen because the ABP is a recent addition in the Nigerian development financing with little information currently available on it. In the review of available literature (both print and internet based), issues, such as the element of innovation in the programme and performance/deficiencies in implementing the programme, formed the basis of the search. Meanwhile, in order to supplement the literature search, in-depth interviews with four (4) key informants were conducted. The choice of the key informants was based on their roles as major stakeholders in the ABP. The informants were: a CBN official, a processor (in an Anchor Company), an agro-input dealer and a representative of smallholder farmers. The interview guide contained questions such as: Has the ABP improved agricultural financing to the Small holder farmers (SHFs)? Has ABP facilitated easy access to agricultural financing and what are the challenges to the effectiveness of the ABP?

RESULTS AND DISCUSSION

Elements of innovation in the finance model of ABP

The finance model in the ABP is built around the Nigeria Incentive-Based Risk Sharing System for Agricultural Lending (NIRSAL). NIRSAL is an innovative mechanism targeted at de-risking lending to the agricultural sector (NIRSAL, 2018). By integrating end-to-end agricultural value chains with agricultural financing, NIRSAL is distinctive from previous schemes that have failed to deliver expected outcomes. The processor interviewed said she could not allow her investment to waste away after provision of training and inputs to the SHFs. She further said she always monitors farmers on their individual farms to ensure strict adherence to agronomic practices. NIRSAL is thus innovative as it incorporates resource pooling mechanism that enables smallholder farmers to be reached with supports comprising training, monitoring and follow-up to ensure compliance with good agronomic practices, from input quality control to harvesting in a controlled and coordinated manner.

Elements of innovation in the distribution model of the ABP

Resulting from the fact that most Nigerian farmers do not keep farm records (Dudafa, 2013), the Participating Financial Institutions (PFIs) are obliged to verify eligible farmers and their farmland. This verification is necessary to guide the PFIs on the farmers' cash flow, loan capacity and ability to offset the loan from the proceeds from the farm. Interview of a farmer groups' representative indicates that this approach has made the loan to be administered to genuine farmers. With this development, political farmers who often use their influence to obtain such loans in the previous schemes have been cut off. To ensure adequate loan performance, a check on each of the applicants is conducted on the National Collateral Registry (NCR). This platform is built into the ABP to ensure that none of the group members is in default of any other loan facility in any financial institution. The interview with an official of CBN affirms that the Bank Verification Number (BVN) that is utilised in the NCR has ensured disbursement of loan to credit worthy participants. Similarly innovative is needs for farmers to cross guarantee each other before loan disbursement. This is necessary to enhance effective loan repayment as any form of default by one member of the cooperative automatically puts all members in default irrespective of other members' level of loan repayment.

Elements of innovation in the risk mitigation of ABP

The scheme involves working with organised farmer cooperatives. Operating with these producer organisations is critical in farmers' selection, monitoring, distribution of information, agricultural extension services and loan disbursement (Cordaid, 2014). Against this backdrop, trainings on group dynamics are incorporated for the smallholder farmers. Being familiar with each other's farmers' organisations has the tendency to reduce risks from side-selling as well as to reduce the cost of doing business. Also, the provision of agricultural extension services is a crucial part of risk mitigation in the ABP. This involves trainings to ensure adherence to good agricultural practices. It is expected that adequate training on agronomic practices will increase farmers' yield and subsequently enhance loan repayment. Meanwhile, collateral in soft form involves a promise from the farmer to deliver the crop to the anchor company who then use the value to defray the farmer's loan.

Performance of the ABP

According to Central Bank of Nigeria (2017), the ABP has achieved landmark success in outreach and coverage, making it one of the most tremendous development finance interventions in Nigeria to date. There is a remarkable increase in yield as high as 7.5 to 8.0 tonnes per hectare by the farmers as compared to less than 2.0 tonnes per hectare prior to the intervention. In the same vein, a total sum of N2 billion (5.6 million USD) has been released to about 60,000 farmers in Kaduna State to cultivate maize, rice and soybeans (Actionaid, 2017). The ABP has helped in increasing the popularity of locally grown rice, and it is becoming more favoured in many homes because of its higher nutritional value compared to the imported rice. The success of the ABP for rice was apparent when the Lagos State Government brokered a Memorandum of Understanding with the Kebbi State Government for rice processing and

packaging. Kebbi State has the comparative advantage of producing local rice, while Lagos State has the comparative advantage of the market as the main commercial hub of the country. This synergy produced 'LAKE rice' towards the end of 2016. In December 2016, LAKE rice competes favourably well with imported rice and yields wide patronage, as it was sold at N12,500 (35 USD) per bag in contrast with N20,000 (56 USD) for imported rice. The success of the ABP for rice production prompted Central Bank of Nigeria (CBN) to expand its coverage to include other crops and livestock.

Implementation challenges of ABP

Evbuomwan and Okoye (2017) have observed some implementation challenges to the ABP. These include the following: inadequate extension services, side-selling of produce by farmers, distribution of inferior agrochemicals and non-viable seeds by agro-input dealers, involvement of many stakeholders with duplication of roles and sharp practices among PFIs staff. From the interview conducted, regular late arrival of production inputs was considered as implementation challenge by the smallholder farmers. Also, cost of trainings and monitoring of the smallholder farmers by the processor was deemed as the implementation challenge by the anchor companies. Similarly, poor loan repayment by some farmer groups was regarded as implementation challenge by PFIs.

CONCLUSION

The value chain finance model, as showcased in the ABP, is undoubtedly an innovative approach to development finance in Nigeria. Thus, giving cognisance to each node of the value chain has ensured minimal risks in the agricultural enterprise. It is crystal clear therefore that ABP has the latency to solve the problem of inadequate financing in the country's agricultural sector. The non-tangible collateral in the programme is innovative and has made finances available to smallholder farmers who are customarily deprived due to lack of physical assets. The distribution model, through farmer cooperatives, has facilitated vigilance on the part of group members at ensuring proper utilisation of the loan. This in the long run will engender effective loan repayment among members. Meanwhile, through adequate trainings (both agronomic and financial), smallholder farmers can experience an increase in yield with high potential to defray their indebtedness. Meanwhile, for a smooth running of the programme, a special purpose vehicle is suggested to be commissioned by the CBN. This will house all the stakeholders as a component to reduce the drudgery of dealing with many actors at a time. Also, a specialised extension agency should be co-opted into the programme. Graduates of the N-Power programme (Agricultural Extension) of the Federal Government should be attached to reputable anchor companies. There is also the need for programme implementation committee to decentralise timing of the release of funds for agricultural activities to reflect varying rainfall pattern in the country's agro-ecological zones. This approach will enhance right timing of fund to solve the issue of delay in input supply provisions. Also, reasonable cost-sharing formula for training and monitoring should be built into the programme. The current status of the anchor company being solely responsible for the cost may not be sustainable in the long run.

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SOCIAL RELATIONSHIP AND COPING STRATEGIES OF FOOD SCAVENGERS IN ARAMOKO EKITI, NIGERIA

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ABSTRACT
The study assesses social relationship and coping strategies of food scavengers in Aramoko Ekiti, Purposive sampling techniques were used to collect responses from consistent 30 food scavengers at social gatherings. Primary data on respondent's living condition, social relationships and coping strategies used when there are no ceremonies were obtained using an interview schedule and notes on observation on social relationships within and outside family member were taken. Data were analyzed using frequency counts, percentages, mean, case studies and Coping strategies use Index (CSUI). Findings of the occupancy status reveals that majority (83.3%) of the food scavenger obtained their drinking water from well and bore hole that either belongs to their community or neighbor, most (56.7%) of the respondents did not have access to any kind of toilet facilities in their homes and there was overcrowding in their houses. CSI reveals that reduction of meal taken (CSI-79) was ranked first, this was followed by borrowed food from a friend/relative and purchase food on credit (CSI-153 respectively) while the least coping strategy utilised was carrying of loads in the market (CSI-17). Social relationships of the food scavengers reveal that neighbours treat them with contempt. The study concluded that food scavengers have unpleasant living conditions and experienced social relationships problems. The study recommended that social welfare Programmes should be developed where there will be a supplementary food provision and clothing for these households and any empowerment programmes that embark on alleviating poverty should be monitored toward the target audiences.
Key Words: **Food scavenging, social relationships and coping strategies**.

INTRODUCTION
The severity of food insecurity and poverty of rural households has led some households into food scavenging. Food is necessary for growth and healthy living. Food security according to USDA (2006) includes at a minimum; (i) the ready availability of nutritionally adequate and safe foods, (ii) assured ability to acquire acceptable foods in socially acceptable ways (that is without resorting to emergency food supplies, scavenging, stealing, or other coping strategies). African Food Security Briefs (AFSB) estimated that approximately one out of every three persons in the sub-Saharan Africa is undernourished. Definition of food security from World Food Summit 1996 identified that there are four components of food security these include: availability, access, utilisation and stability of food (FAO 2008; Simon 2012). However, these components must be satisfied simultaneously to meet the objectives of food security Matemilola and Elegbede (2017). According to Alabi *et al*. (2019), Food scavenger refers to someone who collects food that have been discarded by others or excess food from parties (invited or non-invited), and/or searches through refuse bins for food and useful materials such as money and clothing.

Research findings reveal that most of the rural populace uses some coping strategies in order to avert the inadequate supply of food to meet the requirement of family consumption. James and Felix (2001) expressed that poverty alleviation is synonymous with the reduction in the hardship and poor state of people's welfare. Lokosang (2011), stated that the risk of inadequate access to food is determined by household's capacity to produce food, household purchasing power and several other socioeconomic factors that directly or indirectly affect these three major factors. GeoPoll's (n.d.) stated that, no person in any country should have to wonder where their next meal is coming from, or forgo food themselves in order to feed their children. Food scavengers usually engaged in informal activities and use other strategies to acquire food most especially when there are no parties around, some of the strategies used are sending children to neighbouring house, using themselves as laborers in other people farms, fetching water where there is building constructions etc so that they can cope with severity of hunger. However, these acts sometimes make them to be social outcasts.

Most scavengers faced a lot of challenges from people of higher status in the society due to their low social status. Ridges (2009) found that children who are engaged in begging, scavenging and street life suffer from problematic social relationship due to their poor socio status. Scavengers may experience difficulties in making and maintaining relation with non-scavengers and peers due to stigma and discrimination which is often seen in communication, community association and marriage etc. This deprived them of social relationships as most people believe that birds of the same feather flock together and would therefore not associate with them.

Based on the foregoing, this study assessed Coping strategies and social relationship

of food scavengers in Aramoko Ekiti. The Specific objectives were to:

1. describe the Living Condition of the identified Food Scavenging
2. describe the social relationships of the food scavengers within and outside their family members, and
3. identify the coping strategies of food scavengers when there are no ceremonies.

METHODOLOGY

The study area is Aramoko Ekiti, Ekiti State Nigeria. Purposive sampling techniques were used to collect responses from consistent 30 food scavengers at social gatherings; those identified were followed through their daily activities to collect the necessary information for the study for four months. Data was collected through the use of structured interview schedule was used to measure the quantitative data. 20 of the selected food scavengers were followed and monitored for four months at the rate of a visit per week (preferably on Sundays) where certain information and observation was made. Data capturing was by audio recording; a transcription of the interview was done and recorded. Notes on observation were taken particularly on social relationships such as interaction within and outside family member in their society. Data were analyzed using frequency counts, percentages, mean, case studies analyses was used to describe food scavenger's social relationships, this was done using a case study of 1 person per group and in this case the person represents the whole group. Therefore 5 case studies were used in describing 20 out of the selected food scavengers in Aramoko Ekiti and Coping Strategies Use Index (CSUI) was used to assess the extent of use of the coping strategies by these households when there are no parties.

RESULTS AND DISCUSION

Living condition of the identified food scavenging in Aramoko Ekiti

Alabi *et al.* (2019) provided information on the socioeconomic characteristics of food scavengers in the study area and reported that most of the food scavengers were youth, with no formal education and no stable occupation. These bring about their low income per month and contribute highly to their involvement in food scavenging.

The analysis of the occupancy status as shown in Table 1 reveals that majority of the respondents lived in free temporary houses. Majority (83.3%) of the identified food scavengers obtained their drinking water from well and bore hole that either belongs to their community or neighbor, most (56.7%) of the respondents did not have access to any kind of toilet facilities in their homes and they use bucket and bush around their households as toilet facilities.

Table 1: Living Condition of the food scavengers in Aramoko Ekiti n=30

Living condition	Frequency	Percentage	Mode
Occupancy status			
Renting	3	10	Dwelling provided for free
Dwelling provided for free Temporary	14	46.7	
Shelter	13	43.3	
Source of drinking water			Well/borehole
Supply Water piped inside house	0		
Supply Water (piped), outside	2	6.6	
Stream	3	10	
Well/ borehole	25	83.3	
Water treatment			
No treatment	27	90	No treatment
Addition of Alum	3	10	
Toilet facility used			
None (open field)	6	20	Open field and bush
Bush	11	36.7	
Ordinary Pit Latrine	11	36.7	
Water Closet	2	6.6	
Energy source for cooking			
Electricity	1	3.3	Fire wood
Kerosene	5	16.7	
Firewood	15	50	
Charcoal	9	30	

However, this has serious implication on their health status as it can cause diseases. Moreover, the household concerned was deprived as these household cook mostly with firewood and this have serious implication on their health status as it may cause damages to their eyes when they

get older. There was overcrowding in their houses as most of them live in a room and parlor with more than six people. However, when the condition of the houses was considered, some of their houses were not completely plaster as indicated. During interview with one of the respondent children, most of them sleep on bad mattress that was acquired from relatives or neighbors while some spread cloth on the floor at night.

Conclusively, in analyzing food scavengers living condition 33.3% of the respondents have pleasant living conditions while 66.7% have unpleasant living condition. These people live in free houses with leaking roofs and rely on water from Well/borehole that is far from their homes. They did not have toilet facilities and used fire wood as energy source for cooking among others. This agrees with the findings of Asikha (2010) that people are poor when they lack the tools and the capacity to subdue their environment.

Coping strategies used by the identified food scavengers

Result in Table 2 shows that the reduction of meal taken had the highest CSI with a value of 79 and was ranked first among the respondents. This was followed by the borrowed food or on help from a friend or relative and purchase food on credit (CSI-153 respectively). The least food security coping strategy utilised was carrying of loads in the market (CSI-17). This implies all the coping strategies used to acquire food when there no ceremonies around do not necessarily mean that they were successful in achieving food security but rather make them to be more social outcast. This is in line with Mjonono, Ngidi and Hendriks (2009), that employing coping strategy index does not necessarily mean that the choice of strategies used is always successful in achieving the intended objectives.

Table 2: Coping Strategy used index by the identified Food Scavengers in Aramoko Ekiti

Coping Strategies	Frequently (3)	Occassionally (2)	Rarely (1)	Not used (0)	CSUI	Perc of households	Rank
Begging for alms	12	8	6	4	58	7.5	7th
Reduction of meal taken	21	7	2	0	79	10.2	1st
Eating once a day	12	10	8		64	8.3	4th
Borrow food or rely on help from a friend or relative	18	11	1	0	77	10.0	2nd
Purchase food on credit	20	7	2	1	76	10.0	2nd
Solving it spiritually by fasting and prayer	5	2	15	8	34	4.4	12th
Send household members to eat elsewhere?	13	5	11	1	60	7.8	6th
Limit portion size at mealtimes	9	14	7	0	62	8.0	5th
Restrict consumption of adults	12	6	7	5	55	7.1	8th
Washing of clothes in order to get money to buy food	2	4	8	16	22	2.9	14th
Engage in house help for neighbors so that member of family can eat	5	11	9	5	35	4.5	11th
Working in others people farm as laborers	5	7	10	8	32	4.2	13th
Participate in off- farm jobs	5	8	14	3	45	5.8	9th
Washing of plates at ceremonies/Restaurants	1	6	5	18	18	2.3	15th
Carrying of loads in the market	5		2	23	17	2.2	16th
Clearing of field	5	7	9	9	38	4.9	10th
Total					772	100	

Social relationship of identified food scavengers

Table 3 shows the commonalities among the 20 food scavengers that were monitored for four months. Food scavengers reveal that neighbours treat them with contempt.

This result shares the same conclusion with Ridge (2009) who stated that children in difficult circumstances, like scavenging children, attach particular importance to sustaining good friendships and being part of the social groups, however inability to attain these impacts heavily on children's friendships and social relationships which generates significant anxiety, unhappiness and social insecurity.

Table 3: Commonalities among the 20 food scavengers that was followed for four months

S/N	No in a category	Commonalities
1	2	Widowed, taking responsibilities of food and non- food items, large household size, some children in school, poor educational status, poor living condition, laborers and odd jobs such as washing peoples' cloths.
2	4	Small household size, single, drop out of school, carrying of loads in the market, not living with parents and preferred odd jobs than been artisan.
3	3	Physically challenged, irresponsible father, no formal education, migrants, clearing of fields at ceremonies
4	8	Single mother, poor educational status, odd jobs with meager earning, poor living condition, some children in school, some of their children got pregnant and lived with them contributing to their large family size
5	3	Hawking, washing of plates at ceremonies, running errands for neighbors, small household size with meager earning, living alone with children without a known husband and drop out of school.

RECOMMENDATION

Based on the findings and conclusions dra wn from this study, the following recommendations were:

- Social welfare Programmes should be developed where there will be a supplementary food provision and clothing for these households because their developmental issue is of paramount importance.
- NGO's who are into small scale farming business should give loan (with little or no interest) to the food scavengers in other to encourage them into small scale farming enterprise and necessary skill empowerment programme on specific farm enterprise.
- Any governmental empowerment programmes that embark on alleviating poverty should be monitored. Also, there should be proper evaluation of necessary resources geared toward the target audiences.

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ANALYSIS OF WELLBEING STATUS OF RURAL FARMING HOUSEHOLDS AFFECTED BY MALARIA INFECTION IN NIGER STATE OF NIGERIA

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ABSTRACT
This study analysed wellbeing status of rural farming households affected by malaria infection in Niger State of Nigeria. Sample sizes of 199 rural farming households were selected using multi-stage sampling method. Structured questionnaire complimented with interview scheduled were used for data collection. Data collected were analyzed using descriptive statistics such as (frequency, percentages and mean). The findings revealed that mosquito parasite ($\bar{X}$ = 4.52), poor sanitation ($\bar{X}$ = 4.17) and change of weather ($\bar{X}$ = 3.54) were the major causes of malaria among rural farming households. The most satisfied wellbeing indicators were community connectedness ($\bar{X}$ = 6.75), personal relationship ($\bar{X}$ = 6.75) and spiritual or religious activities (6.43).The most serious constraints faced by rural households in the treating of malaria were; high cost paid (2.75), unfavourable climatic condition for vector breeding ($\bar{X}$ = 2.46) and inadequate capital ($\bar{X}$ = 2.43). It is recommended that proactive malaria drugs and adequate preventive measures should be provided by government and roll back malaria in order to reduce household expenses on malaria treatment.
KEYWORDS: Effects; Malaria Disease; Households; Well-being; Status

INTRODUCTION
Malaria disease has been attributed to poverty in African countries (Anumudu *et al.*, 2006). Malaria disease is rated high in most rural areas of Sub-Sahara Africa and attacks farmers on average of four times annually with an average of 10 to 14 days of incapacitation (Alaba and Alaba, 2014). Reports have shown that more than 2.7 million people die yearly from malaria related sickness. Also, more than 75% of these mortality figures are African children (Multilateral Initiative on Malaria (MIM), 2015). Moreover, malaria disease and agriculture are interwoven, this is because agricultural environments provide conducive environments for breeding of disease vector which causes malaria in human beings. The global effect of malaria on human health, productivity and general well-being is profound, and Africa has been badly affected by this menace that had led to high mortality among farming households (Kwadwo *et al.,* 2011). The malaria disease has also resulted to health and economic problem. At the farmers' household level, it affects productivity of the people thereby limiting farmers' ability to purchase assets, while at farm level, it hinders farmers from maximizing their output. Most households often spend exorbitant income and time on malaria disease prevention and treatment with a lot of efforts committed to control mosquitoes around their environment. The cost of prevention and treatment often exhaust farmers' scarce resources that could have been used in production, while productive time are been spent caring for those under malaria attack (Ogunniyi *et al.,* 2015). Malaria disease has a direct effect on farmers' income, wealth, labour productivity and labour market participation of both the sick and caregivers. In terms of resource wastefulness, more than 13 percent of total small farming households' expenditure in Nigeria is on treating malaria disease, while many are simply too poor to pay for adequate prevention and treatment of the disease (World Health Organisation (WHO), 2011). The loss to households could however be outrageous with the current trend in malaria disease resistance to traditional first-line drugs. Such loss has serious effect on poor households who are already malnourished, live under severe condition and constitute majority of the populace. The objective of the study area to: identify the perceived causes of malaria infection, determine the wellbeing status of rural farming households and examine the constraints faced by rural farming households in treating malaria disease

METHODOLOGY
The study was conducted in Niger State. Niger state is located in the Guinea Savannah ecological zone of Nigeria, the state has the longest land mass among the states in Nigeria with total land area of 76,364 km^2 accounting for about eight percent of Nigeria land areas. About 95% are good for arable land production of staple crops like rice, cassava, and guinea corn. The state lies between Longitude 3^o 30' and 7^o 20' Eastand Latitude 8^o 20' and 11^o 30' North, with a population of about 3,950,249 (National Population Commission) NPC 2006 with a growth rate of 3.9%. The State has an estimated population of 6,374,000 in 2018 (Niger State Geographical Information System (NSGIS), 2018). Multi-stage sampling procedure was used for the study. The first stage involved purposive selection of Agricultural Zone I, II and III in order to establish equal representation. The second stage involved random selection of one (1) Extension Block from each of the zones selected to get a total number of three (3) Extension Blocks. The third stage involved random selection of two (2)

Extension Cells from each of the Extension Block to get a total number of six (6) Extension Cells. The fourth stage will involve random selection of two (2) Sub-Cells from each of the Extension Cell to get a total of twelve (12) Sub-Cells. The fifth stage involved proportionate sampling by 10% the farming households based on the sampling frame of each sub-cells. In overall, a total of 199 respondents was selected as the sample size for the study. Primary data was used for this study. The data was collected by the researcher and trained enumerator with the aid of structured questionnaire complimented with interview schedule. Objective I and III were achieved with descriptive statistics (such as frequency counts, percentage and mean).

Perceived causes of malaria

Objective I was measured using 5-point Likert scale, and were allotted as follows: Strongly agree 5, Agree 4, undecided 3, disagree 2, slightly disagree 1. A mean score of 3.0 was obtained by adding 1+ 2+ 3+ 4+ 5=15 and dividing by 5. The decision rule was any mean ($\bar{X}$) scores > 3.0, indicates agree, while scores < 3.0 was termed disagree.

Well-being status of rural farming households

This was determined using personal well-being status adopted from (Fatoki and Ajibola, 2020). The procedures that determine the well-being of farmers will depend on eight (8) items (standard of living, personal health, live achievement, personal relationship, personal safety, community connectedness, future security, spiritual/religion, self-confidence, availability of quality and quantity of inputs). The scale was operationalized by a number continuum in linear scale that range between 0 – 10. The mean score of 5.5 was considered as satisfied, any mean scores less than 5.5 was considered not satisfied.

Constraints faced in treating malaria disease

Objective III was measured using 3-point Likert type rating scale of Very severe (3), Severe (2) and Not Severe (1). A mean score value of 2.0 was obtained by adding 1 + 2+ 3 = 6 and divide by 3. The decision rule is any mean ($\overline{X}$) score ≥2.0 indicates Severe, while mean score < 2.0 are termed Not severe

RESULT AND DISCUSSIONS

Perceived causes of malaria disease

Table 1 showed that respondents in the study area agreed with the following causes of malaria infection; mosquito parasite ($\bar{X}$ = 4.52) ranked 1st, this was followed by poor sanitation ($\bar{X}$ = 4.17) which ranked 2nd. This could be associated with the fact that dirty environment serves as hideout for malaria vector thereby increases famers' exposure to mosquito bite. Farming household members could also be exposed to malaria as a result of frequent farming activities and its related stress. This finding concurs with that of Ibrahim *et al.* (2017), who reported that agricultural activities increase exposure of individuals to mosquito bites which could lead to malaria transmission. Also, change of weather ($\bar{X}$ = 3.55) ranked 3rd. It is expected change in weather is always accompanied by fever that could negatively affect farming households' productivity and wellbeing status.

Table 1 Distribution of respondents according to perceived causes of malaria (n=199)

Variables	SA	A	UN	D	SD	Sum	Mean	D	R
Mosquito parasites	146 (73.4)	24 (12.1)	18 (9.1)	9 (4.5)	2 (1.1)	900	4.52	A	1st
Poor sanitation	102 (51.3)	61 (30.6)	11 (5.5)	18 (9.1)	7 (3.5)	830	4.17	A	2nd
Change of weather	42 (21.1)	77 (38.7)	42 (21.1)	24 (12.1)	14 (7.0)	706	3.55	A	3rd
Nature	19 (9.6)	45 (22.6)	95 (47.7)	30 (15.1)	10 (5.0)	630	3.17	A	4th
Water pollution	46 (23.1)	40 (20.1)	38 (19.1)	47 (23.6)	28 (14.1)	626	3.15	A	5th
Rain	38 (19.1)	56 (28.1)	29 (14.8)	48 (24.1)	28 (14.1)	625	3.14	A	6th

Sources: Field survey, 2021

Note: SA=Strongly Agreed, A=Agreed, UN=Undecided, D=Disagreed, SD=Strongly Disagreed, DE=Decision, R=Ranking

Wellbeing status of rural households affected by malaria infection

Table 2 revealed that the respondents were satisfied with all the well-being indicators despite their different level of malaria infection in the study area. The wellbeing indicators were ranked as followed; community connectedness ($\bar{X}$ = 6.75) ranked 1st, personal relationship ($\overline{X}$=6.75) ranked 2nd, spiritual or religious activities ($\overline{X}$=6.43) ranked 3rd, Life achievement ($\overline{X}$=6.41) ranked 4th, future security ($\overline{X}$=6.28) ranked 5th, personal safety ($\overline{X}$=6.15) ranked 6th, standard of leaving ranked 7th and personal health ($\overline{X}$=5.81) ranked 8th. This

finding agreed with Fatoki and Ajibola (2020) who reported rice farmers in Nasarawa State, Nigeria were satisfied with their life achievement, personal relationship, standard of living and community connectedness.

Table 2: Distribution of respondents according to their wellbeing status (n=199)

Indicators	Mean	Decision	Rank
Community connectedness despite malaria	6.89	Satisfy	1st
Personal relationship despite malaria	6.75	Satisfy	2nd
Spiritual or religious activities despite malaria	6.43	Satisfy	3rd
Life achievement despite malaria	6.41	Satisfy	4th
Future security despite malaria	6.28	Satisfy	5th
Personal safety despite malaria	6.15	Satisfy	6th
Standard of leaving despite malaria	6.06	Satisfy	7th
Personal health despite malaria	5.81	Satisfy	8th

Sources: Field survey, 2021

Constraints faced by rural farming households in treating malaria disease

Table 3 indicates the seriousness of the constraints faced by rural households in treating malaria disease. The following constraints were perceived serious by the respondents in the study area; high cost paid by farmers ($\overline{X}$=2.75) which ranked 1st. High cost of malaria treatment has been a major concern in the treatment of malaria in Niger State. This usually forced rural populace to take shelter with herd sellers not minding the negative implication on their immune system. Favourable climatic condition for vector ($\overline{X}$=2.47) ranked 2nd, poor hygienic condition of larger proportions of rural households in Nigeria increase the spread of tropical diseases. Inadequate capital ($\bar{X}$ = 2.43) ranked 3rd, majority of rural household do not have enough capital to access quality health care in the treatment of malaria. Also, inadequate human resources ranked 4th, lack of adequate medical personnel in the remote areas contributed to persistence recurrent of malaria infection in Niger State. This finding agreed with that of Onah *et al.* (2017), reported that lack of adequately trained personnels is common in Nigeria.

Table 3: Constraints faced by rural farming households in treating malaria disease (n=199)

Variables	Very Serious	Serious	Not serious	Sum	Mean	Ranking	Decision
High cost paid by farmers	155 (77.9)	39 (19.6)	5 (2.5)	548	2.75	1st	S
Favourable climatic condition for vector	116 (58.3)	60 (30.2)	23 (11.6)	491	2.47	2nd	S
Inadequate capital	102 (51.3)	79 (39.7)	18 (9.1)	484	2.43	3rd	S
Donor dependency	97 (48.7)	70 (35.2)	32 (16.1)	463	2.33	4th	S
Inadequate human resources	87 (43.7)	96 (48.2)	16 (8.0)	469	2.36	5th	S
Time waste in taking care of the sick person	91 (45.3)	71 (35.7)	37 (18.6)	452	2.27	6th	S
Poor health facilities	75 (37.7)	87 (43.7)	37 (18.6)	436	2.19	7th	S
Long distance to health centers	44 (22.1)	61 (30.7)	94 (47.2)	348	1.75	8th	NS

Sources: Field survey, 2021

CONCLUSION AND RECOMMENDATIONS

It could be concluded that mosquito parasite, poor sanitation and change in weather were the most perceived causes of malaria disease. The most satisfied wellbeing indicators were community connectedness, personal relationship and spiritual or religious activities. The most constraints faced by rural farming households in treating malaria disease were high cost paid by farmers for treatment, favourable climatic condition for vector and inadequate capital. It is recommended that Government in collaboration with roll back malaria should increase distribution of treated mosquito nets and sensitize farmers on the need to maintain hygienic environment. Also, proper measures should be taken by farmers to prevent malaria from affecting their productive time which could severely affect their wellbeing status

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ASSESSMENT OF FOOD SECURITY AND LIVELIHOOD STATUS OF RURAL HOUSEHOLDS ADOPTING IMPROVED RICE VARIETIES IN THE NORTH CENTRAL, NIGERIA

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ABSTRACT
The study assessed food security and livelihood status of rural households adopting improved rice varieties in the North Central, Nigeria. Sample size of 394 rice farmers were selected using multi-stage sampling method. Structured questionnaire complimented with interview scheduled were used for data collection. Data were analysed using food security index, livelihood status index and Kendall's coefficient of concordance. The study showed that 92.1% of rice farmers in the study area were food secured. Also, 65.5% of rice farmers in the study area had high livelihood status. The major constraints faced by rice farmers in the study area were poor road network ($\overline{X}$=5.54), inadequate improved varieties ($\overline{X}$=5.54) and inadequate output ($\overline{X}$=5.72). It is recommended that farmers should diversify into other income generating activities in order to augment their livelihood status. Also, feeder roads should be constructed by State and LGAs authority in order to ease the movement of farmers produce from farms to point of processing.
Keywords: Food Security; Livelihood Status; Rural Households; Improved; Rice

INTRODUCTION
Rice (*Oryza sativa*) is one of the most cultivated crops in the world. It is third most important cereal grown and consumed globally after wheat and maize (Agro Nigeria, 2018). In Nigeria, rice is cultivated in almost all ecological belt of the country as they all provide favourable environments to support the crop cultivation (Agro Nigeria, 2018). Many improved rice varieties exist that can be grown in Nigeria, National Cereal Research Institute (NCRI) Baddegi had released many improved rice varieties for cultivation suitable to different agro-climatic condition, they were classified into four main groups; Early maturity varieties, these includes FARO 27 and FARO 44, Medium maturity varieties, these includes, FARO 29, FARO 35, FARO 37, FARO 50, FARO 51, FARO 52 and FARO 57. While, late maturity varieties include FARO 7. FARO 8, FARO 12, FARO 14 and FARO 15 and deep water (floating) arears, FARO 7, FARO 14 and FARO 15 respectively (NCRI, 2009). FARO 44 is one of the many developed rice varieties that is widely distributed and highly adopted compared to other developed varieties (Adesina, 2012). Evidently, food security and rural livelihood will not be thoroughly achieved without rapid agricultural growth. Assisting the rural poor farmers to enhance their livelihood and food security in a sustainable manner is therefore a great challenge. Household food security is a term use to described as an access, at all times, to adequate food for an active and healthy life, which includes access to nutritionally safe foods and assured ability to acquire foods in socially satisfactory ways (FAO 2011). The main aim of the study is to assess the food security and livelihood status of rural households adopting improved rice varieties in the North Central, Nigeria. The specific objectives are to: determine the food security of adopters of improved rice varieties; determine the livelihood statuses of adopters of improved rice varieties and examine constraints to the adoption of improved rice varieties.

METHODOLOGY
The study was conducted in Kwara and Niger States. Kwara State is located in the North Central Nigeria. The State lies between latitudes 8º-10ºN and longitude 2º45'-6º4'E of the Greenwich meridian. It covers an estimated land area of about 36,825 square kilometers or 8% of the total area of Nigeria. According to National Population Census (NPC) (2006), the state has a population of 2,591,555 peoples, spread across the sixteen Local Government Areas, which was projected to be 3,005,409 as at 2017 using an annual population growth rate of 2.5%. Niger State can be found in the Guinea Savannah ecological zone of Nigeria. In terms of land mass, it is the largest State in Nigeria. It covers a total land area of 74,224km^2 thus accounting for about eight percent of Nigeria's land area. About 85% of its land area is good for arable crop production (Niger State Geographical information system, 2007). It is located within longitude 3º 30' and 7º 20' East and latitude 8º 20' and 11º 30' North, with a population of about 3,950,249 (NPC, 2006) and with a growth rate of 3.2%, the State an estimated population of 5,586,000 in 2017 (Niger State Geographical Information System, 2015).

Primary data were used for this study. The data were collected through the use of questionnaire complemented with interview schedule.

Analytical tools: Food security Index

To determined food security and livelihood status of adopters of improved rice

verities, (Objective I) was achieved using Food security Index, decision on whether the rural households adopting improved rice verities are food secure or insecure ($F_i \geq 1$=food secure household and $F_i < 1$=food insecure household).

Food security model:

$$Fi = \frac{per\ capita\ food\ expenditure\ of\ ith\ household}{\frac{2}{3} mean\ per\ capita\ food\ expenditure\ of\ all\ household} \quad (1)$$

Where:
Fi = food security index
Decision Rule:

When Fi ≥1, it implies that i[th] household is food secure, but when Fi< 1, it implies that the i[th] household is food insecure.

Livelihood status

Objective II was achieved using livelihood status index. The index is expressed as;

$$LSI = \frac{\text{Number of livelihood factors benefited by ith respondent}}{\text{Total number of livelihood benefits}} \quad (2)$$

LSI = Livelihood Status Index

The researcher thereby categorized the livelihood status of respondents as follows:
≤0.25=very low livelihood status; 0.26–0.49= low livelihood status; 0.50–0.75= high livelihood status; ≥0.76=very high livelihood status

Kendall's coefficient of concordance

To examine the constraint associated with the use of improved rice verities (Objective III). Kendall's coefficient of concordance (W) described by Mattson was employed to rank the problems. A lower mean rank indicates the problem is not severe and vice versa. It is mathematically expressed as:

$$W = \frac{12 \sum R^{-2}\, i - 3N(N-1)^2}{N(N-1)} \quad (3)$$

Where;
W = Kendell's value,
N= Total sample size,
R = Mean of the rank,
i=ith term

R=mean of the rank. The kendall's coefficient of concordance (W) is a measure of the extent of agreement or disagreement among farmers of the ranking obtained. The value of W is positive and ranges from zero to one where one denotes perfect agreement among farmers of the rankings and zero denotes maximum disagreement

RESULT AND DISCUSSIONS

Food security

Table 1 showed that majority of rice farmers (96.3%) and (90.5%) in Kwara and Niger State respectively were food secured. The pooled results showed that 92.1% of the rice farmers were food secured. This is an indication that majority of rice producers in the study were food secured and this is expected to improve their livelihood status and standard of living of rice farmers in the study area. This finding agreed with Owolabi *et al.* (2016) who reported that majority of crop farmers in Kaduna State, Nigeria were food secure.

Table 1: Distribution of rice farmers according to food security

Food security	Kwara State (n=109)	Niger State (n=285)	Pooled (n=394)
	Freq (%)	Freq (%)	Freq (%)
Secure	105 (96.3)	258 (90.5)	363 (92.1)
Not secure	4 (3.7)	27 (9.4)	31 (7.9)

Sources: Field survey, (2019

Livelihood status

Table 2 showed the distribution of respondents according to livelihood status in study the area. Table showed 80.7% of rice farmers in Kwara State had low livelihood status while 84.7% of rice farmers in Niger had high livelihood status. The pooled result also showed that 65.5% of rice farmers in the study area had high livelihood status, implying adoption of improved rice varieties had significant impacted rice farmers livelihood in the study area. This finding concurs with that of Mohammed *et al.* (2018) who reported that most of the farming populace in Niger and Kogi States, Nigeria had moderate livelihood on the utilisation of forest resources.

Table 2: Distribution of rice farmers according to livelihood status

Livelihood status	Livelihood class	Kwara State (n=109)	Niger State (n=285)	Pooled (n=394)
		Freq (%)	Freq (%)	Freq (%)
Very high	≥ 0.76	4 (3.7)	4 (1.4)	8 (2.0)
High	0.50-0.75	16 (14.7)	242 (84.9)	258 (65.5)
Low	0.26-0.49	88 (80.7)	22 (7.7)	110 (27.9)
Very Low	≤ 25	1 (0.9)	17 (5.9)	18 (4.6)

Sources: Field survey, (2019)

Constraints to the adoption of improved rice varieties

The pooled results in Table 3 showed that Kendall's coefficient of concordance obtained in the analysis was 0.91 and significant at 1% level of probability, implying that 91.0% of rice farmers agreed on the outcome of the ranking. The result in Kwara State revealed 38.0% level of probability while Niger State was 31.0% level of probability. The result of the pooled showed a strong agreement on the ranking outcome while Kwara and Niger showed a weak agreement. Table 5 showed that thirteen constraints were identified as key problems faced by farmers in the adoption of improved rice varieties. The pooled results indicated that poor road network ($\bar{X}$ = 5.54) ranked 1st as the most serious constraint faced by rice farmers in the adoption of improved rice varieties. Poor road network is one of the most serious problems encountered by farmers in the Nigeria. The finding was supported by Martey *et al.* (2014), who reported that poor road network is one of the major problems encountered by farmers in Sub-Sahara Africa. Also, inadequate improved rice varieties ($\bar{X}$ = 5.59) ranked 2nd. This might be due to inability of rice farmers to avoid the available improved rice varieties. Also, inadequate output ($\bar{X}$ = 5.72) ranked 3rd, implying that rice farmers despite adopting improved rice varieties could not get the desired output. This agreed with Mohammed *et al*. (2019), who reported that inadequate output and inadequate improved varieties were one of the challenges to Adoption of Faro (39) Rice Project Technology by Farmers in Agricultural Zone 1 of Niger State, Nigeria. Also, inadequate input ($\bar{X}$ = 6.03) and inadequate extension ($\bar{X}$ = 7.17) were ranked 4th and 5th respectively

Table 3: Constraints to the adoption of improved rice varieties

Variables	Kwara State (n=109) Mean ($\bar{x}$)	Ranking	Niger State (n=285) Mean ($\bar{x}$)	Ranking	Pooled (n=394) Mean ($\bar{x}$)	Ranking
Inadequate output	5.92	1st	5.65	3rd	5.72	3rd
Inadequate input	6.64	4th	5.80	4th	6.03	4th
Inadequate extension services	7.33	6th	7.11	5th	7.17	5th
Problem of fertilizer and agrochemical	7.13	5th	7.47	6th	7.38	6th
Inadequate improved varieties	6.03	2nd	5.42	2nd	5.59	2nd
Poor road network	6.38	3rd	5.22	1st	5.54	1st
Kendall's W	0.38		0.13		0.91	
Chi-Squared	49.285		430.503		430.294	
Degree	7		7		7	
Asymptotic significant	0.000***		0.000***		0.000***	

Sources: Field survey, 2019

CONCLUSION AND RECOMMENDATIONS

It can be concluded that majority of the farming populace in the study area were food secure and also have high livelihood. Also, poor road network and inadequate improved varieties were the major constraints faced by adopters in the study area. The following recommendations were made; extension officers should ensure farmers are equipped with training, skills and knowledge on how to breakeven with the adoption of improved rice varieties, rice farmers should diversify into other income generating activities in order to enhance their livelihood status. Also, feeder roads should be constructed by State and LGAs authority in order to ease the movement of farmers produce from farms to point of processing.

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PERCEIVED EFFECTS OF RICE FARMER ASSOCIATION OF NIGERIA (RIFAN) SERVICES ON MEMBER'S LIVELIHOOD STATUS IN NIGER STATE, NIGERIA

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ABSTRACT
This study analyzed perceived effects of rice farmers association of Nigeria (RIFAN) services on members livelihood Status in Niger State, Nigeria. A multi-stage sampling procedure were used to select 202 farmers and data collected through structured questionnaire were analyzed using frequency distribution, means, percentages. The finding showed that respondents had high extent of participation in rice production ($\overline{X}$=3.25), processing ($\overline{X}$=3.15) trading and marketing ($\overline{X}$=3.15). The most perceived influence of RIFAN to livelihood status of respondents in the study area were opportunity to own land for rice farming ($\overline{X}$=4.46), achieve high quality product ($\overline{X}$=4.22), opportunity to own mobile phones ($\overline{X}$=4.14), enhanced with best farming practices and techniques ($\overline{X}$=4.05). The major constraints associated with farmers participation in RIFAN includes; lack of members corporation ($\overline{X}$=2.65), poor networking among members ($\overline{X}$=2.58), poor management ($\overline{X}$=2.51) and poor maintenance of storage facilities ($\bar{X}$ =2.50). It's recommended that group activities should be properly monitored by members and relevant authorities to curb perceived leadership constraints. Also, default of repayment of loans by farmers and corruption tendencies of the group leaders should be addressed.
Keywords: Effects, RIFAN, Services, Members, Livelihood status.

INTRODUCTION

Rice (*Oryza spp*) is a cereal crop which has become a staple food of considerable importance to more than 4.8 billion people in the world (Food and agricultural organisation (FAO), 2016). RIFAN is the global advocate for all segments of the Nigerian rice industry with a mission to promote and protect the interests of its members. RIFAN has over 12.2 million members who are involved in rice cultivation, milling, storage, marketing, export, research and training allied businesses. The association is recognized by the Government of Nigeria and works closely with its ministries and agencies to achieve their mandate. RIFAN also render consultancy services to government in policy decisions concerning rice and organise seminars and conferences for members on business opportunities in rice production, processing and marketing (RIFAN, 2020). Cumulatively, RIFAN has over 10,000 members involved in the management and storage of over 2million metric tons of rice across the 36 states of the Federation including the Federal Capital Territory (FCT) thus, making RIFAN the leader in management and storage of local rice with a daily net worth of N1.2 billion in Nigeria. To this end, Central Bank of Nigeria has not allocated forex to rice importers since 2015 (RIFAN, 2020). However, the capacity of the rice sector alone to continue to sustain the livelihoods of rural households especially in Niger State is very much in doubt as dependence upon subsistence farming confronts households with a precarious living, exposing them to adverse contingencies especially flood which always make them "risk-managers" (Dary and Kuunibe, 2012). A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in future, while not undermining the natural resource base (Rejwan*et al.*, 2012). Farmers' livelihood in rural communities are shaped by their knowledge, inherent capabilities and assets. Rural farmers also lack access to social assets such as networks and associations, which weakens their influence in political decision-making process and collective representation (International Food Policy Research Institute (IFPRI), 2012). The objectives of the study area to determine extent of members' participation in RIFAN activities; determine perceived Effect of RIFAN on members livelihood and identify constraints faced by members of RIFAN in the study area.

METHODOLOGY

This study was conducted in Niger State, Nigeria. The state is located in the North-central part of Nigeria and lies between Longitude 3^0 30^1 and 7^0 20^1 East of the Greenwich Meridian and Latitude 8^0 20^1 and 11^0 30^1 North of the equator (Niger State Bureau of statistics (NSBS), 2013). The State presently comprises of 25 Local Government Areas (LGAs) and it is made up of three major ethnic groups which include Nupe, Gbagyi and Hausa. The population estimate of the state as at 2006 census stated at which include 3,954,772 (NPC, 2006). The projected population based on the growth rate of 2.5% per annum is 5,556,200 people by 2020 (National Population Commission of Nigeria (NPCN), 2016). Niger State is also endowed with abundant hectares of fertile land capable of producing most of the staple

crops such as yam, cassava, cowpea, sorghum, maize and rice. Three sampling technique were adopted for this study. The State was divided into three Agricultural zones (Zone I, Zone II and Zone III), the first stage involved purposive selection of four (4) LGA from each of the zones based on high rice production and RIFAN activities in the area. Thus 12 LGAs were selected for the study. The second stage were selection of registered RIFAN members across the 12 selected LGAs in the state. This will be obtained from RIFAN officials and Niger State Agricultural and Mechanization Development Authority (NAMDA). The third stage Yamanne formula were used to select respondents from the sample frame of the study. Thus, a total of 202 registered RIFAN members were selected for this study. Primary data were used for this study. The data were collected through the use of questionnaire complemented with interview schedule.

Analytical tools

Objectives i, ii and iii were achieved using descriptive statistics such as mean, percentages and frequency distribution

Farmers' level of participation in RIFAN activities for livelihood

Farmers' level of participation in RIFAN activities for livelihood upliftment were measured using 4-point Likert rating scale of Very High (VH) = 4, High (H)=3, Low (L)=2, and Very Low (VL)=1, and the reference mean for the scale is three (4+3+2+1=10/4=2.5). Thus, the following decisions were derived; Mean scores ≥2.5 were adjudged High participation, while < 2.5 is low

Perceived effects of RIFAN on members livelihood

This was measured using 5-point Likert rating scale of, Strong Agreed (SA) = 5, Agreed (A) = 4, Undecided (UD) = 3, Disagreed (DA) = 2, Strongly disagreed (SDA)=1, and The reference mean for the scale is three (5+4+3+2+1=15/5=3.0). Thus, the following decisions were derived; Mean scores ≥3.0 will be adjudged High participation, while mean scores <3.0 were adjudged low participation.

Constraints faced by members of RIFAN

The constraints faced by members of RIFAN were measured through the use of a 3-point Likert type rating scale of Very Severe (VS)=3, Less Severe (LS)=2, and Not severe (NS)=1.The reference mean for the scale is two (3+2+1=6/3=2). Thus, the following decisions were derived;
mean scores ≥2 were adjudged very severe, while mean scores <2 were adjudged not severe.

RESULT AND DISCUSSIONS

Extent of members' participation in RIFAN activities

Table 4.3 revealed that majority of the respondents in the study area are involved in rice production ($\overline{X}$=3.25), rice processing ($\overline{X}$=3.15) and rice trading and marketing ($\overline{X}$=3.15). This high extent of participation in rice production could be due to the fact that most farmer engage in Farmers' association because it has been identified as one of the major ways to attain good farm outputs and it creates an avenue for farmers with a common purpose and having a formal structure in order to increase the knowledge on rice production. This result corroborates with the findings of Tolno *et al.* (2015) who asserted that it is the desire of all farmers to have a reasonable measure of output after investing time, energy, money and many of other resources in agribusiness but often time all these efforts result to less expected outcomes just because they are not members of agribusiness association of relevance.

Table 1: Extent of members' participation in RIFAN activities (n=202)

RIFAN Activities	VH	H	L	VL	WS	WM	Rank
Grain management and storage	80(39.4)	86(42.4)	21(10.3)	16(7.9)	636	3.13	4th
Rice trading and marketing	92(45.3)	66(32.5)	29(14.3)	16(7.9)	640	3.15	3rd
Rice production	97(47.8)	74(36.5)	16(7.9)	16(7.9)	658	3.24	1st
Rice exportation	48(23.6)	41(20.2)	41(20.2)	73(36.0)	470	2.32	8th
Equipment leasing	33(16.3)	72(35.5)	61(30.0)	37(18.2)	507	2.50	7th
Lending and financial services	28(13.8)	81(39.9)	60(29.6)	32(16.7)	507	2.51	6th
Research and training	29(14.3)	81(39.9)	61(30)	32(15.8)	513	2.53	5tth
Rice Processing	92(45.3)	66(32.5)	29(14.3)	16(7.9)	640	3.15	2nd

Sources: Field survey, 2021

Note: VH - Very High; H - High; L - low; V - Very low; WM=Weighted Mean

Perceived Effect of RIFAN on members livelihood

The most prominent effects of RIFAN on members livelihood as reported by the farmers im Table 2 were members have opportunity to own land for rice farming ($\overline{X}$=4.46), members can achieve high quality product ($\overline{X}$=4.22), members have opportunity to own mobile phones ($\bar{X}$=4.14) and members are enhanced with best farming practices and techniques ($\overline{X}$=4.05) ranked1st, 2nd, 3rd and 4th respectively. This implies that, the farmers perceived that as they become members of RIFAN,

the amount of household income increases, so too does the household food supply, as well as the healthy being of the family which could be due to the availability of some production inputs, quality output and acquisition of good farming practices and techniques for optimum productivity. This assertion was supported by Onasanya *et al.* (2018) who stated that majority of the respondents agreed that participating in organisational activities will definitely enhance income generation of their household and it is also seen as survival strategy of rural household. Also, that land tenure system.

Table 2: Perceived effects of RIFAN services on members' livelihood (n=202)

Perceived effects	WM	Remark	Ranking
Opportunity to own land for rice farming	4.46	Agree	1st
Opportunity to own mobile phone	4.14	Agree	3rd
Access to potable drinking water	4.03	Agree	6th
Access to better use of information related rice farming at appropriate time	4.05	Agree	4th
Easy access to importers and exporters for better marketing of products	3.99	Agree	7th
Members can easily acquire buildings	1.91	Disagree	11th
Members acquire skills of empowerment	3.86	Agree	8th
Members can access and operate rice processing machine/equipments	3.86	Agree	8th
Members can achieve high quality productivity	4.22	Agree	2nd
Members are enhanced with best rice farming practices and techniques	4.05	Agree	4th
Members cannot own land for rice farming	2.39	Disagree	10th

Field survey, 2021

Constraints faced by members of RIFAN in the study area

Table 3 shows the primary challenges faced by members participating in RIFAN activities which includes; lack of members corporation (WM=2.65), poor networking among members (WM=2.58), poor management (WM=2.51) and poor maintenance of storage facilities (WM=2.50) ranked among the top four (4) major constraints in the study area, respectively. This is in line with the findings of Pujara (2016) who stated that it is evident that the single farmer will not be able to fulfil the large order placed by the market traders. Thus, Farmers can join hands in working together by bringing their produce at the collection centres to sell to the traders

Table 3: Constraints faced by members of RIFAN (n=202)

Constraints affecting rice farmers	VS	LS	NS	WM	Rank
Lack of members corporation	131(64.5)	72(35.5)	0(0)	2.65	1st
Poor networking among members	122(60.1)	77(37.9)	4(2.0)	2.58	2nd
Poor management	123(60.6)	60(29.6)	20(9.9)	2.51	3rd
poor maintenance of storage facilities	122(60.1)	61(30.0)	20(9.9)	2.50	4th
Defaulting of repayment by members	119(58.6)	64(31.5)	20(9.9)	2.49	5th
Flood experience on the farm	106(52.2)	85(41.9)	12(5.9)	2.46	6th
Educational qualifications	102(50.2)	93(45.8)	8(3.9)	2.46	6th
Poor leadership of rice farmers	105(51.7)	82(40.0)	16(7.9)	2.44	8th
Limited technical and financial support	95(46.8)	100(49.9)	8(3.90)	2.43	9th
Dispersed settlement of farmers.	109(53.7)	73(36.0)	21(10.3)	2.43	9th
Insect and pest infestations	90(44.3)	105(51.7)	8(3.9)	2.40	11th
Unfavourable Government policy	91(44.8)	100(49.30	12(5.9)	2.39	12th
Limited market for non-cash crops in rotation	97(47.8)	82(40.4)	24(11.8)	2.36	13th

Sources: Field survey, 2021

Not: VS - Very Severe; LS - Less Severe; NS - Not Severe; WM=Weighted Mean

CONCLUSION AND RECOMMENDATIONS

From the findings, it is obvious that farmers in the study area had high level of participation in RIFAN activities. The most perceived effect of RIFAN opportunity to own land for rice farming, members can achieve high quality productivity and opportunity to own mobile phone. The most constraints affecting rice farmers were lack of members corporation, poor networking among members, poor management and poor maintenance of storage facilities It's recommended that group activities should be properly monitored by members and relevant authorities to curb perceived leadership constraints. Also, default of repayment of loans by farmers and corruption tendencies of the group leaders should be addressed.

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SOURCES OF INFORMATION ON AGRICULTURAL PRODUCTION TECHNOLOGIES AMONG CROP FARMERS IN IGABI LOCAL GOVERNMENT AREA OF KADUNA STATE

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ABSTRACT
This study assessed the sources of information on agricultural technologies among crop farmers in Igabi Local Government area of Kaduna State. A sample of 151 respondents were selected using random sampling techniques. Data were collected using structured questionnaire and analyzed with descriptive statistics and linear regression. The study showed that the respondents had different degree of accessibility to radio and television, radio was found to be more accessible. 96.0% of the farmers received agricultural information occasionally from research institute, while (80.8%) of them reported to have frequent information from Agro inputs dealers/retailers. Linear regression was employed to analyze the relationship between socioeconomic variables and sources of agricultural information to farmers; sex was statistically significant at 1% ($p<0.01$); farming experience and association membership were statistically significant at 10% ($p<0.1$). It was concluded that Agro input dealers/retailers were the most frequent sources of agricultural information to the farmers in the study area. Unexpectedly, government agricultural extension agencies were not relied upon by most of the farmers as they were among the least sources of agricultural information. Sourcing for agricultural information was influenced by the farmers' sex, farming experience and membership of association. Hence, male farmers with more farming experiences who were members of social organisation had more sources of agricultural information. The main recommendation was that government agricultural extension agencies and research institutes in Kaduna State and Igabi LGA in particular should be reorganised and re-strategized towards providing the information needed by the farmers to improve their agricultural production.
Keywords: Sources, Information, Agricultural technologies, Farmers

INTRODUCTION
Agricultural information is considered as one of the most important resources in agricultural and rural development that assists farmers to make decisions and take appropriate actions for further farming-related development (Livondo *et al*., 2015). Communication technology is playing very important role in raising awareness on different agricultural technologies among farmers. Mass media approaches to agricultural information dissemination generally are useful in reaching wide audiences at a very fast rate; they are very important sources of agricultural information to farmers in addition to constituting ways of notifying farmers of new developments and emergencies (Mtega 2018). Farmers can only benefit from such technologies when they have access to them and learn how to effectively utilise them in their farming systems and practices. This should be the function of agricultural extension agencies all over the world. These extension agencies employ different approaches, means and media in transferring improved agricultural technologies to the end users (farmers) (Ariyo *et al.* 2013).

Mass media have been defined as any material, objects, instruments or system which serves to communicate information including letters, pamphlets, and other written and printed materials, all types of cinema films, radio and television. The potency of modern electronic technology can be exploited for infotainment of farming community (Omensa, 2010). The cost of extension advice through mass media comes to be considerably low as compared to individual and group methods (Yahaya and Badiru, 2011). However, the mass media involve one-way communication from information source to the receivers. They permit limited and delayed feedback, which of course is essential for effective communication (Yagos *et al*., 2017). Oyebami and Fabusoro (2017) conducted a study on the use of the mass media among farming communities in the rural areas and found that the majority of them still depend on the "traditional mass media" such as, newspaper, television and radio, thus raising a probability that these three mass media sources can be effective sources of agriculture information among the farmers in rural areas.

Despite the potentials that the mass media have exhibited in the provision of agricultural information for poverty reduction for both rural and urban communities, there is little research on how these media especially radio and television can facilitate access and use of agricultural information towards food security and poverty alleviation among farmers in Igabi Local Government Area (LGA) of Kaduna state.

The objectives of the study are to investigate the sources of information on agricultural technologies among crop farmers in Igabi Local Government Area of Kaduna State; identify major sources of agricultural information to farmers through mass media and analyze the effectiveness of mass media in dissemination of agricultural technologies among the farmers.

The hypothesis proposed for the study was that the socioeconomic variables are independent of sources of agricultural information to farmers.

METHODOLOGY

This study was conducted in Igabi Local Government Area of Kaduna State. Igabi was created out of Zaria LGA in the year 1989. It is made up of three districts namely Igabi, Rigachikun and Rigasa. According to 2006 census figures, Igabi LGA has population of 430,753 people (NPC, 2014). It lies within 10°48'21.71" N and 7°42'51.95" E. It is a primarily agriculture-based economy, with staples food such as maize, sorghum, millet, sweet potato, yam and cash crops such as cotton and groundnut.

Sampling procedure and sample size

The study targeted smallholder farmers in the 3 districts of Igabi LGA. A two-stage sampling procedure was used to obtain the sample for the study. In the first stage, 12 villages were selected out of 49 villages. In the second stage, 151 farmers were selected out of 10,000 (the sampling frame) to serve as the study sample.

A structured questionnaire was used to collect primary data for this study. Secondary information was obtained from the official records and other relevant published materials. Descriptive (frequencies and percentages) and inferential (linear regression analysis) statistics were used to achieve the objectives of the study. The dependent variable for this study is sources of information on agricultural technologies to farmers. There are four major sources of agricultural information on agricultural technologies identified on the course of this study. Therefore, the sources of information were measured as low when a farmer has less than two sources, medium when the farmer has two sources and high when a farmer has three or four sources. The independent variables are the farmers' socioeconomic variables such as age, sex, household size, farming experience, educational attainment, farming experience, farm size and association membership. Linear regression model is specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \mu$$

Where:

Y= Sources of information, X_1= Age of the respondent (in years), X_2= Sex of the respondent (dummy variable), X_3= Household size, X_4= Educational Level, X_5= Farming experience, X_6= Association membership, X_7= Farm size, μ= Error term (or disturbance term), β_0 = Constant, $\beta_1 - \beta_7$ = unknown parameters to be estimated

RESULTS AND DISCUSSIONS

Sources of Agricultural information through mass media

Table 1 revealed that 96.0%, 72.2% and 51.7% of the respondents received agricultural information occasionally from research institutes, government extension agencies and agro inputs manufacturers, respectively. Similarly, 80.8% of the respondents also indicated that they received information frequently from Agro-input dealers/retailers. The study also revealed that few of the respondents received information very frequently from the listed source, while most of the respondents received information occasionally. Similar findings which showed farmers not received agriculture information frequently were made by Oyebami and Fabusoro (2017) in Egbeda LGA of Oyo State, Nigeria.

Table 1: Distribution of respondents based on sources of agricultural information (n= 151)

Sources	None at all	Occasionally	Frequently	Very frequently
Government extension agencies	-	72.2	28.8	1.98
Agro input manufacturers	0.7	51.7	47.0	0.7
Agro input dealers/retailers	-	17.2	80.8	1.98
Research institutes	1.3	96.0	1.3	1.3

Source: Field survey, 2018

Relationship between farmers' socioeconomic characteristics and sources of agricultural information

Linear regression result (Table 2) showed the technical relationship between the socioeconomic characteristics of the respondents and sources of agricultural information. The F-ratio is statistically significant at 1% level indicating that the independent variables included in the model adequately explained the dependent variables. It also showed the coefficient of multiple determinations R^2 to be 0.133, this implies that 13.3 percent of the dependent variable (sources of receiving agricultural information) is explained by the independent variable (socioeconomic characteristics), included in the model. The result shows that sex was positive and statistically ($p<0.01$) significant. Farming experience and association of membership were both significant ($p<0.1$) . Base on the result, it is established that there is positive and significant relationship between the socioeconomic characteristics of the farmers and sources of agricultural information. This corroborates the findings of Yagos *et al.* (2017) which showed a significant relationship between the personal characteristics of the

respondents and sources of receiving agricultural information in Northern Uganda.

Table 2: Relationship between farmers' socioeconomic characteristics and sources of agricultural information

Variables	Coefficient	Standard error	t-value
Constant		.667	6.062***
Age	-0.036	.018	-.222^{ns}
Sex	-0.376	.269	-4.160***
Household size	0.119	.036	.667^{ns}
Farming experience	-0.307	.014	-1.908*
Years of formal education	-0.114	.013	-1.085^{ns}
Annual income	-0.032	.000	-.305^{ns}
Association membership	0.157	.305	1.810*
Agricultural land size	0.137	.093	1.051
F. value	2.712***		
R-square	0.133		
Adjusted R-square	0.084		

Source: Field survey 2018

***Significant at 1%, **Significant at 5%, *Significant at 10% and ns=not significant

CONCLUSION AND RECOMMENDATIONS

Agro input dealers/retailers were the most frequent sources of agricultural information to the farmers in the study area. Unexpectedly, government agricultural extension agencies were not relied upon by most of the farmers as they were among the least sources of agricultural information. Sourcing for agricultural information was influenced by the farmers' sex, farming experience and membership of association. Hence, male farmers with more farming experiences who were members of social organisation had more sources of agricultural information.

Government agricultural extension agencies and research institutes in Kaduna State and Igabi LGA in particular should be reorganised and re-strategized towards providing the information needed by the farmers to improve their agricultural production. Both men and women should be given equal consideration during agricultural information dissemination.

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GENDER DIFFERENCES IN FARMERS' INDIGENOUS KNOWLEDGE OF VEGETABLES DISEASE MANAGEMENT: IMPLICATIONS FOR ARTIFICIAL INTELLIGENCE-ENABLED FARMERS' DECISION SUPPORT SYSTEM

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ABSTRACT
The study was carried out in Osun State, Nigeria with the aim to analyse male and female vegetable farmers' indigenous knowledge of disease management. It specifically assessed the indigenous knowledge of male and female farmers on the symptoms, causes, curative, and preventive measures of the vegetable crop diseases. This was done with the aim to provide gender-responsive benchmark data that could enhance the effective adoption of AI-enabled decision support system for crop disease management. Structured interview schedule was used to elicit quantitative data from 106 respondents (59 males and 47 females) for the study. Descriptive statistics was used to analyse the data. Majority of the male and female farmers used indigenous knowledge in identifying the symptoms, causes, curative and preventive measures of most common vegetable crop diseases. Expert/Extension professional-based human intelligence was also a major source of information on crop disease management among the male and female farmers, but the female farmers experienced lower extension contacts than the males. Scientific study and integration of gender responsive and enabling indigenous knowledge on crop disease management into the AI-enabled farmers' decision support system involving experts and extension professionals is recommended for effectiveness and sustainability.
Keywords: Crop disease management, Gender analysis, Artificial intelligence, Indigenous knowledge

INTRODUCTION

Vegetables play a vital role in human nutrition; they provide the body with dietary fibre and are good sources of essential vitamins, minerals, and trace elements. Consumption of vegetables is beneficial to the human body as they boost the immune system, heart, nervous system, and the muscles. (Bruso, 2018). Diseases infestation at all the stages of vegetable production and value chain is the major challenge to the farmers and compromises the quality and quantity of the vegetable. Farmers face many problems as a result of diseases caused by environmental changes and pathogens. Thus, they need competent and comfortable advice from agricultural extension and advisory experts as part of ways to combat the diseases.

In most developing countries like Nigeria, the naked eye observation of extension and advisory experts is the conventional approach adopted for detection, identification as well as prescription of solutions for plant diseases (Weizheng *et al*., 2008). The most currently used audio-visual tools among the farmers' extension and advisory experts are the pictorial newsletter, and audio-visual messages via mobile phones. Developed countries have scaled up from the use of pictorial and audio-visual Information and Communication Technologies into the use of Artificial Intelligence technologies in agricultural advisory services and information exchange (West and Allen 2018).

Artificial intelligence (AI) is intelligence displayed by machines in contrast to the natural intelligence displayed by humans and other animals. Automatic detection of plant diseases is a feature of AI technology that automatically detects the symptoms of diseases as soon as they appear on plant leaves, even on large fields of crops (Al-Bashish *et al*., 2011; Hillnhuetter, 2008). This machine-enabled intelligence is a fast, automatic, less expensive, and accurate method to detect plant diseases (Prasad and Srinivasarao, 2010; Hillnhuetter, 2008). Artificial intelligence-based detection and recognition of crop diseases can provide clues to identify and treat the disease in its early stages (Hillnhuetter, 2008).

Farmers in the developing world are not left out in this technological move. Recent research shows that every household in developing countries like Nigeria, both in the urban and rural communities, has access to at least a mobile phone (Blimpo and Malcolm 2019).

An average male or female farmer in Nigeria possesses at least a mobile phone. Hence the appropriateness and timeliness of integrating mobile phone embedded AI into Extension-based Decision Support Service (EDSS) to farmers in Nigeria. However, for the effective integration of AI into EDSS in Nigeria, there is a need to understand the existing potentials and available opportunities among the farmers in Nigeria as there is dearth of information to serve as gender-responsive benchmark data that could enhance the adoption of AI-enabled EDSS for crop diseases management in Nigeria. Hence, this study focused on vegetable farmers due to emerging economic and nutritional opportunities in the cultivation and consumption of vegetables at the household level in Nigeria. The study assessed the indigenous

knowledge of male and female vegetable farmers on symptoms, causes, curative, and preventive measures of crop diseases. Identified common diseases affecting vegetables as perceived by the farmers and described the implications of the gender differentials in farmers' Indigenous Knowledge for their adoption of AI-enabled EDSS for crop diseases management.

METHODOLOGY

Osun State was the study area. The State is classified into three agro-ecological zones by the Osun State Agricultural Development Project (OSSADEP) which are Iwo, Ife/Ijesa and Osogbo zones. Three stage sampling technique was used to select respondents for the study. At the first stage, two local government areas each were randomly selected from Ife/Ijesa and Osogbo agro-ecological zones. At the second stage, two communities in each local government areas were selected to make a total of four communities. At the third stage 106 respondents (59 males and 47 females) were selected through accidental sampling techniques from the communities. Smartphone embedded structured interview schedule was use to collect data. Data were collected from the sampled vegetable farmers in the study. Relevant information regarding determinants of Artificial Intelligence (AI) integration into extension services for Vegetable crop disease identification and management were elicited from the farmers using interview schedule. Images of diseased and healthy vegetable leaves were taken during the rainy season using smartphone. Descriptive statistics such as frequency counts, percentages, mean score and standard deviation were used to describe the collected data on vegetable farmers' indigenous knowledge on the symptoms, causes, prevention and cures for the identified vegetable, on gender basis.

RESULTS AND DISCUSSION

Sources of information on vegetable crop diseases identification and management

Result in Table I shows that majority of vegetable farmers (74.6% MVF and 63.8% FVF) obtained information from extension agents. Also, 71.2 per cent MVF and 31.9 per cent FVF obtained information through television. About 78 per cent MVF and 60 per cent FVF obtained information on vegetable disease management through radio. Furthermore, about 37 per cent MVF and 21 per cent FVF got information through the internet, while 86.4 per cent MVF, 80.9 per cent FVF got information through input dealers. The results show improvement in farmers' contacts with the extension agents and sourcing information through television and internets, Also, the use of mobile phones, television, and internets as sources of information on crop disease management is an indication of a positive and enabling environment for effective integration of mobile-app based AI into Extension-based Decision Support System (EDSS) for farmers in Nigeria. Furthermore, the prevalent use of extension agents as sources of information among male and female farmers is an indication that the AI integration will be more effective when embedded in the existing extension and advisory system for farmers in Nigeria. Hence there is a need for a curricula paradigm shift to e-extension and advisory curricula at the tertiary education level in Nigeria to equip the prospective extension and advisory scientists and support effective integration of AI in the system.

Table 1: Sources of information on vegetable crop diseases management

Variables	MVF(n=59)		FVF (n=47)	
	Freq	%	Freq	%
Extension agent	44	74.6	30	63.8
Television	42	71.2	15	31.9
Radio	46	78.0	28	59.6
Internet	22	37.3	10	21.3
Input dealers	51	86.4	38	80.9

Freq. = Frequency, %= Percentage MVF-Male Vegetable Farmers, FVF-Female Vegetable Farmers
Source: Field survey, 2018

Gender Differences in the Farmers' Indigenous Knowledge on the Symptoms, Causes, Preventive and Curative measures for the diseases

Results in Table 2 shows that 35.6 per cent MVF and 51.1 per cent FVF indicated drought as the cause of anthracnose mosaic disease. About 40.7 per cent MVF and 51.1 per cent FVF indicated that irrigation as the cure for anthracnose leaf spot. There was gender differential in the preventive measure as perceived by the farmers. About 34 per cent MVF and 30 per cent FVF indicated application of insecticides as a preventive measure against anthracnose leaf spot, while, 36.2 per cent FVF and 32.2 per cent MVF indicated irrigation as a preventive measure against anthracnose leaf spot. There was a gender differences in the preventive measure as perceived by the farmers. About 37 per cent MVF and 31.9 per cent FVF indicated fertilizer application as a preventive measure against cercospora leaf spot, while, 32.2 per cent

MVF and 48.9 per cent FVF indicated irrigation as a preventive measure against cercospora leaf spot.

Results in Table 2 reveal that most MVF (40.7%) identified in-folding of leaves as the symptom of Telfairia mosaic disease, while, 42.6 per cent FVF identified mottling of leaves as the symptom of the disease. Also 54.2 per cent MVF and 40.4 per cent FVF sprayed insecticides to prevent the disease on their vegetable plots. Results shows that most (50.8% MVF and 38.3% FVF) identified the presence of white spots as a symptom of the Telfaria white leaf spot disease. There was a gender difference in the curative measures used by the farmers. About 34 per cent MVF applied DD-force to control the disease, while, 48.9 per cent FVF applied Gammalin 20 to control the disease. The preventive measure used by most MVF 57.6 per cent was to maintain farm hygiene to prevent the occurrence of the disease while 42.6 per cent FVF sprayed insecticides to prevent the occurrence of the disease.

Table 2: Farmers' indigenous knowledge (IK) on symptoms, causes, preventive and curative measures of various vegetable diseases

Diseases	Farmers' IK	MVF (n=59) %	FVF (n=47) %
AMARANTHUS	**Symptom**		
Anthracnose Leaf spot	Spotted leaves	42.4	44.7
	Cause		
	Drought	35.6	51.1
	Curative Measure		
	Irrigation	40.7	51.1
	Preventive Measures		
	Applying insecticides	33.9	29.8
	Irrigation	32.2	36.2
Cercospora Leaf spot	**Symptom**		
	Grey spots on leaves	47.5	55.3
	Cause		
	Pathogen	37.3	38.3
	Curative Measure		
	Spraying of insecticides	67.8	57.4
	Preventive Measures		
	Fertilizer application	37.3	31.9
	Irrigation	32.2	48.9
TELFARIA	**Symptoms**		
Telfaria Mosaic	In-folding of leaves	40.7	25.5
	Mottling of leaves	22.0	42.6
	Causes		
	Insects	47.5	40.4
	Curative Measure		
	Spraying insecticides	47.5	40.4
	Preventive measure		
	Spraying insecticides	54.2	40.4
White leaf spot	**Symptoms**		
	White spots on leaves	50.8	38.3
	Causes		
	Pathogens	32.2	31.9
	Curative Measures		
	DD Force	33.9	34
	Gammalin 20	27.1	48.9
	Preventive Measures		
	Farm hygiene	57.6	36.2
	Spraying insecticides	15.3	42.6

Freq= Frequency; %= Percentage
MVF = Male Vegetable Farmers; FVF = Female Vegetable Farmers; n = Sample size
Source: Field survey, 2018

CONCLUSION AND RECOMMENDATIONS

The study revealed that majority of the male and female farmers had good knowledge of the indigenous intelligence on crop disease management practices due to their positive features such as available, low-cost, and easy to understand, although not effective for crop disease management. In addition to the Indigenous Intelligence, the extension-based human intelligence was a major source of information on crop disease management among the male and female farmers, but the female farmers experienced lower contacts than the males. The study further revealed gender differentials in farmers' indigenous knowledge on crop diseases management. The perception of the males differs from the females on some vegetable diseases' symptoms, causes, curative, and preventive measures. The design and development of the AI-enabled EDSS should respond appropriately to the gender differences in the farmers' indigenous knowledge to enhance gender inclusive adoption of the technology. There is a need for further rigorous gender- responsive multi-disciplinary research on the indigenous crop disease management knowledge and practices at a more comprehensive coverage and scale. The male and female farmers, the extension professional, and agents should be actively engaged in the development and application of AI technologies among the farmers in Nigeria. There should be active engagement and capacity building of the farmers and the providers of the conventional expert-based human intelligence on crop disease management (the extension agents) in the development, adaptation, dissemination, and application of the AI-technologies. Establishment of AI-enabled Extension-based Decision Support Service (EDSS) centres at strategic locations in Nigeria is an essential enabling factor. The establishment and monitoring of the AI-enabled EDSS should involve experts and extension professionals for effectiveness and sustainability.

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MITIGATION STRATEGIES USED BY WOMEN FARMERS DURING CLIMATE CHANGE EMERGENCIES IN WESTERN ZONE OF BAUCHI STATE, NIGERIA

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ABSTRACT

The paper examined the mitigation strategies used by women farmers during climate change emergencies in western zone of Bauchi state, Nigeria. Multistage random sampling technique was employed to select 99 respondents. Data were collected using structured questionnaire and analyzed with descriptive statistics. The results revealed that 82% of the respondents were within the age range of 20-39 years and 50% were married. The findings also revealed that 89% of the respondents can read and write, and 51% had 1-6 years of farming experience. All (100.0%) of the respondents were aware of climate change mitigation strategies. Major mitigation strategies adapted by respondents include conservation of water ($\overline{x}$=2.5), use of organic manure for conservation of soil ($\overline{x}$=2.2), and use of rice varieties that are well adapted to climate change ($\overline{x}$=2.0), among others. Major constraints to the adaptation of mitigation strategies include poor access to climate forecast technologies (93%), climate information (90%) and inadequate awareness on NGOs activities on climate change (85%) among others. The study concluded that women farmers used some strategies to mitigate climate change emergencies. The study, therefore, recommended that climate change technologies and information should be provided to farmers through effective extension services and airing of climate change programmes through community radio stations.

Keywords: Climate Change, Mitigation Strategies and Women

INTRODUCTION

Climate change is considered to be one of the most unprecedented threats of our time. Although climate change is not a new phenomenon, its recent usage, especially in the context of development, refers to changes in the prevailing climate, particularly since the 20th century and the perceived impacts on the economy and livelihoods (Adebayo, *et al.*, 2011; Ozor *et al.,* 2012). Climatepatterns play a fundamentalrole in shaping natural ecosystems, human economies and cultures that depend on them. Therefore, a change in climate has implications on the livelihoods of humans, animals, plants, and the ecosystems. Over the years, farmers have been responding to climate change through adaptation which is the process by which ecological, social or economic system adjusts in response to actual or expected climate stimuli and their effects or impacts (Smith, *et al.*, 2013). Farmers often select crop combinations that will survive harsh conditions such as maize-beans, cowpea-sorghum and millet- groundnut. There will be serious implications for rice and food security in Nigeria; there are no quick and effective measures to adapt to climate change. In Western Zone of Bauchi State, Nigeria, there are observable extreme conditions attributable to climate change which seem critical at first but can also affect rice production.Also increasing changes in rainfall patterns, as a result of climate change is already threatening local rice cultivation and making it difficult to plough rice fields after the very first rain or make multiple harvests in one year. This scenario is required to reduce the importation of milled rice in Bauchi State in particular and Nigeria in general. In addition, the study attempted in filling the gap in the literature with relation to women farmers' awareness of climate change mitigation strategies during emergencies in western zone of Bauchi State, Nigeria.

The broad objective of the study was to assess the awareness of climate change mitigation strategies among women rice farmers in western zone of Bauchi State, Nigeria. The specific objectives include: describe the socioeconomic characteristics of the respondents in the study area, examine women rice farmers awarenesson climate change mitigation strategies, ascertain the types of climate change mitigation strategies adapted by women rice farmers and identify the constraints to the adaptation of climate change mitigation strategies among women rice farmers in the study area.

METHODOLOGY

The study was conducted in Western Zone of Bauchi State, Nigeria. The Western zone is made up of seven (7) Local Government Areas (LGAs) including Alkaleri, Bauchi, Bogoro, Dass, Kirfi, Tafawa Balewa and Toro. The state is located in the North East, Nigeria. The State is located between Latitude $9^0$30' and $12^0$30' North of Equator and between Longitude $8^0$40' and 11^0 East of the Greenwich Meridian. The Zone has population of 4,784,146 people (National Population Census) [NPC], 2019). The main occupation of majority of

the indigenes in the area is farming and livestock production. Multi-stage sampling technique was used in the selection of 99 women rice farmers. Firstly two (2) LGAs (Dass and Toro) were purposively selected to capture areas with more concentration of rice production. Secondly five (5) communities were randomly selected from each LGA togive a total of 10 communities [Dass (Dot, Gajiyol, Yelwan Dass, Wandi and Badas) and Toro (Jajiyol, Zalau, Nabordo, RiminZayam, and Motto)]. Finally, 99 women rice farmers were proportionately (0.05%) and systematically selected. The total sample size of 99 was drawn from sampling frame of 1988 women rice farmers in the study area. Primary data were employed for this study and were collected through the use of structured questionnaires and analyzed using descriptive statistics.

RESULTS AND DISCUSSION

Socioeconomic characteristics

The result in table 1 shows that substantial proportions (44% and 38%) of the respondents were within the age bracket of 20-29 and 30-39 years, respectively. These findings indicate that most of women rice farmers were within their active age and therefore could effectively adapt to climate change mitigation strategies in the study area. The result is in close conformity with the findings of Arimi (2014), who reported that majority of rice farmers were within the age category of 31-50 years Ebonyi State.The result also indicates that half (50%) of the respondents were married.

Table 1: Distribution of Respondents Based on Age, Marital status and Education (n=99)

Variables	Percentage
Age	
20-29	38.0
30-39	44.0
40-49	12.0
50 and above	6.0
Marital Status	
Single	39.0
Married	50.0
Divorced	6.0
Widowed	5.0
Educational Status	
No education	11.0
Quranic education	22.0
Primary education	30.0
Secondary education	14.0
Tertiary education	23.0
Farm Size (ha)	
1-5	83.0
6-10	10.0
11-15	4.0
16 and above	3.0
Farming Experience (years)	
1-5	51.0
6-10	25.0
11-15	10.0
16 and above	4.0
Estimated Annual Income	
< N100,000	97.0
N100,000-N199,000	2.0
N200,000 and above	1.0
Extension contact	
Yes	71.0
No	29.0
Total	**100**

Source: Field Survey, 2019

The findings also revealed that 89% of the respondents can read and write. This result is in agreement with the study of Nwaliwji and Uzuegbuman (2012) in Anambra State Nigeria, implying a majority of the rice farmers possess significant educational experience that can be

useful in the study of climate change. The result indicates that majority (83%) of the respondents had farm size of 1-5 hectares. This finding implies that women rice farmers operate at small scale, which agrees with the findings of Nwaliwji (1999) that rice production is dominated by small hold farmers. The results further revealed that most (97%) of the respondents had annual income of less than N100,000.00. This scenario implies that rice farmers in western zone of Bauchi state were low-income holdings and this could have negative impacts of their desire to procreation and improved varieties and other inputs needed for adaptation to climate change.

Respondents Awareness on the Climate Change Mitigation Strategies

Based on the findings in Table 2 all (100%) of the respondents had awareness of the of climate change mitigation strategies. The findings also show that, the major sources of awareness of the respondents on the climate change mitigation strategies include radio (71%), extension workers (49%) and GSM (35%) among others. This result agrees with the findings of Luka and Yahaya (2012), that majority of farmers source on climate change were from radio and extension workers.

Table 2: Distribution of Respondents based on Awareness to Climate Change (n=99)

Variable	Percentages
Climate Change Awareness	
Yes	100
Total	**100**
Source of Awareness*	
Extension workers	49.0
Radio	71.0
Television	25.0
Social network	16.0
Internet	6.0
Mobile phones	35.0

*Multiple responses recorded
Source: Field Survey, 2019

Mitigation Strategies Adopted by the Respondents

Table 3 describes awareness of rice farmers on mitigation strategies otherwise known as measures directed towards ameliorating effects of climate change in rice production (IFAD, 2010). The findings reveals that the major climate change mitigation strategies adapted by the respondents include, conservation of water ($\bar{x}$=2.5), use of organic manure for soil conservation ($\bar{x}$=2.2), use of rice varieties that thrive well under erratic rainfall ($\bar{x}$=2.0) and use of rice varities that are well adapted to climate change ($\bar{x}$=2.0). The foregoing indicates rice farmer's knowledge of adaptation strategies to climate change in Bauchi LGA of Bauchi State. It could be due to the proper dissemination of information done by the BSADP extension services and related agencies the rice producing communities of Bauchi LGA.This result is also in line with Luka and Yahaya (2012) which revealed that a lot of farmers opted for the use of improved varieties and increase in soil water conservation as suitable adaptive measures to cope with the effects of climate change.

Table 3: Distribution of Respondents based on the Types of Mitigation Strategies Adopted by the Respondents

Mitigation Strategies	Mean
Conversation of water	2.5
Use of organic manure for conversation of soil	2.2
Planting pest and disease resistance variety	1.9
Use of rice varieties that are well adapted	2.0
Draining of wetland for rice cultivation	1.8
Use of zero tillage system	1.0
Use of early maturing rice varieties	2.0
Use of rice varieties that thrive well under erratic rainfall	2.0
Transplanting of rice with early rainfall	0.5
Listening to extension information on climate change	0.7

*Multiple responses recorded
Source: Field Survey, 2019

Constraints to the Adaptation of Climate Change Mitigation Strategies

Table 4 depicts respondents' perception on the constraints impeding the adaptation of climate change mitigation strategies. Based on the findings the Major constraints to the adaptation of mitigation strategies include poor access to climate forecast technologies (93%), poor access to climate change information (90%) and inadequate awareness on NGOs activities on climate change (85%) among others.

Table 4: Distribution of Respondents based on Constraints to the Adaptation of Climate Change Mitigation strategies (n=99)

Constraints	Percentage*
High cost of improved rice variety	52
Inadequate access to weather and climate forecast technologies	93
Inadequate access to weather and climate forecast information	90
Inadequate government policies to empower women rice farmers	67
Inadequate awareness about NGOs programmes on climate change	85
Social and cultural beliefs against adaptation	46
Poor Agricultural extension services	38

*Multiple responses were recorded
Source: Field survey, 2019

Conclusion and Recommendations

The study concluded that women farmers had awareness on climate change mitigation strategies. In addition, the major sources of awareness to climate change mitigation strategies include radio, extension workers and GSM among others. The study therefore, recommended that, climate change technologies and information to be provided to farmers through effective extension services and airing of climate change programmes through community radios. The study also recommended that provision of improved rice varieties and other inputs to the farmers and the provision of basic infrastructure such as irrigation facilities, good markets and good network of roads by the government could influence the farmers' level of adaptation to climate change mitigation strategies.

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DETERMINANTS OF ACCESS TO AGRICULTURAL INFORMATION AMONG CROP FARMERS IN IGABI LOCAL GOVERNMENT AREA OF KADUNA STATE

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ABSTRACT
This study assessed the determinants of access to agricultural information among crop farmers in Igabi Local Government area of Kaduna State. A sample of 151 respondents were selected using random sampling procedure. Data were collected with the aid of structured questionnaire and analyzed using descriptive statistics and linear regression model. Linear regression model was employed to analyze the relationship between determinants of access to information on agricultural technologies and access to agricultural information by farmers. The major radio stations accessed by the respondents include Radio Nigeria Kaduna (91.4%), Hausa service of the Voice of America (VOA) (76.2%) and Nagarta radio (72.8%). Major television stations accessed include Nigeria Television Authority (NTA) Kaduna and Kaduna State Television (KSTV). Majority (98.01%) of the respondents received information on government policies on agriculture, improved production technology (96.03%) and climate change sensitization (95.36%). Result of the linear regression analysis showed that educational level and credit access were statistically ($p<0.01$) and significantly related to access to agricultural information. Sex and extension contact were also significant ($p<0.05$). It was concluded that socioeconomic and institutional factors were the major determinants of farmers` access to information on agricultural technologies. The study recommended that the use of radio and television in information dissemination to farmers in the study area should be strengthened, giving a special consideration to the farmers' sex and education while disseminating information on agricultural technologies to them.
Keywords: Determinants, Access, Farmers, Agricultural, Information, Technologies

INTRODUCTION
In most cases, farmers differ in their access to agricultural information from extension service and other sources; this could be related to various personal, social, economic or institutional factors (Livondo *et al*., 2015). To enhance the production and productivity of agriculture, farmers should have access to well organised and relevant information on agricultural technologies from different sources and extension methods such as mass media, extension service, on-farm research etc. In this regard, communication technology plays a critical role in raising farmer awareness of various agricultural technologies. In general, mass media approaches to agricultural information dissemination are effective at reaching a large number of people quickly; they are useful sources of agricultural information to farmers in addition to constituting ways of notifying farmers of new developments and emergencies (Mtega 2018).

Mass media have been defined as any material, objects, instruments or system which serves to communicate information including letters, pamphlets, and other written and printed materials, all types of cinema films, radio and television. However, the mass media involve one-way communication from information source to the receivers. They permit limited and delayed feedback, which of course is essential for effective communication (Yagos *et al*., 2017). Oyebami and Fabusoro (2017) conducted a study on the use of the mass media among farming communities in the rural areas and found that the majority of them still depend on the "traditional mass media" such as, newspaper, television and radio, thus raising a probability that these three mass media sources can be effective sources of agriculture information among the farmers in rural areas.

In spite of the effectiveness that the mass media have exhibited in the provision of agricultural information for poverty alleviation for both rural and urban communities, there is little empirical work to analyze determinants of access to agricultural information especially through radio and television among crop farmers in Igabi Local Government Area (LGA) of Kaduna State.

The objectives of the study are to assess the determinants of access to agricultural information among crop farmers, determine farmers' access to radio and television stations and identify kind of information received from sources of agricultural information.

The study hypothesis was stated that there is no significant relationship between socioeconomic and institutional variables and access to agricultural information.

RESULTS AND DISCUSSIONS
Farmers' access to radio stations
Table 1 indicates that majority (91.4%), of the respondents have higher access to Radio Nigeria Kaduna, Hausa service of the Voice of America (VOA) (76.2%), Nagarta radio (72.8%) and the Hausa service of the British Broadcasting Corporation (68.2%). The respondents also had medium access to Alheri Radio (71.5%), Kada Radio (70.2%), Kaduna State Media Corporation (KSMC) (68.2%) and Freedom Radio (64.2%). The study finding indicates that farmers have access to almost all the radio stations in the study area but with different level of accessibility. Radio is an important tool in providing information for

enabling the rural community to make informed decision regarding their farming activities, especially in the rural areas of developing countries (Lwoga, 2010).

Table 1: Distribution of respondents based on access to radio stations (n=151)

Radio Station	No access	Low access	Medium access	High access
Radio Nigeria Kaduna	0.0	0.0	8.6	91.4
Nagarta Radio	0.0	0.7	26.5	72.8
KSMC Radio	0.0	3.97	68.2	27.8
Karama Radio	0.0	1.30	55.6	43.0
Supreme FM	11.9	78.1	9.3	0.7
KadaFM	0.0	6.6	70.2	23.2
Alheri Radio	0.0	17.9	71.5	10.6
Freedom Radio	0.0	24.5	64.2	11.3
VOA	0.0	7.9	13.9	76.2
BBC	1.98	7.9	21.9	68.2
DW Radio	5.96	13.9	43.7	36.4
RFI	6.6	16.6	46.4	30.5

Source: Field survey, 2018

Farmers' access to television stations

The result revealed that 49% of the respondents have medium access to Nigeria Television Authority (NTA) Kaduna, while 43.7% had high access to this station (Table 2). Also, 66.9% and 52.3% had medium access to both Kaduna State Television (KSTV) and Desmin Independent Television (DI TV), respectively. About 63% of the respondents also had low access to Africa Independent Television (AIT), while most of the respondents did not have access to Digital Satellite Television (DSTV) perhaps, due to high cost of subscription involved. Radio and television are the major types of media by which farmers received appealing messages very fast (Ramchandani, 2004).

Table 2: Distribution of respondents based on access to television stations (n= 151)

Television	No access	Low access	Medium access	High access
NTA Kaduna	0.0	5.3	49.0	43.7
KSTV	0.0	7.9	66.9	25.2
DI TV	3.97	42.4	52.3	1.3
AIT Television	22.5	62.3	15.2	0.0
Liberty TV	47.7	33.8	13.7	5.3
DSTV	57.6	23.8	7.9	10.6
Arewa 24	82.8	0.0	4.0	13.2
Farinwata	91.4	0.0	1.3	7.3
Dadinkowa	93.4	0.0	2.6	4.0

Source: Field survey, 2018

Information received from the sources indicated by the respondents

Table 3 showed the farmers received information on government policies on agriculture (98.01%), improved production technology (96.03%) and climate change sensitization (95.36%). The result implies that farmers in the study area received information mostly on government policies on agriculture, improved production technology and climate change sensitization. These information items are very essential in agriculture with a major impact on agricultural production.

Table 3: Information received from the sources indicated by the respondents

Information received	Frequency (n=151)	Percentage
Improved production technology	145	96.03
Improved marketing system	61	40.40
Climate change sensitization	144	95.36
Soil conservation techniques	12	7.95
Government policies on Agriculture	148	98.01
Storage	10	6.62
Pest and Disease	6	3.97
Erosion control	22	14.56

Source: Field survey, 2018

Determinants of access to agricultural information

Result of the linear regression analysis showed that educational attainment and credit access were positive and statistically ($p<0.01$) significant. Sex and extension contact were also positive and significant ($p<0.05$) (Table 4). Based on the result, it is established that the socioeconomic and institutional factors were the major determinants of farmers' access to information on agricultural technologies; hence, the null hypothesis is rejected. This corroborates with the findings of Yagos *et al*. (2017) which showed a significant relationship between personal characteristics of the respondents and access to information on agricultural technologies in Northern Uganda.

Table 4: Determinants of access to agricultural information

Variables	Coefficient	Standard error	t-value	P-values
Constant	4.645	0.803	5.783	0.000***
Age	0.031	0.020	1.589	0.114
Sex	0.848	0.288	2.947	0.004**
Educational attainment	0.731	0.128	5.711	0.000***
Household size	0.006	0.040	0.150	0.881
Farm size	0.099	0.079	1.252	0.213
Income level	0.316	0.252	1.254	0.212
Extension contacts	0.079	0.028	2.821	0.005**
Credit access	0.921	0.246	3.744	0.000***
F. value	5.635			
R-square	0.188			
Adjusted R-square	0.137			

Source: Field survey 2018

***Significant at 1%, **Significant at 5%

CONCLUSION AND RECOMMENDATIONS

Based on the results of the study, it is concluded that radio and television were more available and accessible mass media in the study area, hence serve as the major sources of agricultural information to the farmers. Socioeconomic and institutional factors were the major determinants of farmers` access to information on agricultural technologies.

The study recommended that all the sources of agricultural information to farmers such as Kaduna State Agricultural Development Programme and Ministry of Agriculture should strengthen the use of radio and television in information dissemination to farmers in the study area. Special consideration should also be made on the farmers' sex and education while disseminating information on agricultural technologies to them. Improvement in extension contact and credit access of the farmers will in turn lead to improvement in their access to information on agricultural technologies.

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INFORMATION NEEDS OF RICE PROCESSORS ON IMPROVED PARBOILING TECHNOLOGY IN KWARA STATE, NIGERIA

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ABSTRACT

The study assessed rice processors' information needs on parboiling technology. A two-stage sampling procedure was used to select 120 rice processors for the study. Data were collected through the use of interview schedule, frequency counts, percentages, means and multiple regression analysis. Results showed that the mean age of the processors was 45.6 years and 94% were married with a mean household size of 7 persons. Sources of information on rice processing were fellow processors (93.4%), radio (86.1%), cell phone (84.7%), as well as extension agents (35.8%). Respondents indicates information needs on processing skills such as drying (MS= 2.49), steaming (MS=2.51), information on hygiene (MS= 2.51), marketing linkage (MS= 2.39), de-stoning (MS= 2.00) and milling (MS= 2.31). Results of regression analysis indicate a significant and positive relationship between education (β=0.400,) years of experience (β=0.024,) frequency of extension contact (β=0.028), income (β=0.067) and information needs. The study concludes that there was information gap in rice processing and recommends that adequate and timely information should be disseminated through the right source on improved parboiling technology and should be targeted at the identified information needs for better improved quality of rice.

Keywords: Parboiling technology, information needs, rice processors

INTRODUCTION

Rice, *oryza sativa* is a staple food to more than of the world's population and about half of the world's paddy is parboiled (Miah *et al* 2008). There has been a steady increase in rice production and consumption in Nigeria (Imolehin and Wada 2000). This production increase has not been enough to meet the demand of the ever-increasing population of Nigeria. Nigeria is making improvements to make locally grown and processed rice more palatable and more nutritious. Among the improvements that has being proven to be very effective and cheap is improved parboiling method. This has been widely adopted among local processors in west Africa which is slowly making its way throughout Nigeria

Parboiling is a well-developed pre-milling treatment to achieve the maximum recovery of total head rice in rice milling and to minimize the breakage. More than 1000 years ago parboiling was done in simple clay pots to improve shelf life‖ and resistance against insects (Joachim, 2011). Parboiling of paddy is done in three steps, Soaking, Steaming and Drying. Soaking means paddy penetrates into water. Most defects that occur to the rice during transportation, harvesting and sun-drying are eliminated during the parboiling process (Igathinathene *et al.,* 2005). Therefore, milling paddy without parboiling results in rice that is devoid of these nutrients (Paiva *et al.,* 2015). These desirable qualities of parboiled rice make it a highly demand product worldwide, particularly in countries such as Nigeria, India, Italy, Turkey, USA and Bangladesh (Patindol *et al.,* 2008). Despite the huge amount of paddy produce in Nigeria, it's still one of the leading importers of parboiled rice (JET,2015). Paddy parboiling remains problematic despite its well establishment in many countries. This is as a result of the attributes of local rice which earned its name by characteristics such as partly burnt rice, discolored or broken, presence of stones and chalkiness. This has a negative impact on the country's economy and the livelihood of the local farmers.

Information is a key to success and has been generally accepted as an important resource for individual growth and survival. It is the realization of the place of information in goal's attainment that recently gave it the position of the fifth factor of production. In agriculture for example, new information and knowledge can fuel adoption of innovation and increase productivity. There is a link between agriculture and processing, information can be considered as the bridge that connects the two together Knowledge and information are basic ingredients for increased agricultural production and productivity. It is against this background that Hossain (1998) quoted in Opara (2008) noted that communication of agricultural information is a vital factor in the change process of the farming community. Therefore, information is a critical resource in the operation and management of the agricultural enterprise. Furthermore, access to the right information at the right time and from the right source, may shift the balance between success and failure of farmers. Farmers must have access to information about new technologies before they can consider adopting them. According to the International Finance Corporation (IFC) (2010), access to quality information, technical assistance and extension services is a critical factor f or successful smallholder production and adoption. The main of objective of this work is to assess the level of information needs among rice processors. The specific objectives of this research are to:

describe the socioeconomic characteristics of women rice processors in the study area. Identify the sources of information of respondents. assess the information needs on improved parboiling method

The hypothesis of the study was stated that there is no significant relationship between socioeconomic characteristics of rice processors in Kwara state and the information needs of rice processors.

METHODOLOGY

This study was carried out in Kwara state, Nigeria. Its capital is Ilorin. A Three stage sampling procedure was used to select 120 respondents used for the study. Data was collected through the use of structured interview, The independent variables were the socioeconomic characteristics of the respondents such as age, gender, religion, etc. The dependent variable is the level of use of information needs among rice processors in Kwara state and it was measured on a (3) three-point Likert scale of :(a) Highly needed (3) (b) moderately needed (2) (c) not needed at all (1)

RESULTS AND DISCUSSION

Socioeconomic characteristics

This section discusses the socioeconomic characteristics of the respondents. The results are as summarized in Table 1.

Table 1: Distribution of Respondents According to their Socioeconomic Characteristics

Variables	Frequency	Percentages	Mean	SD
Age (in years)				
≤ 30	29	24.2	42.8	12.8
31-40	32	26.7		
41-50	26	21.7		
51-60	22	18.3		
>60	11	9.1		
Marital status				
Married	113	94.2		
Widowed	7	5.8		
Years of Formal Education				
0	47	39.2		
1-6	62	51.7	10.9	1.1
7-12	11	9.1		
> 12	0	0		
Household size(person)				
1-3	2	1.7		
4-6	36	30.0	9.3	1.4
7-9	57	47.5		
> 9	25	20.8		
Experience of rice parboiling (Years)				
≤ 5	12	10.0		
6-15	42	35.0	18.8	10.2
16-25	39	32.5		
> 25	27	22.5		
Income (₦)				
≤ 500,000	10	8.3		
500,001-7500,000	20	16.7	1,033,400	367,871
750,001-1,000,000	41	34.2		
>1,000,000	49	40.8		

Source: Field Survey, 2020

Results presented in Table 1 shows that the mean age of the respondents was 42.79 years which implies that most of these women are of older generation. This is in line with the findings of Morris and Venkatesh (2000) that states that age differences influence the decision to adopt new technology as the younger generation finds it easier to adopt new technology compared to the older generation 94.2% of the respondents were married with 51.7% had primary education. Also, result shows that the average years of processing experience was 18.8 years with an average annual income of ₦1,033,400. This result agrees with the findings of Sennugga *et al* 2020 that adoption of improved agricultural technologies has been associated with higher earnings and lower poverty, improved nutritional status, lower staple food prices.

Table 2: Distribution of respondents based on sources of information

Sources of information	Frequency	Percentage
Mobile phones	128	84.7
Television	10	6.6
Fellow processors	141	93.4
Radio	130	86.1
News paper	6	3.9
Extension agents	54	35.8
Magazine	2	1.3
Internet	12	7.9

Source: Field Survey, 2020

Results in table 2 shows that the use of mobile phones to get information is common among the rice processors with a percentage of 84.7%, followed by Radio (86.1%) next to it is extension agents (35.8%). Extension agents' effort was not impressive. These available sources of information are expected to be sufficient for acquiring information necessary for rice processing if they are reliably adequate. This result is supported by Ofuoku *et al* (2008)

Table 3: Level of information needs of rice processors on improved parboiling technology in Kwara state

Processing	Not Needed F (%)	Moderately needed F (%)	Highly Needed F (%)	Mean Score	Remark
Washing of the raw paddy	61(50.8)	35(29.2)	24(20.0)	1.70	Information, not needed
Soaking	70(58.3)	50(41.7)	0(0.0)	1.57	Information, not needed
Adequate Steaming	20(16.6)	35(29.5)	65(54.2)	2.51	Information Needed
Proper hygiene	26(21.6)	31(25.8)	73(60.8)	2.51	Information Needed
Market linkage	31(25.8)	39(32.5)	50(41.6)	2.14	Information Needed
De-stoning	28(23.3)	47(39.1)	45(37.5)	2.00	Information needed
Milling	25(20.8)	33(27.5)	62(51.7)	2.31	Information needed

Source: Survey, 2020

Table 3 shows that rice processors expressed strong desire for more information on adequate steaming of paddy and proper hygiene (MS- 2.51) respectively followed information on milling (MS= 2.31) next to it is market linkage (MS-2.14) There is low need for information on de-stoning, washing of paddy and soaking.

Table 4: Result of multiple regression analysis of some selected socioeconomic characteristics and information needs on rice processing

	Unstandardized Coefficients			
	β	Std. Error	t-value	Sig.
(Constant)	1.666	0.283	5.898	0.000
Age	-0.009	0.006	-1.601	0.112
Sex	-0.004	0.096	-0.046	0.963
HH size	0.005	0.015	0.348	0.728
Education	0.400*	0.062	-2.575	0.001
Experience	0.024*	0.071	0.546	0.000
Income	0.067*	0.044	5.539	0.000
Extension contact	0.028*	0.118	-4.074	0.000

Source: Field Survey, 2020

Significant at p≤0.05 R=0.532, R^2=0.283, Adjusted R^2=0.240. P<0.05

Results presented in table 4 show the multiple regression analysis between some socioeconomic characteristics and level of information needs on rice processing. At P<0.05, years of formal education (0.400) positively influenced the level of information needs on rice processing. Also, annual income realized from rice processing (0.067), years of experience (0.024), and contact with extension (0.028) positively influenced the level of information needs on rice processing. Increase in the number of extension contacts will make the level of information needs

increase. This finding is consistent with report of Kayode *et al* (2019).

CONCLUSION AND RECOMMENDATIONS

The sources of information explored by the respondents were mobile phones, fellow processors, radio and. extension agents. Information needed were most crucial in; adequate steaming, proper hygiene, market linkage, de-stoning and milling of paddy rice. Adequate and timely information should be disseminated through the appropriate source such as extension agents, research institute and other relevant agencies on improved parboiling methods and should be targeted at the identified information needs for better improved quality of rice.

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EFFECT OF IFAD PROGRAMME ON THE INCOME OF RICE PRODUCERS IN AGRICULTURAL ZONE III OF NIGER STATE, NIGERIA

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ABSTRACT
The study assessed the effect of IFAD programme on the income of rice value chain producers in Agricultural Zone III of Niger State, Nigeria. Sample size of 123 rice producers under IFAD programme were selected using multi-stage sampling method. Structured questionnaire complimented with interview scheduled were used for data collection. Data were analysed using descriptive statistics and linear regression. The study indicated that 75.6% of the respondents were male with mean age of 38.0 years. Also, 65.9% of the respondents had formal education in the study area. Also, the coefficient of expansion of land (2.927386), size of farm land (0.31072), duration of participation (-6.567839) and cost of labour (-0.0022504) had significant effect on the income of rice producers. The major constraints faced by rice producers were flood ($\bar{X}$ =2.35), poor credit facilities ($\bar{X}$ =2.31) and problem of farm inputs ($\bar{X}$=2.26). It is recommended that fund and credit facilities should be provided to farmers by Value Chain Development Programme in order to enhance their efficiency. Also, duration of the programme should be increased in order to enhance farmers' income.
Keywords: Effect, IFAD, Programme, Income, Rice-Producers

INTRODUCTION
Rice (*Oryza sativa*) is the most important food crop for half of human race (United State Agency for International Development (USAID) 2015). It is the world's most consumed cereal after wheat which shapes the lives of millions of people; more than half of the world's population depends on rice for 80% of the daily calories ingested. The world rice production is 691.6 million metric tons of paddy per year with global rice production increasingly considerable, since the sixties (FAOSTAT, 2015). More than 90 percent of the world rice production takes place in developed countries, mostly in Asia with China and India being the two largest producers, while Latin America and Africa produce 3.8 and 2.8 percent respectively (FAOSTAT, 2015). In value chain system, farmers are linked to consumers' needs working closely with suppliers and processors to produce specific goods to meet consumers' demand. Similarly, through the flows of information and products, consumers are linked with needs of the farmers. Under this approach, and through continuous innovations, the return to farmers can be increased and livelihoods enhanced. It is against this background that the Value Chain Development Programme was initiated by Federal Government of Nigeria and International Fund for Agricultural Development to address the constraints along rice value chain through an inclusive strategy of strengthening the capability of actors along the chain including producers, processors, marketers as well as public and private institutions, service providers and access to market. Value Chain Development Programme (VCDP) in Nigeria is a six-year development initiative of the Federal Government of Nigeria (FGN) and International Fund for Agricultural Development (IFAD) programme to improve cassava and rice value chains for small farmers in six States of Anambra, Benue, Ebonyi, Niger, Ogun and Taraba while addressing the constraints along the value chain. Agricultural transformation through commodity value chain approach with emphasis on enhancing productivity and access to markets for rice and cassava smallholder farmers via Value Chain Development Programme is embedded in Nigeria government's plan (VCDP, 2015). VCDP is an agricultural programme inaugurated by IFAD, Value Chain Development Programme. This programme takes a holistic and demand- driven approach to addressing the constraints along the rice and cassava value chains. It does so through an inclusive strategy, strengthening the capacity of the actors along the chain including producers, processors, marketers as well as private and public institutions, policy – makers and ragulators. The objective of the study are to describe the socioeconomic characteristics of rice producers, effect of the IFAD programme on the income of rice value chain producers and identity the constraints faced by rice producers in the study area.

METHODOLOGY
Niger State is located in the Guinea Savanna Ecological Zone of Nigeria. The State is divided in to three agricultural zones: Zone I with headquarter in Bida, while zone ii and iii have their headquarters at Kuta and Kontagora respectively. The State has 25 Local Government Areas (LGAs). It lies within Latitudes 8^0 20`N to $11^o$ 30`N and Longitude 3^0 30`N and Longitude $3^0$ 30`E to 7^0 20` with an area of 86,000 Km^2 or 8.6 million hectares of land, representing about 9.3% of the total land area of the country (Niger State Agricultural Mechanization and Development Authority (Niger State Geographical Information System (NIGIS, 2015). The State has the projected population value of 5,989,340 in 2018 using growth rate of 2.88%.

Eighty percent (80%) of the State population live in the rural areas and are predominantly farmers, that makes the State agrarian society (NAMDA, 2018). Crops that are commonly cultivated in the state include food and cash crops such as rice, sorghum, cowpea, maize, millet, cassava, cotton sweet potato, cashew, beans, soya beans, groundnut, yam, melon, sugarcane, vegetables as well as tree crops such as locust beans, shear – nut, cashew among others. Animal reared include cow, goat, sheep, rabbit, and poultry. Multi-stage sample techniques were used for the study. The first stage involved purposive selection of Wushishi Local Government Area. The second stage involved random selection of six (6) villages from the LGA. The third stage involved use of proportional sampling to select 10% of the sample size which gave a total of one hundred and twenty-three (123) rice farmers. Method of data collection primary data were used for this study. The data were collected through the use of questionnaire complemented with interview schedule.

Objectives i and iii were achieved using descriptive statistics such as frequency and percentage, count and mean

Linear Regression Model

Objective ii was achieved using Linear Regression Model. The Model is specified below

$Y = f(x_1, x_2, x_3, x_4, x_5, x_6, x_7)$

Y = Income of rice producers (N)

X_1 = Cost agrochemical (Naira)

X_2 = Training of rice farmers by IFAD at local, state level (Number)

X_3 = Expansion of land (ha)

X_4 = Farm size (ha)

X_5 = Cost of fertilisers on rice farm (Naira)

X_6 = Duration of participation (year)

X_7 = Labour cost

e = Error term which was used to capture the influence of variables not included in the model.

RESULTS AND DISCUSSIONS

Socioeconomic characteristics

Table showed that 75.6% of the respondents were male while 24.4% were females. This implies men are more into rice production in the study area. This could be attributed to women involvement in marketing and processing of rice. Also, this could be attributed to women engagement in domestic activities. Finding is in line with that of Alhassan *et al.* (2019) also indicated that majority of rice farmers in Niger State, Nigeria was male. Table 1 revealed that the mean age of rice producers under value chain programme was 38.0 years, signifying an active and productive age in which risks and proper measures are taken that would improve rice producers' income. This finding agrees with Mohammed *et al.* (2018) who reported that majority of rice producers in Niger State, were young farmers. Table 1 indicated that 65.0% of the respondents had formal education while 34.1% did not access formal education. This implies that most of the respondents had access to one form of formal education and the other. Access to formal education is expected to increase the knowledge and skills of rice producers. Access to education will also create better atmosphere for the adoption of new innovation among rice producers. Table 1 showed that the mean farming experience for rice producers was 15.8 years, implying many years in rice farming that could be of added advantage in the area of acquiring practical experience that will enhance their income. This result is in consonance with Nwalieji (2016) who reported high experience among rice producers in Anambra State of Nigeria.

Table 1: Socioeconomic characteristics of rice producers (n=123)

Variables	Frequency	Percentage	Mean
Sex			
Male	93	75.6	
Female	30	24.4	
Age			
<30	12	9.8	38.0
31-40	39	31.7	
41-50	67	54.5	
>50	9	7.3	
Access to formal education			
Access	81	65.9	
No access	42	34.1	
Experience in rice farming			
1-10	12	9.8	15.8
11-20	45	36.6	
21-30	34	27.6	
>30	32	26.0	
Access to extension			
Yes	57	46.3	
No	66	53.7	

Sources: Field survey, 2019

Effect of the IFAD programme on the income of rice producers

Table 2 showed effect of IFAD programme on the income of rice producers. The result indicated a R-squared of 0.5315 significant at 1% level of probability. This implies that 53.2% variation in the effect of IFAD programme on income of rice producers was explained by independent variables present in the model. The coefficient of expansion of land (2.927386) was positively significant at 1% level of probability, implying that expansion of land will increase the income of rice producers' income. Also, the coefficient of size of farm land (0.31072) was positively significant at 1% level of probability, signifying that increase in farm land will increase the income of rice producers. The coefficient of duration of participation (-6.567839) was negatively significant at 1% level of probability, signifying that increase in duration of participation will reduce rice farmers income. This was contrary to priori expectation. The coefficient of cost of labour (-0.0022504) was negatively significant at 1% level of probability. This implies that reduction in labour cost will increase rice producers.

Table 2: Effect of the IFAD programme on the income of rice value chain producers

Variables	Coefficient	t-value
Cost agrochemical	-2.58e-06	-0.02
Training	.0017589	0.71
Expansion of land	2.927386	3.36***
Size of farm land	.31072	2.77***
Cost of fertilizer	4.97e-06	0.95
Duration of participation	-6.567839	-2.97***
Labour cost	-.0022504	-6.15***
Constant	42.46309	8.73***
F-value	1%	
R-squared	0.5315	
Adj R-squared	0.5030	

Sources: Field survey, 2019
*** Significant at 1% level of probability

Constraints faced by rice producers

Table 3 showed that flood ($\overline{X}$=2.35) ranked 1st as the most constraints faced by rice producers in the study area. This was followed by poor credit facilities ($\overline{X}$=2.31) ranked 2nd. Flood in Wushishi and its environment has affected most of the rice farmers in the study area leading to low output. Problem of farm inputs ($\overline{X}$=2.26) ranked 3rd. Lack of access to farm inputs is one the major constraint faced by rice farmers in Nigeria. Also, high cost of farming equipments ($\overline{X}$=2.09) ranked 5th. However, weed ($\overline{X}$=1.79) ranked 6th was not a serious constraints faced by rice producers in the study area

Table 3: Constraints faced by rice producers in the study area (n=123)

Variables	Very serious	Serious	Not serious	Sum	Mean	Rank	Decision
Inadequate funds	53 (43.1)	48 (39.0)	22 (17.9)	277	2.25	4th	Serious
Poor credit facilities	41 (33.3)	69 (56.1)	23 (18.7)	284	2.31	2nd	Serious
Flood	64 (52.0)	38 (30.9)	21 (17.1)	289	2.35	1st	Serious
High cost of farming equipments	39 (31.7)	57 (46.3)	27 (21.9)	258	2.09	5th	Serious
Problem of farm inputs	50 (49.7)	55 (44.7)	18 (14.6)	278	*2.26*	3rd	Serious
Weeds	28 (22.8)	41 (33.3)	54 (43.9)	220	1.79	6th	Not serious

Sources: Field survey, 2019

CONCLUSION

From the findings, it is concluded that majority of rice producers were male and in their active age of farming. The the coefficient of expansion of land, size of farm land, duration of participation and cost of labour had significant effect on the income of rice producers. The most constraints faced by rice producers in the study area were flood poor credit facilities and problem of farm inputs. It is recommended that fund and credit facilities should be provided to farmers by Value Chain Development Programme in order to enhance their efficiency. Also, duration of the programme should be increased in order to enhance farmers' income.

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THE ROLE OF AGE GRADES IN MAINTAINING LAW AND ORDER IN RURAL COMMUNITIES OF ABIA STATE

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ABSTRACT

Age grades in Abia State are principal social groups used by most communities to foster development. This paper qualitatively assessed the roles played by these groups in maintaining law and order, ensuring security and peaceful coexistence among members and the community at large. The paper reviewed several literatures which revealed that age grades in the study area are community watchdogs who take turns to keep watch over their communities during the day and night. The younger groups are used as foot soldiers to implement resolutions reached by the leadership of the communities. Due to internal solidarity, age grades avoid things that bring conflicts within their groups. Good conduct and hard work are rewarded while offenders are punished. The paper concluded that age grades play significant role in the maintenance of law and order in rural communities. It is therefore recommended that age grades be formed in rural communities and empowered to help each other and also manage security issues.

Keywords: Age grade, law and order, insecurity

INTRODUCTION

Insecurity is a global social challenge that threatens the foundation of many communities. It has robbed many of their homes, peace, source of livelihood and even dreams. These have led to continuous break down of law and order with people engaging in self-defence, corrupt practices and cutting corners, jungle justice, proliferation of arms, and further crimes just to mention a few (Udoh, 2015). In order to check this menace, rural communities in Abia state have set up social groups and local security institutions such as age grades and vigilante groups to assist the government whose responsibility it is to secure the lives and properties of her citizenry. Age grades from history have always been at the fore front of security issues (Ijekpa, 2007). They were used for intertribal wars and as territory defenders. In recent times however, the scope of their operations has increased to include provision of rural infrastructure (Obuba, 2008; Ndukwe, 2015).

The purpose of this paper is to critically review relevant literature on insecurity and the age grade system, x-ray the role of age grades in maintaining law and order and bring to lime light their significant contribution in curbing insecurity and ensuring peace and development in rural areas of Abia State. It also looked at the theory on which the work is anchored and made recommendations.

CONCEPTUAL REVIEW

Concept of insecurity

Insecurity is a global phenomenon cutting across nations. It is the state of being subject to danger, threat or injury. It can be described as the feeling experienced during periods of vulnerability, uncertainty and lack of confidence. Achumba, Ighomereho and Akpor-Robaro (2013) identified want of safety; danger; hazard; uncertainty; want of confidence; inadequately guarded or protected; lacking stability; troubled; lack of protection; and unsafe as previously used descriptors of the term. They went further to sum it as a state of vulnerability to harm and loss of life, property or livelihood.

The Federal Government of Nigeria's constitutional responsibility of taking care of the welfare and security of her citizens, as enshrined in the 1999 constitution, is a function they have not lived up to. Reiterating this Ewetan and Urhie, (2014) stated that governments have rather failed to provide a secured and safe environment for lives, properties and the conduct of business and economic activities. Governments' inability to provide security for her citizenry especially those in the rural areas has made them vulnerable.

The rural communities of Abia state have realised that they cannot completely depend on the government if they must survive, be at peace, feel safe and protected. Among the provisions put in place to ensure peace and security and reduce conflict to the barest minimum is the age grade system (Ibenekwu, 2011).

Concept of age grade system

The age grade system is common in most communities in Igboland and in some parts of her neighbouring states such as Akwa Ibom, Cross River, Edo, Delta and Rivers (Ekhosuehi, 2017; Dike, 2012; Akpomuvie, 2009; Erim, Akpama and Asor, 2011; Ekanem, 2010). Age grades consist of groups of people who traditionally belong to the same age bracket judging by societal norms and values. In Abia State it is common to see age grades where men and women of same age bracket belong to same group e.g., Ohafia, Bende, Arochukwu, In Umuahia North and South wives and their husbands belong to the same age grade irrespective of their age difference. For some other communities it is for the men folks alone.

Age grades are so entrenched in the traditional lives of rural communities in Abia State that very little can be done without them. They are

the basis of most social activities such as wrestling, shared labour, marriages and sometimes assignment of roles. An active age grade member's function such as wedding, burial etc. is often the responsibility of the group. They stand in solidarity with their members through thick and thin to ensure brotherliness and well-being of members.

While serving the needs of its members, age grades also serve the community by ensuring that peace reigns and the people are safe. They have been known to foster development in rural communities in several ways. To buttress this Forded and Jones (2005) in Ndukwe (2015) asserted that age grades helped in community development and in ensuring the welfare of their members, for instance, they helped in clearing paths, cutting forests, acting as market police and guarding in settlement in time of war.

The age grade system in Abia state

Every community in Abia State where the age grade system is practiced has several functional age grades at a time. Some have as much as 10, 12 and 13 active and recognised groups. New groups are formed regularly depending on the age bracket of age grades in the community.

Different age grades go by different names which they take up during their naming ceremony popularly called *Iza afa* or *Izara afa* (Oko, 2011). According to Ndukwe (2015) age grades take different names depending on the purpose, time or circumstances surrounding its formation. Some of the names include *Udomba, Ikejimba, Akajiaku, Ifemba, Agumba, Ugomba, Enyimba, Okaome, Otu-Obi* (Udomba, 2018). Prior to this naming ceremony, age grades in some communities operate as affiliates of older groups, taking up their name with the suffix 2 or 3 as the case may be. Within this period, the members of the age grade execute mini project which they present to the community to show that they have come of age and are ready to be independent.

The activities of most age grades in Abia state culminate at the time of presentation of their major projects to the community which coincides with the time of their retirement from active community service. The traditional retirement ceremony called *Igba Uche, Igboto Mma, Igboto Omu or Igba Ekpe* in Ohafia and its environs signify time of rest (Obuba, 2008). This is usually an occasion celebrated with pump and pageantry, where those who have served their communities meritoriously are honoured. It is payback time – time to reciprocate the good they have done in the community (Obuba, 2008; Ijekpa, 2007; Ndukwe, 2015; Udomba, 2018). Some of the projects executed by age grades and handed over to the communities include schools, pipe-borne water, drainages, town halls, civic centres, rural electrification.

Roles of age grades in maintaining law and order and ensuring security in the community

It is common practice among age grades to take turns in cleaning their surroundings. Ibenekwu (2011) reiterated this by stating that age grades performed such public functions as clearing the paths, construction of roads and markets. This is to ensure that there are no hide outs for hoodlums and dangerous animals and reptiles. The cleaning and clearing of surroundings help to reduce sicknesses and diseases to the barest minimum, make it easier for people to see clear and far, notice strange and threatening advances easily and see possible ways of averting them.

Age grades take turns to watch the communities during the day and at night. While men and women are at work, in the farms and doing their businesses, some age grade members are assigned in turns to keep watch over their communities. Their duty is to protect the aged, the nursing mothers, children and the vulnerable as well as secure lives and properties (Obuba, 2008). At night they also keep guard to protect their people. It is on record that age grades have had to fight wars to protect their territories or to defend their communities against adversaries (Ibenekwu, 2011; Ndukwe, 2015).

Laws or decisions taken by community leaders are implemented by age grades. The younger age grades are often the foot soldiers who serve as community police force (Ibenekwu, 2011; Iruoma, 2017). In times of emergencies or crises such as fire outbreaks, kidnap and robbery or even search for missing persons age grades take the lead to salvage the situation. Cooperation and commitment to community well-being and peace is often the watch word (Maduka, 2018).

There is very high level of solidarity among age grades in Abia state, such that injury to one is injury to all. In order to reduce criminality among their members, age grades have had to institute welfare packages to help the less privileged among them.

It is worthy of note to state that age grades make deliberate efforts to see that there is peace among its members. Conflicts within groups are settled among them (Iruoma, 2017). It is a taboo for a member to bring in the police to arrest a fellow member. The leadership of the group has the responsibility of resolving internal conflicts and making sure it does not escalate. Hence Maduka (2018) reported that the members of the groups are faithful to each other and loyal to the group. Their loyalty to the group makes it easy for them to forgive wrongs and quickly settle disagreements so they can work together as a team. Every age grade has rules and regulations and terms of operation. According to Ugiagbe and Ugiagbe, (2015) age grades settle disputes between their members and punish erring members who engage in acts inimical

to their reputation and ideology. This is aimed at ensuring that criminality is reduced and law and order maintained in the rural areas.

Age grades have also gone beyond physical defence of the communities against invasion to provision of social security and amenities. They ensure that basic social infrastructures which are necessary for the peoples' well-being but lacking in their communities are provided. They task/levy themselves and through self-help provide for the economic and social needs of the rural populace (Maduka, 2018; Iruoma, 2017; Ndukwe, 2015; Udomba, 2018).

The structural and functional theory

This model, also called functionalism, is an approach that likens society to a living organism with many parts and each part having such functions as to make it indispensable to the survival of the system. According to Macionis and Gerber (2010), the various components of a system work together to promote stability and solidarity and the society is seen as a body made up of many parts which must function to keep it whole (Urry, 2000). Functionalism theory focuses on structure, social function and relationship between the various institutions that constitute a society.

From the foregoing, age grades as institutions within the society are conscious of the fact that they have roles to play in maintaining law and order and ensuring peace in the community. Crime prevention and security is everybody's business and requires collective action in order to achieve meaningful result and see to the efficiency of the system. With the age grade system, every individual has and performs some functions to contribute to the success of the group and the entire community either in cash or kind or both. These tasks and functions help to make the community stable and the individuals and institutions interdependent.

CONCLUSION AND RECOMMENDATIONS

Age grades engage high level of social capital such as solidarity, cooperation, commitment and reciprocity in their relationship and this has made it possible for them to effectively discharge their duties of maintaining law and order and ensuring peaceful co-existence among community dwellers - both indigenes and non-indigenes (Iruoma, 2017; Maduka, 2018). Age grades have made communities in Abia state safer havens for their people, where they can come in and relax, do business and feel secured without fear. This they have achieved by keeping watch day and night to fish out hoodlums, ensuring that there is unity among her members, enforcing and implementing laws, orders and decisions of the community leadership, resolving conflicts within their group specifically and within the community in general, tending to the welfare needs of their members and providing basic social amenities in their various communities through self-help to help boost social and economic activities.

It is therefore recommended that age grade formation be encouraged in all the rural communities to assist law enforcement agents in maintaining law and order and watching over their communities. Economic security and business safety can only be achieved in a peaceful environment where the people are law abiding, therefore age grades should be encouraged and empowered to maintain peace. No community develops amidst chaos therefore it is needful to have people who understand the community, its culture and environs to perform security functions and the age grade is most qualified. Having exhibited strong sense of commitment and responsibility in managing community affairs, projects funds earmarked by government for projects should be channelled through the groups as this will help to empower them and make them more effective in their duties.

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ACTIVITIES OF HERDSMEN AFFECTING CROP PRODUCTION AND COPING STRATEGIES ADOPTED BY FARMERS IN EDO STATE, NIGERIA.

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ABSTRACT
The study identified the activities of herdsmen affecting arable crops production and the coping strategies adopted by the arable crop farmers in managing the herdsmen activities in Edo State, Nigeria. A multistage and purposive sampling was used to select one hundred and twenty-five (125) respondents. A well-structured and validated interview schedule was used to collect data from the respondents. Data were analysed using descriptive statistics such as mean, frequency and percentages. The study revealed that shooting of innocent citizen by herdsman ($\bar{x} = 5.0$), grazing on food crops by their animals ($\bar{x} = 4.92$), raping of women on the farm ($\bar{x} = 4.84$), theft of stored farm produce to feed themselves ($\bar{x} = 4.76$), herdsmen causing bush fire ($\bar{x} = 4.72$) and harvesting crops to feed themselves ($\bar{x} = 4.36$) were the prominent herdsmen activities affecting arable crop farmers' production activities with mean values equal to or above the grand mean of 4.7. The commonly used coping strategies by the farmers were; praying for peace (93.6%), psychologically prepared for the worst (84%) involvement in supplementary occupation outside crop farming (64%) and early harvesting of crops (56%). The study concluded that several activities of the herders affect arable crop production negatively and farmers are trying to cope with the situation using different mechanisms. The study recommended that to avert these activities there is need to ban open grazing and ranching be embraced. Community policing and regular dialogues between the herders and the farmers is also important.
Keywords: Herdsmen, arable crop, production, bandits, coping strategies

INTRODUCTION

The survival of human race is hinged on the availability and accessibility of food in different forms. The food of human derivable from both crops and animals have been hampered by several factors in different regions of the world. These factors include weather, insect pests and diseases, technical know-how, availability of technology, human activities and several other factors. Human activities are in different categories. In Nigeria the production of arable crops for the ever-increasing population of the country has been adversely affected by the activities of herdsmen across the country. It has become a national issue that has been debated from different angles adducing different reasons as the root cause.

The Fulani indisputably represent a significant component of the Nigerian economy. They constitute the major breeders of cattle, the main source of meat, the most available and cheap source of animal proteins consumed by Nigerians. The Fulani own over 90% of the nation's livestock population which accounts for one-third of agricultural GDP and 3.2% of the nation's GDP (Eniola, 2017). Furthermore, the impact of the Fulani on the local food chain and national food security is as well important and worthy of consideration. The movement of pastoralist from one area of the country to another is usually caused by the increasing demand for fresh grazing grounds especially during drought period, when the pastoralists move southwards because of the availability of pasture. In most cases, the pastoralists do encounter problems with the local people because farmers' crops were being destroyed by their cattle (Olaleye *et al*, 2013).

The farmers claim the pastoralists deliberately bring animals to graze on their farmland and cause malicious damages to their crops but in the defence of some of the herdsmen they claim the farmers shift to planting on their grazing routes having been well manure over consistent grazing (Eniola, 2017). The ugly trend has not only raised question about peaceful coexistence of different ethnic groups in Nigeria, but has also forced individual states to introduce legal measures to curtail the activities of herders across their states (Ngwodo, 2018) With both parties trading blame, the increase in competition for arable land has often led to serious manifestation of hostilities and social frictions among the two groups in many parts of Edo state, the state is strategic because it has agro-ecological belts with abundant grass(savannah) and also high forest where rainfall lasts for most parts of the year. This has made Edo state attractive for the herdsmen to graze their animals. It is therefore imperative to conduct this survey and achieve these two cardinal objectives:

1. identify herdsmen' activities that affect arable crop production in the state;
2. ascertain the coping strategies adopted by the arable crop farmers in managing the herdsmen activities in the study area.

Hypothesis of the study was stated that there is no significant relationship between the activities of the herdsmen and the farmers' coping strategies.

METHODOLOGY

The study area is Edo State which is an inland state in central Southern Nigeria; its capital is Benin City. It was formed in 1991 by splitting Bendel State into Edo and Delta State. Edo state current population is around 3,218,332 people. It is located on latitude 6.5438° N, longitudes5.8987°E. the state has 18 local government Areas. Agriculture is the predominant occupation of people in this State. The State is endowed with abundant natural resources such as crude oil, natural gas, clay chalk, marbles and limestone.

Sampling Procedure and Sample Size: A multi-stage purposive and random sampling procedure was used to select respondents for the research. Edo State is one of the states in Nigeria that have recorded high incidence of Farmer-herdsmen conflict (Sulaiman, 2017). Out of the 18 local government areas (LGAs) in the state, there are 10; mostly experiencing farmer-herdsmen conflict are: Orhionmwon, Etsako East, Esan West, Esan Central, Akoko Edo, Owan West, Owan East, Uhumwonde, Ikphoba-Okha, Ovia North-East. Out of these 10, five L.G.A.s was randomly selected; they are Orhionmwon, Etsako East, Esan Central, Akoko Edo, Ovia North East. In each LGA, five farming communities were randomly selected, five arable crop farmers were purposively selected from each of the five farming communities based on a pre-survey using local leaders to identify farmers that did not experience Fulani herdsmen activities in 2017, but thus experienced it in 2018 giving a total of 125 farmers from 25 communities. Relevant data was collected with the aid of well-structured questionnaire.

Measurement of variables

Activities of the herdsmen on arable crop production in the state. A list of activities was presented to the respondents to choose from and was operationalized on a 5-point Likert scale of strongly agree=5, agree=4, undecided=3, disagree=2 and strongly disagree=1. A grand mean of 4.7 was obtained for all items on schedule, any mean score greater than or equal to the grand mean was regarded as strongly agree while any mean score lesser than the grand mean was regarded as strongly disagree.

Coping strategies: the farmers were given a range of pre-defined options and asked to select the level at which he concurs on a five-point Likert scale.

RESULTS AND DISCUSSSION

Activities of Herdsmen Affecting crop Production by Farmers

Shooting of Innocent Citizens by Herdsmen

Table 1 shows that all (100%) the respondents strongly agreed that shooting citizen by herdsmen are how herdsmen oppress the arable crops farmers. The mean score of 5.0 ascertained that the decision of the respondents skewed towards the fact that shooting citizen by herdsmen was one of the important activities by herdsmen affecting crop production

Grazing on Food Crops by their Animals

Table 1 shows that majority (92.0%) of the respondents strongly agreed to the statement that grazing on food crops by their animals was an important activity of herdsmen in the study area. The mean score of 4.92 ascertained that the opinion of the respondents was of the fact that herdsmen grazed their animals on crop farmers' farm which was buttressed by the majority (84.0%) who strongly agreed to the statement.

Raping of Women on their Farms

The result in Table 1 further reveals that majority (84.0%) strongly agreed that raping of women on the farm was an activity of the herdsmen while 16.0% of the respondents agreed to the statement that herdsmen raped women on the farm. The mean score of 4.84 ascertained that the decision of the respondents skewed towards agreeing to raping of women on their farm

Herdsmen Causing Bush Fire

Table 1 shows that majority (80.0%) strongly agreed to the statement that herdsmen cause bush fire**.** This was followed by those who agreed (16.0%) that herdsmen caused bush fire and those who were undecided were 4.0%. The mean score of 4.72 confirms bushfire as an activity of the herdsmen.

Pollution of Water Bodies by Herdsmen

Table 1 shows that majority (80.0%) strongly agreed to the statement on pollution of water bodies by herdsmen**.** This was followed by those who agreed (16%) with pollution of water bodies by herdsmen and those who were undecided representing 4%. The mean score of 4.72 ascertained that the pollution of water bodies by herdsmen was an activity affecting arable crop production in the study area.

In conclusion, the findings showed that shooting of innocent farmers by herdsmen ($\bar{x} = 5.00$), grazing of food crops by herders' herds ($\bar{x} = 4.92$), raping of women on the farm ($\bar{x} = 4.84$), theft of farm produce to feed themselves ($\bar{x} = 4.76$), bush burning ($\bar{x} = 4.72$) and pollution of water ($\bar{x} = 4.72$), were the prominent activities of herdsmen in the study area.

Table 1: Herdsmen activities affecting arable crop production

Herdsmen Activities	SD F (%)	D F (%)	U F (%)	A F (%)	SA F (%)	Mean	Decision
Shooting of Innocent citizen by herdsman	0.0	0.0	0.0	0.0	125 (100.0)	5.00	SA
Grazing on food crops by their animals	0.0	0.0	0.0	10 (8.0)	115 (92.0)	4.92	SA
Raping of women on the farm	0.0	0.0	0.0	20 (16.0)	105 (84.0)	4.84	SA
Herdsmen causing bush fire	0.0	5 (4.0)	0.0	20 (16.0)	100 (80.0)	4.72	SA
Pollution of water bodies by herdsmen	0.0	5 (4.0)	0.0	20 (16.0)	100 (80.0)	4.72	SA
Disregards for local Authority	10 (8.0)	5 (4.0)	0.0	50 (40.0)	60 (48.0)	4.16	SA
Hostility on local Residents	0.0	0.0	5 (4.0)	30 (24.0)	90 (72.0)	4.68	SA
Theft of farm produce to feed themselves	0.0	0.0	0.0	30 (24.0)	95 (76.0)	4.76	SA
Overgrazing	0.0	5 (4.0)	0.0	25 (20.0)	79 (56.0)	4.68	SA
Harvesting crops to feed their animals	0.0	0.0	0.0	50 (40.0)	75 (60.0)	4.60	SA
Harvesting crops to feed their themselves	0.0	5 (4.0)	0.0	65 (52.0)	55 (44.0)	4.36	A

Source: Field Survey, 2019.
SD= Strongly Disagree, D=Disagree, U=Undecided, A=Agree and SA=Strongly Agree
Grand Mean=4.7. Strongly Agree = ≥4.5; Agree = 3.5 – 4.49; Undecided = 2.5 – 3.49; Disagree = 1.5 – 2.49; Strongly Disagree = ≤1.5

Coping strategies used by the respondents

The coping strategies were classified as problem-oriented coping strategies (POCS), emotion-oriented coping strategies (EOCS), and social support-seeking coping strategies (SSCS).

Respondents generally used combinations of strategies that traverse the three classifications as no single strategy is enough to bring the needed succour caused by conflict.

As shown in Table 2, under problem-oriented coping strategy, the most widely used coping strategies were supplementary occupation (s) (64.0%), early harvesting (56.0%) and Purchase of food crops (52.0%). The use of these strategies portends varying implications for agricultural production as well as the farmers. For instance, the pursuance of alternative occupations could introduce additional fund for farming, but could also imply less time and attention for farming among the concerned farmers. Although 'increasing farm size' was considered as conflict coping strategies by farmers, when this is not properly carried out, especially when done without adequate consideration for herdsmen's stock routes, there could be further problems with cattle herdsmen. Early harvesting as a coping strategy also introduces the need for adequate storage and processing techniques and expenses. The fact that the farmers claimed to buy foodstuff for home consumption may indicate the severity of the effect of destruction of their farms. Moreover, the use of prayer for peace (93.6%) and appeasement (43.2%) under emotion-oriented coping strategy were also prevalent. In addition, the prevalent coping strategies used under social support-seeking coping strategies were preparation for the worst (84.0%), worked harder (64.0%), use of experience (58.4%) and Help from relations/friends (52.0%) to ameliorate the adverse effects of conflict with herdsmen.

Table 2: Coping strategies used by farmers for herdsmen activities

Coping Strategies	Frequency	Percentage
Problem-oriented		
Supplementary Occupation (s)	80	64.0
Early harvesting	70	56.0
Purchase of food crops	65	52.0
Increased labour input	55	44.0
Stayed late on farm at night	40	32.0
Borrowed Money	35	28.0
Relocate farms	20	16.0
Used charms	19	15.2
Increase farm size	15	12.0
Emotion-oriented		
Prayed for peace	117	93.6
Appeasement	54	43.2
Pretence	49	39.2
Used drugs/alcohol	33	26.4
Vengeance	20	16.0
Social support		
Prepared for the worst	105	84.0
Worked harder	80	64.0
Used my experience	73	58.4
Help from relations/friends	65	52.0
Sought litigation	53	24.0
Sold farm	45	36.0
Help from local leaders	40	32.0
Help from government/insurance policy/bank credit/NGO support	30	24.0

Source: Field Survey, 2019

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COMMUNICATION STRATEGIES FOR MANAGING FRAMER/HERDERS CONFLICT IN SOUTH WEST NIGERIA

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INTRODUCTION

In today's digital age, the flow and exchange of information is crucial to maintaining a holistic public order, especially in a plural and diverse society like Nigeria. This view is also upheld by (Awosusi and Ogbuleke, 2019), asserting that the peace or lack thereof in a society is dependent on the control and management of information.

In the face of the persistent clash between farmers and herders over land in southwest Nigeria and the volatility of ethnic resentment that fuels this crisis, it becomes imperative to adopt a fluid and responsive communication channel to manage and resolve these conflicts, especially given the vast technological and digital platforms that exist in today's world and at the disposal of government and its relevant agencies. Today's new media differs vastly in scope and utility compared with the traditional forms of media communication used by the government in the past. The interactivity, digital, virtual, and other characteristics of new media make it a suitable option for effectively managing conflicts. Communication strategies have expanded beyond the tentacles of traditional media. Opeyemi, (2020) posits that the past decades have positioned social media as the primary channel of communication enhanced by flexibility and easy connectivity. The proliferation of social media channels offers a myriad of opportunities for government to manage and effectively control its population, especially in times of crisis and security glitches that require quick and responsive solutions.

Uzuegbunam and Omenugha (2018) writes that communication experts have continued to argue that communication and the power of the media are viable solutions for resolving conflicts in situations such as Nigeria. However, given that the blight of our mainstream media is epitomized by ethical concerns of ownership and governmental control, the extent to which these traditional media can continue to contribute to engendering peace and violence-free Nigeria has remained dubious. Asides from the institutional factors that constrict traditional Nigerian media from effectively checking and reporting on farmer/herder conflict, its lack of immediate, interactive, and open communication flow limits its effectiveness in managing conflicts.

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

METHODOLOGY

Data for this study is gathered mainly from primary and secondary sources and would be primarily qualitative. Primary data for this study will be derived from content analysis of social media posts on the Twitter Platform of governors of selected states from Oyo and Ondo. Secondary sources would include journal articles, texts, and internet posts.

The position of this paper is to highlight the Importance of adopting a "flexible, interactive and multidirectional" channel of communication in de-escalating and managing the conflicts between farmers and herders in the southwest of Nigeria and provide relevant examples where it fits of how this channel of communication has proven effective in dosing and resolving conflicts in the region. This study uses the techno-optimism theory to explicate the study's boundaries in examining communication strategies in managing farmer-herder conflicts in southwest Nigeria.

Techno-optimism is an approach that emphasizes the potential of social media technologies to solve social problems (Kidd and McIntosh, 2016). They emphasize that the magnitude of such concerns varies significantly, covering both global challenges such as climate change and proportionately more minor problems, such as encouraging participation in the democratic process, or in the case of this study, resolving clashes between herders and farmers in the southwest of Nigeria. As McLennan (n.d.) posits

this optimism is based on the notion that internet networking and social media offer a disintermediated and participatory environment for a wide range of actors to interact and collaborate. Leveraging social media for communication in farmer/herder crisis by the government creates opportunities to succinctly address at first hand and in person without misinterpretation the appropriate course of action and thus mediating between the parties to the conflict to help prevent degeneration of the conflict into a full-blown crisis.

RESULT AND DISCUSSION

Due to the widespread use and dependence on mobile devices, social media has emerged as an essential medium for quick real-time communication during a crisis. According to Nicholas (2019) using Oyo state as an example under the leadership of governor Seyi Makinde, an examination of his social media activities in response to the crisis in the state reveals that his usage of social media channels through his handle was instrumental in the minimization of altercations in the state. Using the Sasa ethnic clash as an example, the governor was able to provide an immediate response via his social media handles, as particularly observed on his Twitter page and to notify the citizens of the conflict in the area and, more importantly, calm the tensions of the parties involved, with state agencies deployed immediately to resolve the situation. On this Twitter handle from 14 February to 16th, his tweets were in response to the clash, which acknowledged the situation, followed by assessment of the damages, a state broadcast to reassure the citizens of safety, and also images of visiting northern governors to the state to ensure a collaborative response to the crisis. His proactive response enabled by the use of social media was praised by some civil society groups who claimed that his honesty, proactiveness, and integrity was vital to the resolution of the situation (The Guardian Feb, 2021)

In another example of social media as a veritable means of communication in conflicts, in the aftermath of the Fulani invasion and killing of residents in the Ibarapa region of Oyo state, the governor in his usual fashion took to his social media page on 20 January to immediately broadcast the state's response to the conflict followed by daily communication through his Twitter handle with a total of 14 tweets from 20 January to 27 January 2021 addressing the residents of the area to leave the course of action to the state's security agencies while embracing peace that justice would be served accordingly. These two cases in Oyo state show that the social media channel of communication, through and by the governor himself, was instrumental in preventing an escalation that could result in crisis in the state. Putting himself out through constant communication rather than reports by pressmen or press house was crucial in ensuring that the aggrieved party had complete trust in the government through his open communication strategy facilitated by the use of social media.

In Ondo State, Governor Rotimi Akeredolu also adopted new media technologies as an essential communication strategy in response to farmer-herder clashes in his state. Observing from his twitter handle, his pinned post is a newsletter that addresses the communal clashes between farmers and herders in his state, reiterating his commitment to using the state's security units, including the newly formed ones Amotekun, to douse the persistent altercations in his state. The efficiency of the new media outlet is mainly reflected in Ondo's case as the unwavering commitment of the governor in managing and resolving the crisis in his state permits him to attach a communique visible to all citizens of his state by the click of a button. The implication of this is the assurance of protection and safety for citizens and those involved in the conflict, which further helps to deepen and concretize their trust in the government enhanced by using social media outlets.

These examples have shown that leveraging on social media channels allows the elected representative of the state to communicate in person without the influence of second- or third-party channels that could dilute the credibility of the government's intentions in resolving the issues. Also, on the part of the citizens, the influence of social media on disputes may be both good and detrimental. Social media aids in disseminating conflict-related information, and the intention behind the dissemination on the part of citizens could be for positive or negative purposes. In the positive light, it helps regular citizens contact directly with police enforcement whenever security concerns arise from the farmer-herder crisis, as feedback is frequently extremely instantaneous. (Ann, 2020)

Therefore, as more citizens spend much time on social media channels, the government can adopt this medium to disseminate information to the public, especially to parties of various conflicts, which guarantees an instantaneous response to aggrieved issues for peaceful coexistence.

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

- The audience of the government is now on social media due to the widespread dependence on mobile devices, which makes it (social media) an essential medium for communication by the government during crisis.

- Governors Makinde and Akeredolu have at various times utilised this medium to mitigate disaster.

In the cases of the Sasa ethnic conflict, Fulani invasion of Ibarapa, and farmer-herder clash in Ondo, social media helped the governors to:

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

All done with the speed of a button, as against processed of traditional media.

CONCLUSION

To summarize, effective communication, which consists of encoding, transmission, decoding, and feedback, should be decentralized through social media channels, especially in polarized situations like the farmer-herder conflict in Nigeria's southwest region, as this allows governments to speak to the source and parties to the conflict in a manner that transcends empathy, concern, and willingness to resolve and manage these volatile issues before they magnify.

Thus, this paper recommends that governments of various states and agencies involved in conflict resolution and dispute management have social media channels of communication to facilitate quick response to sites of conflict and thus provide appropriate means of resolving it.

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PROSPECTS OF PLATFORM COOPERATIVE AMONG AGRIPRENEURS IN LAGOS STATE, NIGERIA

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ABSTRACT
Ceaseless efforts have been on to improve the livelihood of rural-urban people through many channels. One medium is the exploitation of the growing application of internet-based facilities. This study therefore investigated the feasibility of platform cooperative; a website, mobile application, or other kind of online platform that is structured as a cooperative being owned democratically by the users and other stakeholders, as a medium of improving rural-urban income. The study has three objectives: to analyse the level of awareness of platform cooperative, examine the requirements for platform cooperative and its financial viability in the study area. Survey design was adopted while primary and secondary data were used. Questionnaire was administered to 220 agripreneurs using simple random sampling technique but 170 were successful for analysis. Data were analysed using content analysis, descriptive statistics, net present value and internal rate of return. Findings revealed that platform cooperative promotes exchange of goods and services in agribusiness and boosts income of members. Also, 38.82% were aware of platform cooperative. The requirements, such as internet, computer gadgets and software, for setting up platform cooperative are available in the study area. It is financially feasible with net present value of N1,407,150:00 and internal rate of return of 95.66% over 5years period at 14% discount rate. It is recommended that investment in platform cooperative establishment should be given top priority by entrepreneurs and supervisory agency of cooperatives. Platform cooperative should be encouraged through public enlightenment programme to promote inclusive income growth.
Keywords: Agripreneurs, Internet, Online cooperative, Awareness, Feasible

INTRODUCTION
The importance of cooperative in the promotion of production, consumption and inclusive income growth cannot be over-emphasised. Physical cooperative brings participants together for economic prosperity (Marathe, 2017) and particularly is part of continual efforts at improving the livelihoods of rural-urban people on sustainable basis. There is rising application of computer and internet in all business spheres including cooperative with limited usage in cooperative administration. Platform cooperative (PC) is a cooperative society on the web, cooperative that is run on computer and mobile internet applications. PC serves same purpose as physical cooperative, providing wider reach and participation, capturing more youth's participation, bringing buyers and sellers of goods and services together. All its subscribers are owners of the platform with equal voting rights and is strictly run like the physical cooperative. Universally, any effort that captures more youths promotes security, which further underpins the relevance of PC.

However, Nigeria lags behind in ICT application frontier (Oluwole, 2021). Production inputs are becoming non-readily available. Suppliers and buyers of agro-inputs/outputs need shorter time to consummate transaction and there is intermediaries challenge that leads to higher prices. All these problems necessitate the introduction of novel mechanisms like PC that will at least reduce these problems significantly. The objectives of the study are therefore to examine the level of awareness of PC among agripreneurs, analyse the requirements for Platform Cooperative and examine the feasibility of Platform cooperative in the study area.

The study is novel, in that this is the first time PC is taken to the fore of academic discuss in Nigeria to the best of the authors' knowledge. Globally, literature on PC is very few and there is lack of research, which portends the need for more studies on it (Zhu and Marjanovic, 2021). PC is a veritable window for engaging the youths and their empowerment in digital era. It will close the gap between inputs sources and producers, and improves market available for producers to increase timely purchase and reduce wastage of farm produce respectively. Study's findings will be useful for policy makers on platform cooperative, source of input for improved usage of internet facilities and avenue to take advantage of growing digital economy.

There is growing literature on cooperatives but not on PC that include Bhuyan (2007); Oduyoye, Adebola and Binuyo (2013); Onugu and Nwankwo (2013); Onugu and Abdulahi (2013); Kassali, Adejobi and Okparaocha (2013) and International Cooperative Alliance (2015). All these studies are limited to improving the socioeconomic and political prosperity of cooperatives and their members.

With the growing incursion of internet and ICT in commercial and economic ventures, researchers have put limited efforts at taking cooperative to online apps such that its membership and running can be done on computer and mobile phones with internet connections. The study efforts started with Scholz (2014) and later included Borkin (2019) and Zhu and Marjanovic (2021) to which this study is an addition.

According to Mayo (2015), cooperatives dated back to 1844 in Britain by Rochdale Pioneers and it is an organisation owned and operated for the benefit of those using its services with open membership, democratic control, no religion and political discrimination, sales at prevailing market prices, setting aside of some earnings to promote the cooperative and sharing of part of earnings. Online cooperative business has these features and will therefore promote productivity and inclusive income growth (Scholz, 2014).

METHODOLOGY

The study area is Lagos State and the population referred to agripreneurs that are economic agents in the agricultural enterprises value chains. Survey design was adopted using multi-stage sampling technique. Primary and secondary data were used. First stage involved the purposive selection of two Local Government Areas (LGA): Epe and Ikorodu. The second stage entailed the purposive selection of two communities from each LGA and simple random selection of 210 respondents disproportionate to size but 170 were successful for analysis. Data were obtained on socioeconomic variables: gender, educational status, marital status, cooperative membership, household size, agro-business type. ICT practitioners, web designers and computer science specialists were interviewed. Secondary data were obtained on cost items for operating a website. Table, percentage, Content analysis, Net Present Value (NPV) and Internal Rate of Return (IRR) were used as analytical tools. In line with Olowe (2009), NPV and IRR are shown below.

$$NPV = \sum_{t=1}^{N} \frac{B_t}{(1+K)^t} - \sum_{t=1}^{N} \frac{C_t}{(1+K)^t} \quad \text{…….. eqn (i)}$$

where B = Cash inflow at time (year) t,
t = 1, …, N
K = Cost of capital (%)
C = Cash outflow at time (year) t, and

$$IRR = LR + \left[\frac{NPV_p}{NPV_p - NPV_n}\right](HR - LR) \quad \text{…..... eqn (ii)}$$

where LR = Lower discount rate with a positive NPV
HR = Higher discount rate with a negative NPV
NPV_p = the amount of positive NPV
NPV_n = amount of negative NPV

RESULTS AND DISCUSSION

Respondents' socioeconomic characteristics

Table 1 shows that 56.47%, 87.06%, and 77.06% female, had more than primary education and were married respectively. The table also shows that the respondents businesses cut across processing, transportation packaging, storage and farming. However, they were mostly farmers (51.77%). They were also product/input middlemen and into input/output sales. These reflect the economic agents that will be members of PC.

Table 1: Socioeconomic characteristics of respondents

Categories	Variable	Frequency	Percentage
Gender	Male	74	43.53
	Female	96	56.47
Formal Education	Primary School	22	12.94
	JSC/SSSC	25	14.71
	NCE/ND	45	26.47
	HND/Bachelor's Degree	47	27.65
	PGD/Master's Degree	20	11.76
	PhD	11	6.47
Marital Status	Single	26	15.29
	Married	131	77.06
	Separated/Married	13	7.65
Type of Agribusiness	Processing	39	22.94
	Transportation	20	11.76
	Packaging	20	11.76
	Storage	3	1.77
	Farming	88	51.77
Other agribusinesses	Product Marketing middlemen	51	30.00
	Input Marketing middlemen	13	7.65
	Farm inputs sales	22	12.94
	Farm outputs sales	84	49.41
	Total	**170**	**100.00**

Awareness of platform cooperative

From Table 2, majority (61.18%) mentioned that they were not aware of PC in the study area and elsewhere. None of the respondents is a member of PC. However, 66.47% of the respondents belonged to other cooperatives while 54.71% mentioned that they could join PC.

Table 2: Awareness of platform cooperative and membership of other cooperatives

	Yes		No		Undecided	
Variable	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**
Awareness of platform cooperatives	66	38.82	104	61.18	0	0.00
Membership of platform cooperative	0	0.00	170	100.0	0	0.00
Membership of other cooperatives	113	66.47	57	33.53	0	0.00
Intension to join Platform Cooperative	93	54.71	29	17.06	48	28.24

Requirements for platform cooperative

According to Heng (2016) the requirements for the establishment of platform cooperative are: getting domain name, choosing a web host and signing up for an account, designing web pages, testing the website, collecting payment card information, and getting site noticed. Others are mobile phones/computers, internet connectivity, electricity, insurance services, government support, marketing information services, transportation services and infrastructure. They are the necessary and sufficient factors for establishing and running platform cooperative.

Financial feasibility and maintenance requirements of PC

The NPV and IRR of N1,407,150.00 and 95.66% respectively computed from table 3 indicate that PC is financially viable in the study area. Interest Rate of capital of 14% was used with the projected members for the PC as 50 in year 1 increasing to 200 in year 5.

Table 3: Estimated Platform cooperative cash flow

Year	Estimated number of Membership	Estimated Cash flow (N)
1	50	(1,000,000.00)
2	90	1,000,000.00
3	120	1,000,000.00
4	150	1,000,000.00
5	200	480,000.00

The Cash inflow items are subscription by membership, commission on transaction (through on-line payment) and commission on internet access. The cash outflow items include sunk cost, web design, web development, server purchase, website domain registration, registration with government, operating cost, web maintenance, server maintenance, secretariat staff and labour, secretariat equipment (computer, printer etc.) and annual website domain host renewal fee.

The requirements to maintain PC, according to Woolard (2015), are human resources who must have expertise in specific areas. These are: project manager who helps with scheduling events, facilitating meetings, and tracking budgets; a communications professional to craft clear message and recruit people to try out the platform as it develops; a designer who makes the front end beautiful; a developer who develops the software and annotates it so that other people can add to it in the future; and advisors: one per area of expertise that have been mentioned, as well as one who have strong connections to the community of interest.

CONCLUSION AND RECOMMENDATIONS

Cooperative on the internet, PC, promotes employment opportunities, creates market and promotes agro-enterprises with attendant inclusive growth. In spite the benefits of PC, the study has shown that the level of its awareness is very low and has not been practiced by any the respondents. However, PC can be successfully introduced as most of the respondents could join it. The requirements for PC are available in Nigeria. It is profitable and financially feasible. The study recommends that the awareness of PC should be launched and boosted by government and non-governmental organisations through education and enlightenment programmes. Also, investment in the requirements of PC should be promoted by agripreneurs and government supervisory agencies of cooperatives. Internet access, a fundamental requirement for PC, should equally be encouraged among Nigerians through provision of necessary infrastructure. Further studies on PC should include registration and likely challenges of PC in Nigeria.

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FACTORS INFLUENCING THE USE OF SOCIAL MEDIA IN INFORMATION DISSEMINATION BY EXTENSION AGENTS IN LAGOS STATE

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ABSTRACT
This study determined factors influencing the use of social media in information dissemination by extension agents in Lagos State. Simple random sampling technique was used to select 73 respondents for the study. Data were collected on the respondents' personal characteristics, effectiveness of social media sources used by the extension agents and factors influencing the use of social media by the respondents using a structured questionnaire. Data were analyzed using frequency counts, percentages, mean, standard deviation and Pearson Product Moment Correlation Coefficient (PPMC). Results show that 52.1% of the respondents were male, 74.0% were married, 57.5% were Christians, with a mean age and work experience of 52.8years and 10years respectively. WhatsApp ($\bar{x}$=3.60), Facebook ($\bar{x}$=3.25) and E-mail ($\bar{x}$=2.89) were the most effective social media tools used by the respondents. Major factors influencing the use of social media were ease/speed of disseminating information to the farmers ($\bar{x}$=4.48), epileptic power supply ($\bar{x}$=4.38), weak network connection ($\bar{x}$=4.34) and social media are helpful to get connected to different stakeholders ($\bar{x}$=4.33). There was a significant ($p<0.05$) relationship between factors influencing extension agents use of social media and its effectiveness (r=-0.40). The study concluded that, WhatsApp and Facebook were the most effective social media sources among extension agents. Therefore, it is recommended that these social media sources should be popularized among extension agents through awareness, organising trainings and workshops.
Keywords: Social media, Information dissemination, Educational and training information

INTRODUCTION
There are about 3.8 billion social media users worldwide (*Statista*, 2021). Social media have become an essential means of communicating because of increased use of smartphones and mobile internet user worldwide. Kaplan and Haenlein (2010) defined social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, which allows the creation and exchange for user-generated content". According to Raufu (2003), social media are the modern means of giving information to a large number of people at the same time in different places. Yawson *et al*. (2010) noted that social media (electronic and print) are playing very important roles in creating awareness about new agricultural innovation among farmers. In developing countries such as Nigeria, latest social media tools are now used for backing up the agricultural sector through extension activities (Qamar, 2006). Among other sources of information, radio and television constitute the highest preference for information dissemination (Okwu and Dauda, 2011).

METHODOLOGY
This study was carried out in Lagos state. Simple random sampling technique was used to select the respondents for this study by getting a list of all extension agents in Lagos State Agricultural Development Authority (LSADA), which were a total of 90 extension agents covering the three Zones (Ikorodu, Epe and Badagry). Responses were gotten from 73 extension agents which indicate 80.0% response rate.

RESULTS AND DISCUSSION
Personal characteristics
Results in Table 1 shows majority (83.5%) of the respondents were below 51 years old. This implies that extension agents are still young and active. This trend may have huge impact on social media use, as young people might be interested in using social media to disseminate information. Umar *et al*., (2015) found that the age of individuals affects their mental attitude toward new ideas and hence influence adoption of social media in several ways. This result is similar to Suchiradipta and Saravanan (2016) who reported that 48.2% of social media users among extensionists and scientists in Sub-Saharan Africa are between 26 and 45 years. Male respondents made up 52.1 percent of the total while female respondents made up 47.9%. Even though the organisation was dominated by male, the findings indicate that both sexes were needed for the smooth running of the organisation. Women have increased their participation in labour force and are contributing more to share of household earnings as a result of their improved educational qualification. Fapojuwo *et al*., (2021) argued that the hectic nature of agricultural activities enables male to get much involved in the job thereby dominating the agricultural workforce. Majority (74.0%) of the respondents were married. This is an indication that many of the respondents have family responsibilities. The average year of experience of

the respondents was 10 years as majority (97.3%) had less than below 21 years' work experience. It implies that majority of the extension agents have established themselves, therefore, adapting to new technologies might not be difficult (Jibowo, 2005).

Table 1: Distribution of Respondents' Personal Characteristics (n=73)

Variables	Frequency	Percentage (%)	Mean	SD
Age (Years)			42.8	8.0
≤30	4	5.5		
31-40	25	34.2		
41-50	32	43.8		
51-60	12	16.4		
Gender				
Male	38	52.1		
Female	35	47.9		
Marital Status				
Single	13	17.8		
Married	54	74		
Divorced	3	4.1		
Widow/widower				
Years of Experience			10.0	5.7
≤10	47	64.4		
11-20	24	32.9		
21-30	2	2.7		

Source: Field Survey, 2020

Effective Social Media Sources used by the Extension Agents

With regards to effective social media sources used by extension agents in disseminating information. Figure 1 shows that a larger number of the respondents used WhatsApp ($\bar{x}$=3.60) more compared to Facebook ($\bar{x}$=3.25), E-mail ($\bar{x}$=2.89), Telegram ($\bar{x}$=2.58) and YouTube ($\bar{x}$=2.51).

However, Skype ($\bar{x}$=1.55) and LinkedIn ($\bar{x}$=1.44) were reported by the respondents to be ineffective. This could imply that they are not commonly used for extension service which may be the reason for their perceived ineffectiveness.

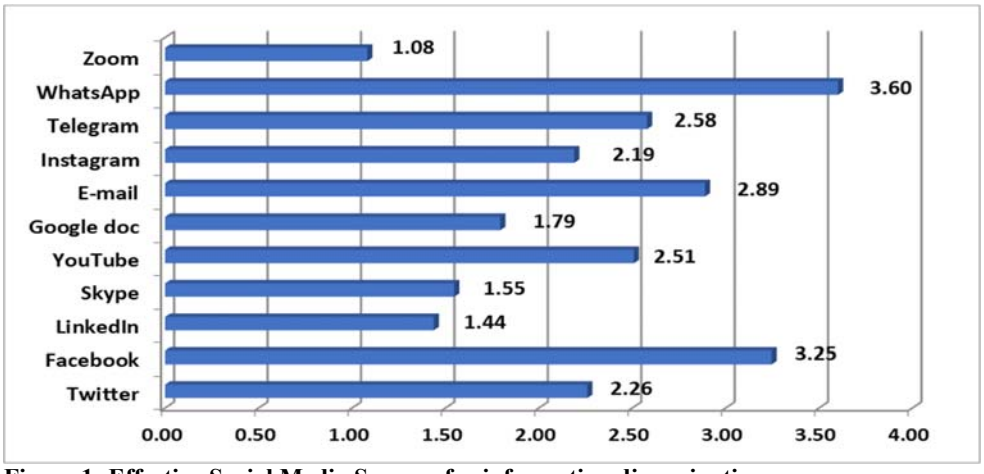

Figure 1: Effective Social Media Sources for information dissemination

Factors influencing the use of social media among respondents

An enquiry into factors influencing the use of social media in information dissemination as shown in Table 2, revealed that, ease/speed of disseminating information to the farmers ($\bar{x}$=4.48), inadequate/epileptic power supply ($\bar{x}$=4.38), weak network connection ($\bar{x}$=4.34), social media are helpful to get connected to different stakeholders ($\bar{x}$=4.33) and ease of receiving and seeking information) ($\bar{x}$=4.30) were the major factors of influencing the respondents use of social media. Also, ease of viewing of agricultural programme online ($\bar{x}$=4.29), irrelevant posts ($\bar{x}$=4.25), getting

advise on agricultural problems ($\bar{x}$=4.22) and getting various agricultural information ($\bar{x}$=4.22) also influence the respondents use of social media. This implies that ease/speed of disseminating information to the farmers, inadequate/epileptic power supply and weak network connection have more influence on social media usage compared to other factors. Following the activities of colleagues on social media ($\bar{x}$=3.99) and low education ($\bar{x}$=3.88) were the least influential factors among the respondents.

Table 2: Distribution of Respondents according to factors influencing the use of social media in information dissemination (n=73)

Items	SA	A	U	D	SD	$\bar{x}$	$S.d$
Ease/speed of disseminating information to the farmers	45(61.6)	18(24.7)	10(13.7)	0.0	0.0	4.48	0.73
Inadequate/Epileptic power supply	37(50.7)	31(42.5)	2(2.7)	2(2.7)	1(1.4)	4.38	0.79
Weak network connection	33(45.2)	34(46.6)	4(5.5)	2(2.7)	0.0	4.34	0.71
Social media are helpful to get connected to different stakeholders	37(50.7)	24(32.9)	11(15.1)	1(1.4)	0.0	4.33	0.78
Getting information on agricultural development (ease of receiving and seeking information)	25(34.2)	47(64.4)	0.0	0.0	1(1.4)	4.30	0.62
Ease of viewing of agricultural programme online	25(34.2)	44(60.3)	4(5.5)	0.0	0.0	4.29	0.56
Irrelevant posts	31(42.5)	29(39.7)	13(17.8)	0.0	0.0	4.25	0.74
Getting advice on agricultural problems	29(39.7)	31(42.5)	13(17.8)	0.0	0.0	4.22	0.67
I get various agricultural information from social media	25(34.2)	40(54.8)	7(9.6)	1(1.4)	0.0	4.22	0.73
Sending and receiving early warnings/alarms	28(38.4)	33(45.2)	10(13.7)	1(1.4)	1(1.4)	4.18	0.82
Getting information on management of pests and diseases	25(34.2)	36(49.3)	12(16.4)	0.0	0.0	4.18	0.69
I can follow the activities of my colleagues on social media	20(27.4)	34(46.6)	17(23.3)	2(2.7)	0.0	3.99	0.79
Low education	12(16.4)	45(61.6)	12(16.4)	3(4.1)	1(1.4)	3.88	0.78

Source: Field Survey, 2020

Test of relationship between factors influencing extension agents use of social media and its effectiveness

The result of this hypothesis that there is no significant relationship between factors influencing extension agents use of social media and its effectiveness was tested using PPMC. The significance was determined at 5.0 level. Findings in Table 4 revealed a positive and significant ($p<0.05$) relationship between factors influencing extension agents use of social media (r=-0.40) and its effectiveness.

Table 3: Test of relationship between factors influencing extension agents use of social media and its effectiveness using PPMC

Variables	r-value	p-value	Decision
Relationship between factors influencing extension agents use of social media and its effectiveness	0.30	0.01	S

Source: Field survey, 2020.
p-Value is significant at 0.05 level (2 tailed)

CONCLUSION AND RECOMMENDATIONS

Social media play important roles in creating awareness about new agricultural innovation among farmers through extension agents. It can be concluded from the study that; WhatsApp and Facebook were the most effective social media tools among extension agents. The social media sources to which the respondents have low level of effectiveness were: Zoom, Twitter, Instagram, LinkedIn and Skype. Therefore, it is recommended that these social media sources should be popularized among extension agents through awareness, organising trainings and workshops. Telecommunication providers should be mobilised toward making social media devices readily accessible and effective in rural areas, in order to optimize their usage. Government should make effort at ensuring that there is steady power supply to increase the effective use of ICT facilities by the extension agents.

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LAND TENURE SYSTEM IN NIGERIA AND PROPERTY RIGHT: PERSPECTIVE FROM GENDER LENS

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ABSTRACT

Land tenure refers to the relationship that individuals and groups hold with respect to land and related resources. Gender is one of the most important determinants of land rights in households and rural communities. The study focused on the land tenure systems in Nigeria and the right to the use of community land on a gender basis. Specifically, the study examines the accessibility of rural dwellers to land on gender bases and constraints to land accessibility. The study was conducted in Enugu and Osun States, Southeastern and Southwestern Nigeria respectively. Three hundred respondents were interviewed. Mean, Percentages, Standard deviation and Analysis of Variance (ANOVA) statistical analysis were used to analysed the data. The results of the study show that rights to the use of land are generally determined by socio-cultural and religious institutions such as inheritance, marriage, and community allocation. Results further show that male (96.3%) and female (74.5%) have right to inherit, own and use land in Western Nigeria while majority of male 92% and minority (34.2%) of the female have right to their inheritance to land in South East. This is an indication that men were given priority in the allocation of land over women especially in the Eastern part of Nigeria. One of the constraints to land right include existence of various discriminatory customary law practices. The consequence of gender discrimination in land ownership includes women's vulnerability to poverty. There is a need for redistribution reform which will address the discrimination against women in land ownership.

INTRODUCTION

Access to land is a crucial issue in addressing food security in the country and a key factor for shelter and community development. Land area in Nigeria was reported at 910,770 sq. Km in 2018, according to the World Bank report in 2018 in which less than 35% has been utilised for agricultural production.

Land tenure systems consist of the social relations that are established around natural resources, particularly land, water, and trees. Land tenure systems determines who can use land, what resources and how they are to be used. `Land access for agricultural depends on the nature of rights attached to the use of such lands. Land tenure refers to the relationship that individuals and groups hold with respect to land and related resources (United State Agency for International Development (USAID), 2013). Access to land rights is governed by socio-cultural norms, which have profound effects on gender relations. (Chiwuzie, Ogunba and Dabara, 2021)

In societies in which customary practices and traditional social structures are predominant, rights to most land are generally determined by sociocultural and religious institutions such as inheritance, marriage, and community allocation. The nature of access of farmers to productive opportunities on the land is dictated by the existing land tenure system. When a woman marries, her husband gives her cultivation rights to a plot of land; she cultivates the land to provide food and other goods for herself, her children, and husband, but she does not have other property rights to it, such as the right to pass it on to heirs.

Madumere (2018) was of the opinion that customary tenure regimes and traditional institutions are often criticised for containing discriminatory elements that undermine the enjoyment of the fundamental human rights of women and other vulnerable members of the society, particularly by perpetuating male dominance and control over land thereby inhibit the ability of women to acquire and keep land assets. Madu (2013) was of opinion that violation of land rights of women varies among different ethnic groups of Nigeria

Hence this research looks at the Land Tenure system in Nigeria and property right: Perspective from Gender Lens with particular interest on women's tenure security among the Yoruba of Western and the Igbo people of Eastern Nigeria. The paper addressed the following objectives which are to:

1 describe socioeconomic characteristics of respondents;
2 analyse land tenure systems for agricultural purposes on gender basis in West and Eastern Nigeria;
3 comparatively analyse property rights to land on gender bases in West and Eastern Nigeria and to
4 assess the factors affecting accessibility to land for agricultural production.

METHODOLOGY

The study was conducted among the Igbo ethnic group in the South-Eastern axis of Nigeria and Yoruba people in the South-West. Multistage sampling procedure was used to select the

respondents. The first stage involved the random selection of Osun State from South Western and Enugu State from South Eastern part of Nigeria. At the second stage, three Local Government Areas (Nsukka, Igbo-Etti and Uzo Uwani) from one agricultural zone (Nsukka) were selected from Enugu state and Ife East and Ife South and Ife North from Ife zone in Osun State, making a total of six LGAs. The third stage involved a randomly selection of one community from each LGA making a total of six communities. At the fourth stage, 25 males and 25 females were randomly selected from each community. In all, 300 respondents were selected. Data analysis was carried out using simple descriptive statistical techniques such as frequency counts, percentages, means and standard deviation were used to summarize the data collected.

RESULTS AND DISCUSSION

Socioeconomic characteristics

Results in Table 1 indicated that majority (65.7%) of the respondents were within the age range of 30-60 years with average age of 48 years. This shows that many of the respondents were still in their active working years Majority (75.4%) of the respondents were married. About 59% attended at least primary school which shows that a sizeable number of all the respondents are fairly educated. Furthermore, majority (60.3%) realized less than 100,000 Naira (263.16USD) annually. This indicates that majority are poor in that they are living on less than one USD per day. Above 86.3% had been staying in the community for more than 15 years.

Table 1: Percentage distribution of socioeconomic characteristics of respondents

Variables	Frequency	Percentage	Mean/SD
Age (years)			48/10.7
≤30	49	16.3	
31-60	197	65.7	
≥ 61	54	18.0	
Year of Education			5.53/4.69
Never	35	11.7	
1-6	177	59.0	
7-12	63	21.0	
Above 12	25	8.3	
Income (Annually)			
≤100,000	181	60.3	
101,000 – 200,000	72	24.0	95,966/31,432
≥ 201	47	15.7	
Years of residency in the community			
≤ 10	53	17.7	
11-20	178	53.3	
≥21	69	23.0	

Accessibility to land for agricultural purposes

Access to land refers to the means and ways by which individuals or groups obtain rights to use, control and transfer land (property). Results in Table 2 shows that majority of the male and female respondents in Osun accessed land for agricultural purposes through inheritance. However, majority of males accessed land through inheritance while minimal number of females in Enugu State accessed land through inheritance. Furthermore, majority of Igbo women accessed land through share cropping (56.2%), lease (55.7%) and gift (67.3%). This implies that major means of acquiring land for agricultural purposes by women in Igbo land are through other means apart for inheritance which might be as a result of their customs and traditions.

Table 2: Land tenure systems for agricultural purposes on gender basis in West and Eastern Nigeria

Means of accessing agricultural land	Osun State Male %	Osun State Female %	Enugu Male %	Enugu State Female %
Inheritance by heirs of the owner	95.3	65.6	94.5	34.6
Share cropping	21,8	30.4	32.1	56.2
Lease	48.3	50.4	43.2	55.7
Outright purchase	56.9	31.3	16	20
Gift	30.5	30.7	30.7	67.3

Property ownership rights

Results in Figure 1 show that majority (96.3%) male and females (74.5%) have right to inherit, own and use land in Western Nigeria. This finding implies that in Western Nigeria, customary rule of inheritance offered rights of inheritance to all the descendants of the deceased in equal proportion irrespective of their status, age or gender However, majority (92.0%) male while female (34.2%) has right to inherit land in South East. This implies that patrilineal practice is more popular among the Igbo ethnic group. This is in line with Madumere (2018) assertion that patrilineal inheritance which is a customary pattern of inheritance in which rights of property inheritance usually traces through fathers (male) and their bloodline is common in Igbo Land.

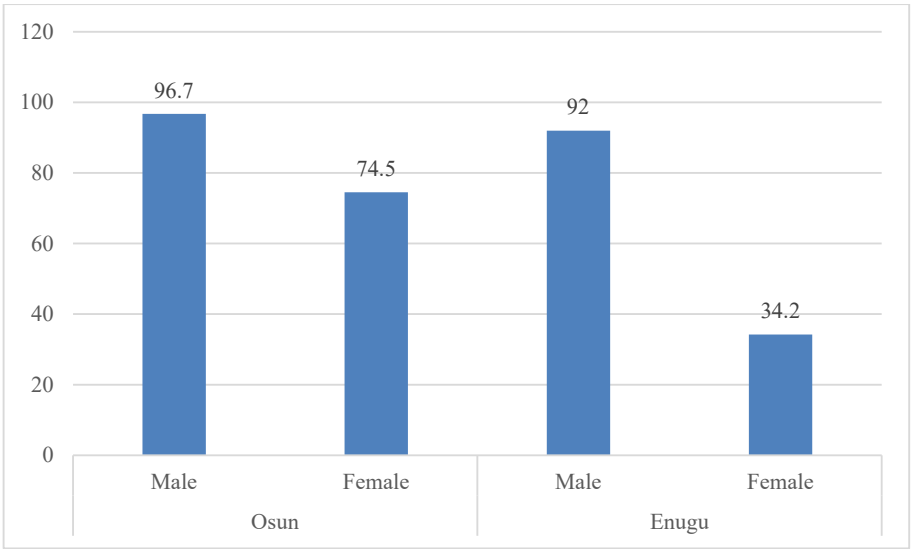

Figure 1: Right to inherit, own and use land

Factors affecting gender right to land

Respondents in the study area claimed that tenure insecurity especially among women which includes existence of various discriminatory customary law practices that disinherit women and undermine the enjoyment of the fundamental human rights. Other factors included statutory legal provisions are that ill equipped to handle land matters and rural poverty.

CONCLUSION AND RECOMMENDATIONS

Conclusively, in Western Nigeria, customary rule of inheritance offered rights of inheritance to all the children of the deceased in equal proportion while land rights in customary law and traditional norms tends to disregard the rights of women in Eastern Nigeria.

The study recommended the need to implement laws enacted by Eastern Nigeria to regulate inheritance processes within their domain. There is also need for Government and Non-Governmental Organisations to encourage the involvement of women and other vulnerable groups in the management and administration of land. Moreso, there is need for Government and members of community to abide by the provisions of the Land Use Act of 1978.

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STRESS MANAGEMENT STRATEGIES AMONG ARABLE WOMEN FARMERS IN AYEDAADE LOCAL GOVERNMENT AREA OF OSUN STATE

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ABSTRACT
Stress challenges women farmer's sustainable agriculture in developing nations. Hence, strategies to cope with their multiple tasks are germane. The study investigated stress management strategies among arable women farmers of Ayedaade Local Government Area of Osun State. A three-stage sampling procedure was used to select 120 respondents. Data on respondents' socioeconomic characteristics, sources of stress and stress management strategies were collected, using interview schedule. Data were analysed with descriptive (percentages, mean and weighted score) and inferential (Chi–square and PPMC) statistics at α0.05. Results show that the mean age and years of farming experience were 41.07 and 19.42 years respectively; with farm size of 1-2 hectares (67.5%). Respondents' sources of stress (domain basis) were; financial (deciding when to sell (WM= 2.0); weather (prolonged adverse weather (WM= 2.43); work related (machinery breakdown (WM 2.3); health (long term health problem (WM= 2.72); and other people (being under a lot of pressure (WM =2.13). The stress management strategies deployed included; financial (prioritizing financial activities (WM 2.71); weather (Seeking extension agent support (WM 3.0); work related (relaxation with family and friends (WM 2.56); health (Taking balanced diet (WM =3.29); other people (talk about worries with family and friends (WM 2.56). Significant relationship existed between farmers' age (r=-0.582), marital status (r=-56.50), household size (r=-0.523), farm size (r=-0.221), sources of labour (162.92), years of farming experience (r=-0.667) and stress management strategies. The prevailing stress coping strategies should be encouraged to sustain the arable women productivity.
Keywords: Women sustainable agriculture, thinning, prolonged adverse weather, balance diet and years of farming experience

INTRODUCTION

Stress is one of the challenges militating against the sustainable development of Agriculture in developing country especially among the arable women farmers. Studies have shown that women's role in Agriculture cannot be over emphasized as they were involved in the production of arable crops across the value chain and this has made women around the globe to be a transformer of agriculture to its resilience and sustainability (Adeniyi and Yekinni, 2020). Added to this productive role was the reproductive responsibility of women (mother and wife) in their household. In addition, women of all ages have been said to carry out several roles in the rural community, they have been the chief chef, dry cleaner, nurse and care giver in their respective homes (World Bank Group, 2017).

However, the inability of rural women to meet up with the responsibility attached to the women role may likely leads to feeling of not being fulfilled, frustration, anger, depression, nervousness which may result into several health challenges like raised blood pressure, increase rate of heart bit and high sugar level among others (Shutske, 2020). The sources of rural women's stress might be from society, environment, work place and from the home and could be physically, emotionally, cognitively and behaviorally manifested (Better Health Channels, 2019).

However, for rural arable women to be able cope with the stress they face at a given period of time. Hence, the study ascertained the socioeconomic characteristics of the respondents, examined the types of farming practices engaged in by the respondents, sources of stress and respondents' stress management strategies. It was hypothesised that no significant relationship existed between the selected socioeconomic characteristics of the respondents and the stress management strategies.

METHODOLOGY

The study was conducted in Ayedaade local government area of Osun state. A three-stage sampling procedure was employed to select respondents for this study. The first stage involved the simple random selection of two of the three districts area in the Local Government Area. The selected districts were Orile Owu and Ode-Omu. The second stage involved the simple random selection of three villages among the selected districts. The selected villages for Orile owu district were Abinu Alakinde, Afonle and Aalagbede; while Aba Dorcas, Abewela and Awaye were selected from the Ode-Omu district. The third stage involved the simple random

selection of 20 Arable Women farmers in each of the selected villages, given a sample size of 120 respondents. Data were collected using interview schedule; and analysed with descriptive (Percentages, weighted mean score and Rank) and inferential (PPMC) statistics at α0.05.

RESULT AND DISCUSSION

Table 1 shows the respondents were married (82.5%), with mean age and household size of 41.07 years and 5.73 persons respectively. This implies that the respondents were active in age, living with their husband with a moderate family size. Respondents' role as arable crop farmers coupled with the family responsibilities and home management is an indication of the need of coping strategies against stress (Olowogbon, 2019).

Table 1: Selected Socioeconomic characteristics of the respondents

Years	Frequency	Percentage Mean
Age		
21-30 years	26	21.6 41.07
31-40 years	40	33.4
41-50 years	42	34.9
60 years and above	12	10.1
Marital Status		
Married	99	82.5
Single	10	8.3
Separated	5	4.2
Widowed	6	5
Household size		
1-4	33	27.5 5.73
5-8	72	60.0
9 and above	15	12.5
Total	120	100.0

Source: Field Survey, 2019

Respondents' sources of stress

Table 3 shows the five possible domains of stress that the respondents may daily encountered. The result in Table 3 shows that the most FS source of the respondents was the ability to take decision on when to sell their farm produce (WM=2.00) and this was followed by how they will meet the daily financial obligations in other to meet their necessities (WM=1.85) while poor sale/low commodity price (WMS=1.43) was the least. This implies that respondents' sales of arable produce at the right time is germane to their enterprise which might ease the stress of poor or low arable crops price. However, the decision-making ability of rural women is low (Adeniyi and Yekinni, 2020). On health source of stress as reveals by Table 3, long term health problem was ranked first with WMS=2.72 while personal illness during major farm operation (WMS=1.56) was the least ranked health stressor. However, Shutske (2020) asserts that, stress do result into health challenges among the farmers.

Table 3: Respondents sources of stress

Sources of stress	WMS	Rank
A. Financial Stressor		
Deciding when to sell produce	2.00	1st
Meeting obligations and daily necessities	1.85	2nd
Poor sale/low commodity price	1.41	6th
B. Weather Stressor		
Delay in farm operation such harvesting	2.43	1st
Reduced yield	2.15	2nd
Problems of pest	1.57	4th
C. Work related		
Machinery breakdown at critical point of need	2.3	1st
Keeping up with new technology	2.01	2nd
Long work hours	1.0	6th
D. Health		
Long term health problems	2.72	1st
Insufficient access to health services	2.14	2nd
Decision making on health Problems	1.72	6th
Personal illness during major farm operation	1.56	7th
E. Other people related		
Being under a lot of pressure	2.13	1st
Difficulty in being friendly with nuclear and extended families	2.00	2nd
Poor housing conditions	1.40	5th

Source: Field Survey, 2019

Stress management strategies employed

Table 4 shows the stress management strategies employed among the arable women farmers in the study area on sources of stress domain basis. On the FS domain, priotising financial obligation (WMS=2.17) ranked 1st with getting farm inputs on credit (WMS=2.15) ranked 2nd while borrowing money for farm work (WMS=0.72) was the least coping strategies used by the respondents. This implies that respondents do deduce means of coping with financial stress militating the success of their enterprise especially ploughing back their profit as established in Table 1. Most of the respondents as reveals by Table 4 choose listening to health talk on Radio (WMS=) as the highest coping strategies employed against health stressor with getting sufficient sleep as the least strategies used for the health stressor (WMS=1.71). This implies that ICT-based health information has been found relevant to the respondents in the study area as Radio has been found to be the most accessible ICT by Southwestern rural women (Adeniyi and Yekinni, 2020).

On other people stressor domain as depicts by Table 4, the 1st coping strategies employed by the respondents was talking out worries with families and friends (WMS=2.56) with the least strategies employed was possessing the positive mind towards the future (WMS=1.43). This means that the principle of problem half shared is half solved to cope with stress associated with other people was employed (Shutske, 2020 and Better Health Channels, 2019).

Table 4: Stress Management Strategies employed by the Respondents

Stressor management	Mean	Rank
1. Financial		
Priortising financial obligations	2.71	1st
Getting input on credit	2.15	2nd
Borrowing of money for farm work	0.72	8th
2. Weather		
Seeking extension agents support	3.00	1st
Planting of cover crop to support soil	2.58	2nd
Planting early maturing crop	1.72	6th
3. Work Related		
Spending time with family and friends	2.56	1st
Deliberately avoiding stressful situation	2.42	2nd
Use of hired labourer	1.85	6th

4. Health		
Listening to health talk on Radio	3.29	1st
Eating balance diet	2.72	2nd
Get sufficient sleep	1.71	8th
5. Other people as stressor		
Talking out worries with families and friends	2.56	1st
Taking timeout of the farm work to be with families and friends	2.13	2nd
Positive mind towards the future	1.43	9th

Source: Field Survey 2019

Relationship between the selected socioeconomic characteristics of the respondents and the stress management strategies

The result in Table 5 reveals that respondents' age (r=-0.582), Household size (r=-0.523), marital status (r=-56.50) and year of experience (r=-0.667) had an inverse significant relationship with the stress management practices. This implies that the respondents' ability to cope and manage the stress encountered on daily basis is proportional to the respondents' youngness of age, smaller household size, and the youngness of farming experience. However, there is no significant relationship between respondents' source of labour (r= 0.80) and the stress management strategies.

Table 5: Relationship between the selected socioeconomic characteristics of the respondents and the stress management strategies

Variables	**r-value**	
Age	-0.58*	
Years of farming experience	-0.67*	
Household size	-0.52*	
Farm size	-0.22*	
Variables	**r-value**	**Df**
Marital status	-56.50*	1
Source of labour	162.92	2

Source: Field survey, (2019)
* Significant at P≤0.05)

CONCLUSION

The study concludes that women arable farmers have various stress and have derived different coping mechanism which depends on the type/source of stress encountered. The study further finds out that some of the factors affecting the rate of stress experienced by the respondents were younger age, marital status, years of farming experience, number of persons in their household and the area of land cultivated. Hence, the study recommends that Women farmers should take time to rest during the day to avoid over working. Also, government and non-governmental organisations should endeavor to organise public enlightenment for young women in the rural communities for enhanced mental health through seminars, conferences, workshops and adequate communication system on the stress management strategies. However, the prevailing stress coping strategies employed by the respondents should be encouraged to sustain the arable women productivity

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COMMUNITY MEMBERS STRATEGIES IN SUSTAINING SELF-HELP PROJECTS: IMPLICATION FOR SUSTAINABLE RURAL DEVELOPMENT IN OSUN STATE, NIGERIA

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ABSTRACT
The study assessed the strategies used by community members in sustaining self-help projects in Osun State, Nigeria. It specifically described the socioeconomic characteristics of respondents; identified projects characteristics undertaken and identified methods of mobilising people for the projects and examine strategies used in sustainability of self-help projects. A multistage sampling procedure was used to select 288 respondents from six administrative zones of Osun State but 264 questionnaires were analyzable and data were collected with the aid of structured interview schedule. Data were analysed using descriptive statistics such as frequency counts, percentages, means and standard deviations. Results showed that respondents had a mean age of 48.03±10.99 years and majorities (75.8%) were males. The strategies used were levying of CDA members (69.1%) and formation of committee (75.0%). The findings also revealed that rural electrification had the cost of N9.9 million and (87.5%) were considered large project based on the fact that it could meet the need of the entire communities. Furthermore, all (100%) of the communities used group meetings for mobilisation while (10.42%) were through village/town criers. It is therefore concluded that strategies adopted by community members has enhanced sustainability of self-help projects.
Keywords: Assessment, Self-help Projects, Sustainability and mobilisation

INTRODUCTION

Development is central to the existence of every society and generally in all geo-political and demographic entities that constitute a community of people in the world. All known developed societies grew from being crude to the attainment of their present status. In Nigeria, the case of development is not different except for the interjection of the European culture that affected the gradual development of Africa; as explained in Walter Rodney's work on how Europe underdeveloped Africa in 1972.

Sustainability means "meeting the needs of present and future generations while substantially reducing poverty and conserving the planet's life support systems." Therefore, sustainability is the most adequate measure of the final success of a project and is central in community development efforts. Strategies employed by any community in sustaining self-help projects must be very effective and a major mechanism for the mass involvement of poor rural dwellers in the poverty reduction and growth promoting development process of the country. In most of the government programmes and projects, a supply-driven approach which resulted into lack of sustainability have always been used without a thorough consultation with the rural dwellers on their felt needs. Hence, the need to know the community member's strategies in sustaining self-help projects and its implication in rural community development in Osun State, Nigeria. The study described the socioeconomic characteristics of the respondents; identified projects characteristics undertaken; identified methods of mobilising people for the projects and examine strategies used in sustainability of self-help projects.

METHODOLOGY

This study was conducted in Osun State, Nigeria and residents of the community were the population of the study. The study covered the six administrative zones of Osun State which are Ife, Ilesa, Osogbo, Iwo, Ede and Ikirun. A multistage sampling procedure was used to select respondents for the study and one Local Government Area was purposively selected from each administrative zone (Ife-east, Obokun, Osogbo, Iwo, Ede south and Odo¬-otin LG respectively) based on the highest number of projects undertaken. Twenty five percent of 192 communities in the State where self-help projects are located were proportionally selected. A total of 48 communities were selected. Finally, six members of the selected communities were interviewed to give a total of 288 respondents but 264 copies of questionnaire administered were analyzable. Data were analysed using SPSS software while simple descriptive statistical techniques such frequency count, percentage, means and standard deviation were used to summarize the data collected.

Sustainability strategies were measured by asking respondents whether they partake in project maintenance and sustainability. These were scored as Yes (1) and no (0). Total score was then obtained by summing the point obtained by each respondent together. Method of sustenance were also measured by asking the strategy which they use for sustaining the projects in their respective

communities. These were scored one point. Total score was then obtained by summing the point obtained by each respondent together.

Respondents were asked to give the total amount expended on the project(s) and their mean cost was obtained. (2) The lengths of completion/ span: this was measured at ratio level. The value was given in year and then grouped for descriptive purpose into: less than 11 months, 12-23 months and 24-35 months. Total score was then obtained by summing the point obtained by each respondent together. (3) Size: Respondents were asked to indicate whether the project benefited majority or just few people in the community. It was based on the number of people that project could serve. This classification is based on Adisa (2001) categorization of community development projects size as large, medium and small based on the project ability to meet peoples' and community pressing needs. Respondents were asked to indicate the method used in mobilising them.

RESULTS AND DISCUSSIONS

Socioeconomic characteristics

Results in Table 1 show that (75.8%) of the respondents were male. This may be because women prefer their husbands to take part in community related activities which is as a result of African culture which assumes that females should be restricted to certain things. Also, the mean age of the respondents was 48.03±10.99 years.

This implies that respondents were relatively young as most of them were still found in their active ages. Results further show that slightly above half (53.4%) of the respondents were Christians. The findings reveal that Christianity and Islam were the two major religions practised by respondents in Osun State. Majority 91.3 percent of them were married. The findings indicate that majority of them were people with responsibilities. Also, results in Table 1 further show that majority (92.8%) could read and write. The most prominent issues considered before taking final decisons on the type of projects to be done were felt-needs of community members (76.9%), resources available (51.1%) and community pressing need (59.1%). The implication of this finding is that projects that are very important to the members of the community are considered. Only 47.0 percent of the respondents were indigenes of the community. The mean household size was 5.43±1.9. The total number of persons in a family could be a criterion for involvement in social projects while 83.7 percent of them had travelled only within the state while (80 and 10 percent) had travelled out the state and the country respectively. These are indication that community members in the study area had a high level of expose to events outside their communities

Table 1: Distribution of respondents by their selected personal and socioeconomic characteristics (n=266)

Variables	Frequency	Percentages	Mean±Std. Dev
Sex			
Male	200	75.8	
Female	64	24.2	
Age (Years)			
<30	11	4.2	
30-39	35	13.3	
40-49	102	38.6	48.03±10.99
50-59	73	27.7	
60 and above	43	16.3	
Religion			
Christainity	141	53.4	
Islam	123	46.6	
Marital status			
Single	15	5.7	
Married	241	91.3	
Separated	1	0.4	
Widowed	7	2.7	

Table 1b: Distribution of respondents by other selected personal and socioeconomic characteristics (n=266)

Indigene status			
Indigenes	124	47.0	
Non-indigenes	140	53.0	

Household size			
<6	130	49.2	
6-9	122	46.2	5.4±1.9
10 and above	12	4.5	
Level of education			
Non- formal education	15	7.2	
Adult education	8	3.0	
Primary education	14	6.4	
Secondary education	90	37.9	
Tertiary education	115	45.5	
Community need			
Felt-need of the members	200	76.9	
Community pressing need	181	51.1	
Resources available	162	59.1	

Sustainability Strategies

Table 2 Results showed that 57.6 percent of the respondents never involved in sustainable strategies adopted for the project while only 42.4 percent of them were involved. Furthermore, among those that involved in sustainability strategies, results in Figure 1 showed that formation of committee on the various completed projects (75.8%), levying of CDA (61.9%) and seeking voluntary donations from the community members (53.4%) were the prominent sustainability strategies adopted by members of the various comminities studied. Others strategies not so prominent were formation of sub-committee (29.5%), fixing of regular meetings (18.9%), improving community members capability to carry out maintenance (18.6%) and leasing of projects to generate funds (17.8%) was the least strategy used.

The implication of this is that there is a cooperation among the commmunity members as they formed committee and also levied themselves in order to sustain the projects. This now conform kakumba (2010); Hickey and Mohan (2005) that for any rural development initiative to thrive well, citizens' participation is required so as to create empowerment and ownership among the target group.

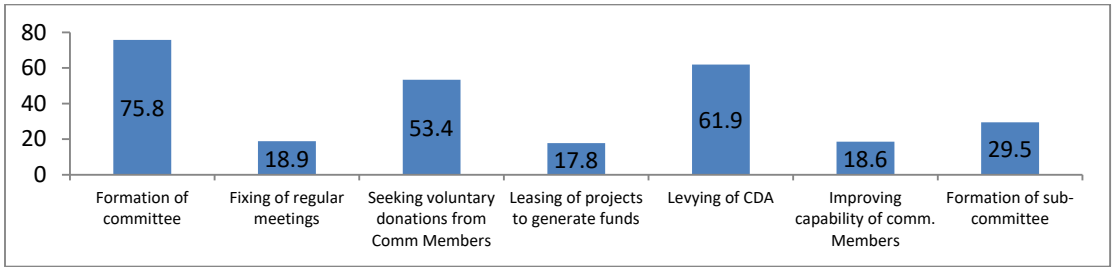

Figure 1: Distribution of respondents based on the sustainaility strategies used on the completed projects

Projects characteristics

Types of projects

These are demand-driven self-help projects that can improve social facilities in communities, help strengthen sustainable environmental management and generally improve access of poor people to social and natural resources infrastructure.

Cost of Projects

Evideince in Figure 3 shows the mean cost of selected projects that were undertaken by the Community Member's in the study area. It was observed that rural electrification such as buying and erection of poles and wire had the highest mean of N9.9 million while education such as building of classroom, had about N1.6 million but sensitization programme such as gender awareness and programmes had the least cost of N500,000. The findings agree with the submission of Hassan and Oyebamiji, (2012), and the World Bank (1999) that road, electricity, health and education projects are fundamenetal to the development of rural areas in developing countries as these are key indicators of development in any nation.

Span of Projects

Results in Table 3 show that majority of the projects were completed within 0-11 months.

Size of projects

Results in Figure 3.8 show detailed analysis of project size as this was based on the number of people that project could serve. It was revealed that 87.5 percent of the projects were regarded as large based on the fact that they were projects that could meet the needs of all the entire members of the communities. However, only 12.5 percent of the projects fall into the small sized group according to this classification. This classification is based on Adisa (2001) categorization of community development projects size as large, medium and small based on the project ability to meet peoples' and community pressing needs.

Table 2: Distribution of respondents based on the projects' characteristics (n=264)

S/N	Project type	Size	Cost	Span 0-11	12-23	24-35
1	Education	Large	1,600,000	223 (84.5%)	41 (15.5)	22-36
2	Water	Large	700,000	171 (64.8%)	90 (34.1)	
3	Transport	Large	1,100,000	171 (64.8%)	93 (35.2)	3 (1.1)
4	Socio-Economics	Large	1,300,000	186 (70.5%)	78 (29.5)	-
5	Rural Electricity	Large	9,900,000	186 (70.5%)	78 (29.5)	-
6	Health	Large	1,700,000	252 (95.5%)	12 (4.5)	-
7	Gender and vulnerable	Small	500,000	264 (100.0%)		-
8	Environment	Large	900,000	180 (68.2)	84 (31.8)	-

Mobilisation method

Results in Table 4 showed that 100 percent of the communities used group meetings for mobilisation, while 64.58 percent, it was through nomination of committee. Also, 10.42 percent and 50.08 percent were through town/village cariers and house to house visit. This finding is in line with Kuponiyi *et al.,* (2007), who asserted that the most widely exploited source of awareness in mobilising communities in self-help project is through conveyance of meetings both at the ward and community levels.

Table 3: Distribution of the respondents based on mobilisation method

Activities	Frequency	Percentage
Group meetings	48	100.00
Nomination of committee	31	64.58
Town /Village cariers	5	10.42
House to house visit	25	50.08

CONCLUSION AND RECOMMENDATION

The rural dwellers regarded the projects as a priority one and majority of them participated in sustaining them because the projects create empowerment and ownership among the target group. The major strategies used in sustaining the self-help projects were levying of CDA members, formation of committee and seeking voluntary donation. It is therefore concluded that strategies adopted by community members has enhanced sustainability of self-help projects in the community.

It is therefore recommended that different strategies should be used to bring community members into a project and in a meaningful way so that they will continue to be involved in it.

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ANALYSIS OF MARKETING MARGIN AND PROFITABILITY OF FROZEN FISH IN KADUNA NORTH LOCAL GOVTERNMENT AREA OF KADUNA STATE, NIGERIA

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ABSTRACT
This study Analysedthe marketing margin and profitability of frozen fish retailing in Kaduna North local government area of Kaduna State. Multistage sampling technique was employed to collect relevant data from 45 frozen fish retailers from three selected markets in the study area viz., Kawo, Unguwanrimi and Badarawa. Descriptive statistics, marketing margin analysis and profitability ratio were used to analysethe data. The study reveals that majorities (62.22%) of the retailers in the study area were women, and 55% of the retailers were educated up to Secondary and Tertiary levels. The result further shows that the marketing margin ranges from 5.42% to 7.2%, and the profitability ratio shows that Mackerel has the highest profitability of all the species of frozen fish studied, in the study area. The constraints to retailing of frozen fish in Kaduna North local government area of Kaduna State were fish spoilage, power outage, financial losses, poor sales, and poor transportation facilities in the order of importance. The study recommended that the marketing margin and profitability of these frozen fish retailers can be improved by organising them into Cooperative Societies to facilitate purchase cold room where their fish can be preserved.
Keywords: Marketing margin, Profitability, Frozen fish

INTRODUCTION

The national fish production is about 1.1 million metric tones from all sources including aquaculture, artisanal and industrial fishing sectors leading to a supply short fall of about 2.1 million metic tonnes Fsh make up around 40% of Nigerian protein intake while about 1,477,651 people works as fishermen. According to the minister of Agricultural and rural Development, Nigeria imported over 2 million metric tonnes. of fish before 2015. He said production had double by 600,000 mt. The federal government has in last three years, before government restricted food importation by direct fish importers to embrace backward integration through commercial aquaculture. The federal government has said that, Nigeria currently has a supply gap of about 2.1 million metric tonnes of fish through. The minister of state for Agriculture and Rural Development senator Dr. Heineki Lokpobiri made this disclosure at the stakeholders' workshop on the world fish Nigeria research programme in Abuja. Nigeria current annual national fish demand is in excess of 3.2 million metric tones. (www.thisdaylive.com,2018)

The main objective of this study was to Analyzed the marketing margin and profitability of frozen fish marketing in central market Kaduna. The specific objectives were to:

i. describe the socioeconomic characteristics of frozen fish retailers in the study area;
ii. determine the marketing margin of frozen fish retailing in central market Kaduna;
iii. determine the profitability of fish retailing in the study area, and
iv. Identify the major problems associated with the retailing of frozen fish in central market Kaduna

METHODOLOGY

This study was conducted in Kaduna town (central market). Kaduna State falls within the North West Agro. Ecological Zone of Nigeria, occupying a land area of about 48.473.2km^2 (NAERLS, 2013). The state is located between latitude 9º-10º and 11º-30ºN Longitude 6º.10" and 9ºE. the state shares boundaries with Katsina and Kano States to the North, Plateau State to the North East, the state has a population of 6,113,503 people, the estimated projected population as 2018 using the population growth rate of 3.2% was 8,920,827 people. Based on NPC (2006), Data for the study were collected from 45 frozen fish retailers with aid of structured questionnaire. Descriptive statistic such as frequencies and percentages were used to achieved objective 1and 4 while marketing margin formula was used to achieve objective 2 and gross margin analysis was used to achieve objective 3.

Marketing margin = $\frac{retailing\ selling\ price - Wholesale\ price}{Retail-selling\ price}\ x100$

Where; Gm = Gross Margin, GI = Gross Income TVC = Total Variable Cost

RESULT AND DISCUSSION

Socioeconomic characteristics

The result of the socioeconomic characteristics of the respondents shows that the majority (66.22%) were females while (37.78%) were males. This implies that marketing of frozen

fish is mostly carried out by females in the study area. The result further shows that most (71.11%) of the respondents were married. The result also shows that (55.55%) of the respondents had secondary school education and (64.44%) of them had more than 6 years of retailing experience.

Table 1: Socioeconomic characteristics of frozen fish retailer

Variables	Frequency	Percentage	Mean
Gender			
Male	17	37.78	
Female	28	62.22	
Marital status			
Married	32	71.11	
Single	13	28.89	
Age			
11-30	25	55.56	32
31-40	14	31.11	
41 and above	06	13.33	
Educational Level			
No formal education	05	11.11	
Adult education	07	15.56	
Primary education	08	17.78	
Secondary education	19	42.22	
Tertiary education	06	13.33	
Marketing experience			
1-5	16	35.56	8
6-10	20	44.44	
11-15	05	11.11	
16 and above	04	8.88	

Source: Field survey, 2021

Result of Types of frozen fish most retailed in the study area

The result in table 2 shows that the types of frozen fish mostly retailed in the study area were sawa, sardine, and mackerel with 92.3%, 84.44%, and 73.33% respectively.

Table 2: Types of frozen fish most retailed in the study area

Types	Percentage
Sawa	92.33
Sardine	84.44
Mackerel	73.33

Source: Field survey, 2021

The result for marketing margin analyses shows that the marketing of frozen fish in the study area was significantly profitable with 7.2%, 6.6% and 5.4% (mackerel, sawa and sardine frozen fish) this implies that, the frozen fish retailer can get an average profit of ₦1,692,1520.3 and ₦1,680.2 respectively per carton. However, the marketing margin between the various participants in the frozen fish marketing system in the study reveals that the market was performing well.

i. Marketing margin between wholesalers and retailers for sawa.

Wholesalers' price = N23000
Retailers' price = N24629
Marketing Margin =

$$\frac{selling\ price\ of\ retailers - Wholesale\ purchase\ price}{Selling\ price\ of\ retailer} x\ 100$$

$$\text{Marketing Margin} = \frac{24629-23000}{24629} x\ 100$$

Marketing Margin = 6.61%

i. Marketing Margin between wholesalers and retailers for mackerel was;

Wholesalers' price = N23500
Retailers' price = N25324
MM = Marketing margin =

$$\frac{selling\ price\ of\ retailers - selling\ price\ of\ wholesalers}{Selling\ price\ of\ retailers} x\ 100$$

$$\text{MM} = \text{Marketing margin} = \frac{25324-23500}{25324} x\ 100$$

MM = 7.2 %

ii. Marketing margin between wholesalers and retailers for sardine fish was

Wholesalers' price = N31000
Retailers' price = N 32775

MM = Marketing margin = $\frac{selling\ price\ of\ retailers - selling\ price\ of\ wholesalers}{Selling\ price\ of\ retailers} x\ 100$

MM = Marketing margin = $\frac{32775-31000}{32775} x\ 100$

MM = 5.42%

The result in table 3 shows the gross income of the (45) retailers was N138,224,844 per month. The net income of the retailers / month is N 133,853,557. The result agreed with findings of E. O. Edet *et al* 2018) in his study which reported a net farm income (NFI) of ₦125,000 This implies that, the marketing of frozen fish in kaduna north local government is significantly profitable.

Note:
TR = Total Revenue
TFC = Total Fixed Cost
TVC = Total Variable Cost
NI = Net Income
GI = Gross Income

Table 3: Cost and Return for Retailers (45) respondents

Variables	Sawa	Mackerel	Sardine	Total
No. of carton/Month	7830	2976	2842	
Cost price/ Carton month	23000	23500	31000	
Total variable cost/ Carton (TVC)	65,090,000	69,939,000	88,102,000	223,131,000
Selling price/ Carton	24,629	25,324	32,775	
Total sales/Month (TR)	192,845,070	75,364,224	93,146,550	361,355,844
GI=TR-TVC	127,755,070	5,425,224	5,044,550	138,224,844 respondents/month
Operational- cost (TFC) /month/Transportation Rent and other charges				4,371,287 /respondents/month
NI=GI- TFC				133,853,557/respondents/month

Source: Field survey, 2021

Problem faced by frozen fish retailers in the study area

The result revealed the problems faced by the frozen fish retailers in the study area among which were spoilage with 77.78%, power outage with 84.44%, financial loses with 88.9%, poor sales with 33.33%, fluctuation in price with 55.56%, unsuitable supply with 66.67% and seasonality with 37.78%. This shows that spoilage, power outage, financial loses and poor transportation facilities were the most problems faced by frozen fish retailers in the study area.

Table 4: Problem faced by frozen fish retailers in the study area

Problems	Frequency	Percentage
Power outage	38	84.44
Poor transportation facilities	38	84.44
Finance losses	36	80.00
Spoilage	35	77.78
Unsuitable supply	30	66.67
Fluctuation in prices	25	55.56
Seasonality	17	37.78
Poor sales	15	33.33

Source: Field survey, 2021

CONCLUSION

This study concludes that the marketing margin was a function of marketing cost among which was transportation. Marketing margin for the study area ranges within 5.42% to 7.2%. However, profitability analysis revealed that mackerel and Sawa had the highest returns with 7.2 % and 6.61 % respectively.

RECOMMENDATION

The study therefore recommends an improvement in the present power supply to minimize fish spoilage and financial losses arising from power outage. The study also recommends the introduction of affordable refrigerated vehicles for transporting frozen fish to long distant markets and the formation of cooperative society and provision of supervised micro credit to help increase the financial state of retailers.

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ASSESSMENT OF IMPACT OF ANCHOR BARROWERS PROGRAM ON RICE FARMERS LIVELIHOOD IN GIWA LOCAL GOVERNMENT AREA OF KADUNA STATE

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ABSTRACT

The study assessed the impact of Anchor Borrowers programme on rice farmers in Giwa Local Government Area of Kaduna State, Nigeria. Random sampling technique was used to select five districts out of eleven districts from the study area which included Giwa, Shika, Gangara, Danmahawayi and Kakangi, with beneficiaries 120, 110, 95, 90, and 85 respectively. Twenty percent (20%) of rice farmers were randomly selected among the beneficiaries of Anchor Borrowers from each district making a total of hundred (100) respondents; although only 94 of the distributed questionnaires were obtained for analyses. Descriptive statistics (percentage, mean, table and frequency) and T-test were used in analyzing the data. The result shows that, the average yield of paddy rice cultivated by the farmers before joining the Anchor Borrowers programme was 2.5tones/hectare while after joining the program the average yield was3.5 tones/hectare with a margin of more than 1tone/hectare, which implies that there was an increased in yield of rice because of participating in the programme. The result further shows that there was a significant difference between the income of the farmers before and after joining the programme with mean value of #601135.6383 obtained before while after joining with mean value of #843,884.2199 with a margin of about #242,748.6. The result however shows that untimely delivery of input and the distance to input collection centers were the major constraints affecting farmers' participation in the programme. The study recommended that inputs should be made available to the farmers at sufficient quantities and at appropriate time of the farming season. Also inputs collection centre should be provided in each ward to ease accessibility for the input by the farmers.

Keyword: Anchor borrower, Rice farmers and livelihood

INTRODUCTION

Rice is one of the agricultural products that is of growing importance in Nigeria, (Johnson *et-al.* 2013). The Central Bank of Nigeria (CBN) in line with its developmental function established the Anchor Borrowers' Program (ABP). The Program which was launched by President Muhammadu Buhari (GCFR) on November 17, 2015is intended to create a linkage between anchor companies involved in the processing and Small Holder Farmers (SHFs) of the required key agricultural commodities. The program thrust of the ABP is provision of farm inputs in kind and cash (for farm labour) to small holder farmers to boost productionof these commodities, stabilize inputs supply to agro-processors and address the country's negative balance of payments on food. At harvest, the SHF supplies his/her produce to the Agro-processor (Anchor) who pays the cash equivalent to the farmer's account (CBN 2016). The broad objective of the ABP is to create economic linkage between smallholder farmers and reputable large-scale processors with a view to increasing agricultural output and significantly improving capacity utilisation of processors.

The broad objective of this study was to assess the impact of the anchor borrower's program on the rice farmers output and standard of living in Giwa Local Government Area of Kaduna State. The specific objectives were to:

i. describe the socioeconomic characteristics of the rice farmers in the study area;
ii. assess the perception of farmers on the anchor barrowers' program;
iii. evaluate the impact of anchor barrowers' program on the yield and income of the rice farmers in the study area,
iv. identify the major constraints limiting the benefit of anchor barrowers to rice farmers.

The research hypothesis of the study was stated that there is no significant difference between the yield of the rice farmers before and after joining the program.

METHODOLOGY

Giwa local government area of Kaduna State has an area of about 2,066km^2 and lies between latitude ^{110} 00 – ^{110} N and longitude 7^0 00-7^0 45E of the equator found in the northern guinea and south tip of the savannah (NAERLS, 2013). The local government had an estimated population of about 292,384 (NPC, 2006), and it was estimated to increase to about 720,407 by 2019 based on the national population commission annual growth rate of 3.2% Descriptive statistics were used to achieve objective 1, 2, 3 and 4 while analysis of variance (ANOVA) was used for testing the hypothesis.

Table 1: Sampling procedure and sample size table

LGA	District	Communities	Population size of anchor borrower' rice farmers	Sample size of anchor borrower' rice farmers 20%
Giwa	Giwa	Giwa gari	120	24
	Shika	Guga	110	22
	Gangara	Gulbala	95	19
	Danmahawayi	Danmahawayi gari	90	18
	Kakangi	Turawa	85	17
Total			500	100

Source: Field survey, 2021

RESULTS AND DISCUSSION

The result in table 2 shows that, the mean age of the respondents was 32 this implies that the respondents are in their youthful age and can easily adopt good agronomical practices. This confirms the findings of Abdullahi *et al.* (2015) which found that most of the respondents were of middle age. Also 8 years was found to be the average farming experience of the respondents. The result further indicated that majority (87.2%) were males. This could be attributed to the culture of the respondents of not allowing females to fully take part in fieldwork. The result also shows that 33% of the respondents had tertiary education. This implies that reasonable percentage of the respondents obtained higher education and was aware of the importance of improved-inputs for increased agricultural productivity. Literacy was identified as among other factors that positively influenced the use of improved agricultural inputs by farmers.

Table 2: Result of socioeconomic characteristics of the respondents

Variables	Percentage (n=94	Mean
Age		
18 - 25	19.1	
26 - 35	22.3	32
36 - 45	33.0	
> 46	25.5	
Gender		
Male	87.2	
Female	12.8	
Level of Education		
Qur'anic school	31.9	
Primary	8.5	
Secondary	26.6	
Tertiary	33.0	
Years of farming experience		
1 - 5	26.6	
6 -10	33.0	8
11 - 15	11.7	
> 16	28.7	
Total	100	

Source: Field survey, 2021

The result in table 3 shows that, majority (57.4%) and (44.7%) of the respondents before and after joining the program had farm sizes of about 2-3 hectares of farmland, respectively. This implies that, rice farmers had increased their farm land for higher productivity due to the training and farm input obtained from the program.

Table 3: Result showing the sizes of farm used and by the respondents before and after joining the anchor borrowers' program

Variables	Before	After (n=94)
Size of farm (hectare)		
< 1	27.7	29.8
2 – 3	44.7	57.4
4 – 5	11.7	11.7
6 - >	3.2	13.8
Total	100	100

Source: Field survey, 2021

The result in table 4 shows that, 43.6% of the respondents had partially understood the program, and 44.7% of them considered the program as very innovative., This implies that, the respondents need more awareness and sensitization about the program. And were of the opinion that, the program should continue.

Table 4: Showing the result of respondents' perception about the program

Variables	Percentage (n= 94)
Level of understanding of the program	
Partially understood	43.6
Strongly understood	22.3
Not understood	16.0
Undecided	18.1
How innovative the program was	
Very innovative	44.7
less innovative	22.3
Not innovative	32.9
Total	100

Source: Field survey, 2021

The result in table 5 above show the average yield obtained per hectare in the study area for both before and after joining the program were 2518.552009kg and 3559.716312kg respectively with p-value < 0.05. Therefore, there is a significant difference between the yield obtained before and after joining the programs. This implies that, the null hypothesis is rejected.

Table 5: Showing the result of hypotheses on yield obtained before and after joining the program

	Rice yield before	Rice yield - After
Mean	2518.552009klg	3559.716312kg
Variance	15951734	7959094.781
Observations	*94*	*94*
Df	93	
F	2.004214604	
P(F<=f) one-tail	0.00046533	
F Critical one-tail	1.408995454	

Source: Field survey, 2021

The result in table 6 above show the average income obtained annually in the study area for both before and after joining the program were ₦601,135.6383 and ₦843,884.2199 respectively with p-value < 0.05. Therefore, there is a significant difference between the income obtained before and after joining the programs. This implies that, the null hypothesis was rejected.

Table 6: showing the result of hypotheses on income obtained before and after joining the program

	Income before	***Income after***
Mean	601135.6383	843884.2199
Variance	9.42785E+11	4.54588E+11
Observations	*94*	*94*
Df	93	

F	2.073931146
P(F<=f) one-tail	0.000260076
F Critical one-tail	1.408995454

Source: Field survey, 2021

The result in table 7 above shows that, Untimely delivery of input, Distance between farmers and collection center of input and Time of repayment were the major constrained faced in the program with 53.2%, 48.9% and also 48.9% respectively. This implies that, there is shortage of input collection centers for the farmers have to travel far away from their villages to the input collectors and also time of repayment should be extended as reasonable as possible.

Table 7: Constraints faced by beneficiaries in the Anchor Borrowers program

Variables	Frequency	Percentage
Untimely delivery of input	50	53.2
Distance between farmers and collection center of input	46	48.9
Time of repayment	46	48.9
Method of repayment	34	36.2
Insufficient capital for running expenses	28	29.9
Insufficiency of extension workers	28	29.9
Total	**94**	

Source: Field survey, 2021

CONCLUSION AND RECOMMENDATION

The research concluded that there is a significant difference between the farm yield produced before and after joining the program which has caused a significant impact on their livelihood due to the increase in their income. However, the research recommended that, sufficient input should be extended to the farmers at the appropriate time of the farming season, to create more input collection centers, also to attach a financial support to make farming operation easier.

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PERCEIVED BEHAVIOURAL STATUS ON RANCHING ADOPTION OF AGRO-PASTORAL HOUSEHOLDS IN OYO STATE

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ABSTRACT
Agro-pastoralists do engage in both livestock and crop production. They usually move their herds from one place to another in search of pastures and fresh water due to scarcity of pastures which has led to the destruction of crops. However, ranching which establishes limits of livestock animals' mobility has been proposed to mitigate and mediate the problem. Therefore, the perceived behavioural status on ranching adoption (knowledge, attitude and practice) of agro-pastoralists in Oyo state Nigeria was investigated. Data were collected from 115 respondents using interview schedule on respondents' socioeconomic characteristics, enterprise characteristics, and knowledge, attitude and practice about ranching. Data were analyzed using descriptive statistics, Pearson Product Moment Correlation, t-test and regression analysis. The constraints identified were over grazing (66.9%, $\bar{x}$=3.53), urbanization (29.5%,$\bar{x}$=3.29) and inadequate trainings (20.0%, $\bar{x}$=2.88) while bush burning as the only challenge (5.0%,$\bar{x}$=1.76). Categorisation of agro-pastoralist ranching behavioural status showed that respondents had low level of ranching behavioural status (59.3%, low: 1.8-6.6, high: 6.7-11.2) which was accounted for by their low practice (low: 38.00-46.35, high: 46.36-62.00). There was no significant difference between the ranching behavioural status of Saki local government and Ibadan/Ibarapa local government (p= 0.754). It was therefore concluded that agro-pastoralists had low ranching behavioural status and therefore recommended that adequate training on ranching in line with global best practices should be encouraged and government reserved ranching areas should be established around river basins to encourage sustainability.
Keywords: Ranching, behavioural status, agro-pastoralists

INTRODUCTION

Violence between Fulani herdsmen and farmers is one of Nigeria's most persistent security concerns and has left thousands of people dead and homeless in recent decades. The Fulani Herds men have borne a large proportion of the blame for most conflict and environmental degradation in policy statements in the Guinea Savannah region of West African states (Thebaud and Batterburry, 2001)

Recent clashes have been driven by a number of factors from environmental to political but at the centre of the problem is land scarcity climate change desertification of the Northern part of Nigeria which have now forced the nomadic cattle herdsmen farther south to feed their cattle. This movement has led to encroachment on the territory of farmers.

The production potential of grassland and livestock in the arid and semi arid region is constrained by low and variable rainfall (Thebaud and Batterbury, 2001; Ifatimehin, 2008). Therefore, there is a need for grazing movements to access pasture resources across regions in order to ensure food security for the herds. Hence, pastures, woody vegetation, water resources and land are taken as a common property resource as reported by Berger (2003). But the complex land-use system that has changed markedly over time, has culminated in the present-day tension and conflicts between herds man and host communities.

Some initial steps have been taken in April 2017, a policy dialogue initiated by the (FAO) recommended that the government formulate and implement a ten-year National Ranch Development Plan. The Federal Government's policy direction and stakeholders' concurrence signal a growing consensus on the imperative of shifting from open grazing to ranching. Ranching is the practice of raising herds of animals on large tracts of land. It is an efficient way to raise livestock to provide meat, dairy products and raw materials for fabrics. It is a vital part of economies and rural development around the world.

Although, there have been several studies on agro pastoralist and farmer clash, many of these studies are focused on the understanding of the causes and effects of conflict between nomads and farmers in host communities (Ofuoku, 2009). Dimelu, Salifu, Chah, Ewelu, and Igbokwe (2017) also reported that there have been instances of conflict between cattle and herder and crop farmers in Igala Mela/ Odolo Local Government Area, Ibaji and Ofu LGAs over crop destruction by cattle, killing of a herder and stabbing of a farmer. More also Gbaka (2014), also reported that there has been a significant loss of lives in many parts of Nigeria, including Katsina, Taraba, kogi and Oyo state to mention a few.

Similar occurrence has also been reported in recent times, the clash between farmers and herdsmen in Benue state which led to Massacre of hundreds of farmers. These may account for the lack of information on the attitude, practices, and

knowledge, among other behavioral attributes. However, animals are kept in fenced areas at a distance of about 2 kilometers away from their settlement. They are then moved according to season and vegetation availability.

Most agricultural development programmes such as Agricultural Transformation Agenda (ATA,2012), Green Alternative (2016), to mention a few have focused on crops while little or no attention is given to livestock production has been targeted mostly on poultry production (The SUN newspaper, 2018) without any plan for agro-pastoralists. However, there is a dearth of information on ranching behavior among agro-pastoralist in the study area and there has not been any empherical study with respect to ranching behavior (knowledge, attitude and practice). It is against this backdrop that this study focused on assessing Perceived behavioural status on ranching adoption of agro-pastoral households in Oyo state with the following set of objectives;

1. describe the personal characteristics of the agro pastoral households in Oyo state
2. determine the perceived behavioural status on ranching adoption of the respondents
3. assess the possible hindrances faced by the respondents in ranching

METHODOLOGY

The study was carried out in Oyo state which is geographically located in the southwest of Nigeria. Population of the study consisted of all agro pastoral households in Oyo state. A multi stage sampling procedure was used to select respondents for the study. Oyo state has 33 local government areas for administration. Oyo state has four ADP zones; they are Saki, Ibadan/Ibarapa, Oyo and Ogbomosho. Two ADP zones was randomly selected from which two local government areas that has highest concentration of agro-pastoralists was selected purposively from each zone. The selected zones and LGA's are Saki (Saki west, Saki east), and Ibadan/Ibarapa (Ibarapa north and Ido). 20% of the settlements with highest concentration of agro- pastoral household were purposively selected. 30% of the agro-pastoral households were randomly selected for the study. In all, a total of one hundred and fifteen (115) respondents were interviewed for the study. Data collection was using structured interview. Data were analysed using descriptive statistics to explain the relationship between study variables.

The hypothesis of the study, stated in null, that there is no significant difference between the ranching behavioural status of Saki local government and Ibadan/Ibarapa local government.

RESULT AND DISCUSSIONS

Personal and enterprise characteristics

Table 1 shows that majority (60.0%) of the respondents are within the age bracket of 31-50 years. This implies that both adults and youths engage in agro-pastoralism. It also shows a prime age when they have enough energy to engage in various livestock activities. All the respondents practice Islam (100%). This implies that all the agro-pastoralists are Muslims. This finding corroborates the study carried out by Olusanya T. P., Fabusoro E., Talabi, A.O (2014) who stated that Islamic faith is connected with their origin which is Northern Nigeria, a region reputed to have the highest numbers of ardent Muslims in Nigeria. The implication of this is that religious centres are very resourceful in information sharing and can also be an avenue to conduct training on ranching. 82.6% of agro-pastoralists in the study area were married with average household number of 7**.** 85.2% have no formal education, while 1.7% have completed secondary school and tertiary education, and 13% had nomadic education. As depicted in table 1, more than half (57.9%) of the agro-pastoralists had 11-30 years of experience in herding and livestock production in the study area. 20.0% of the agro pastoralists have more than 30 years of experience in livestock production and crop farming. This implies that they agro-pastoralists had been in the business for long and are familiar with the challenges relating or confronting ranching adoption in the study area. The implication of this to extension is that, it will help to know where extension service is needed because extension starts from where the people are and build on their existing knowledge to improve their knowledge attitude and skills. According to Olajide, Akinlabi and Tijani (2012) individuals with many years of experience should be actively involved in their own problem identification, programme design, project implementation, monitoring and evaluation to guarantee sustainability**.**

Table 1: Personal characteristics of respondents

Variable	Frequency	Percentage (%)	Mean	Standard Deviation
Age (years)				
<31	28	24.4		
31-40	45	39.1	38.0	10.8
41-50	24	20.9		
51-60	15	13.0		
>60	3	2.6		
Religion				
Christianity	0	0		
Islam	115	100		
Traditional	0	0		
Tribe				
Hausa	0	0		
Igbo	0	0		
Yoruba	0	0		
Fulani	115	100		
Marital status				
Married	95	82.6		
Single	20	17.4		
Divorced	0	0		
Household size (male and female)				
1-3	8	7.0		
4-6	32	27.8		
7-9	49	42.6	7.7	3.2
>9	26	22.6		
Educational level				
No formal education	98	85.3		
Completed secondary school and tertiary education	2	1.7		
Nomadic education	15	13.0		
Number of years of agro-pastoral experience				
<11	14	13.2		
11-20	44	41.5		
21-30	25	23.6	25.4	19.4
>30	23	21.7		

Source: Field survey (2018)

Possible hindrances faced in ranching

The result of analysis of categorization of hindrances faced by respondents as presented on Table 2 reveals that majority (73.0%) of the respondents confirmed that they encounter high level of hindrances in ranching while 27% encountered low level of hindrances in ranching. The implication of this is that the high level of hindrance encountered by the respondents in the study area will affect the adoption of ranching.

Table 2: Categorisation of respondents by possible hindrances faced in ranching

Category	Frequency	Percentage
Low	31	27.0
High	84	73.0
Total	115	100.0

Source: Field Survey (2018) Min= 37.00, Max= 58.00, Mean= 47.67

Ranching knowledge level of respondents

Table 3 indicates the categories of the level of the respondents on ranching in the study area. The result shows that more than half (52.2%) of the respondents have the high knowledge of ranching while 47.8% have low knowledge of ranching.

Table 3: Distribution of categories of ranching knowledge level of respondents

Category	Frequency	Percentage
Low	55	47.8
High	60	52.2
Total	115	100.0

Source: Field Survey (2018) Min=23.00, Max=29.00, Mean=46.34

Attitude of respondents towards ranching

Result of analysis on table 4 shows the category of respondents' attitude towards ranching in the study area. The result shows that majority (63.5%) had favourable attitude towards ranching while only 36.5% had unfavorable attitude towards it. This means that agro-pastoralists attitude towards ranching is favorable, but the high level of hindrances they encounter, will limit their level of adoption. The implication of this to extension is that their favourable attitude towards ranching could be used as a basis in planning training or intervention that would improve their skills and practices.

Table 4: Distribution Categorization of attitude of respondents towards ranching

Category	Frequency	Percentage
Unfavourable	42	36.5
Favourable	73	63.5
Total	115	100.0

Source: Field Survey (2018) Min=68.00, Max=120.00, Mean=89.86

Perceived Ranching practices of respondents.

Result of analysis on table 5 shows the category of respondents' status of ranching practices in the study area. The result shows that majority (61.7%) had low level of ranching practices while only 38.3% had high level of practice in ranching. This could be due high hindrances faced by the respondents e.g., shortage of water has been identified as the most severe problem in the study area, which makes agro-pastoralist travel far distance in search of fresh water for the animals to drink.

Table 5: Distribution of categorization status of ranching practices of respondents

Category	Frequency	Percentage
Low	71	61.7
High	44	38.3
Total	115	100.0

Source: Field Survey (2018) Min=38.00 Max= 62.00 Mean=46.35

Perceived Behavioral status of Ranching adoption of the respondents

Result of analysis on table 6 revealed the behavioural status of respondents towards ranching in the study area. The result shows that more than half (53.9%) had low behavioural status towards ranching while 46.1% had high behavioural status. Result of findings established in table 3, reveals that the respondents had high knowledge of ranching, also Table 4 established that the respondents had favourable attitude towards ranching and table 5 also shows the low extent at which they practice ranching. However, their low perceived behavioural status of ranching adoption was due to the low level at which they practice ranching which is caused by the high level of hindrances being faced by the respondents which discourages ranching practices even though they have favourable attitude towards it.

Table 6: Distribution of respondents by their ranching behavioral status

Category	Frequency	Percentage
Unfavorable	62	53.9
Favorable	53	46.1
Total	115	100.0

Source: Field Survey (2018) Min=1.82, Max=11.15, Mean=6.69

Hypothesis Testing

The t-test showing the analysis of difference between ranching behavioural staus of Saki local government and Ibadan /Ibarapa local government discloses that there was no significant difference (t=-0.314, p=0.754) in their ranching behavioural status. This implies that their ranching behavioural status is the same across the two local governments. Hence, the null hypothesis is accepted.

Table 8: Independent sample t-test of agro-pastoralists' ranching behavioural status across the two local governments.

Ranching Behavioural status	N	Mean	Standard deviation	Mean difference	t-value	p-value	Decision
Saki	70	6.65	1.65	-0.1054	-0.314	0.754	Not significant
Ibadan/Ibarapa	45	6.76	2.07				

CONCLUSION

Based on the findings of the study, it is therefore concluded that agro-pastoralists ranching behavioural status was low which was accounted for by their low level of practice. Although the knowledge of the respondents about ranching was high, they had favourable attitude towards it but their practice is low due to the high level of hindrances faced by the respondents. This implies that agro-pastoralists understand and are knowledgeable about ranching, but have low practice because of the hindrances they encounter such as shortage of water, expanding human population amongst others. Their favourable attitude towards ranching suggests that further training will be readily accepted by them provided some of the hindrances and can be taken care of.

RECOMMENDATIONS

Based on the above conclusions, the following recommendations are hereby made:

- Government should address some of the hindrances encountered by agro-pastoralists e.g., shortage of water, so as to ensure make ranching adoption easy to practice, which in turn will solve the agro-pastoralists and farmers clashes and ensuring good security.
- Agro-pastoralists should be adequately trained on ranching in line with global best practices.
- Government reserved areas ranching centers should be established around river basins so as to encourage sustainability.

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DYNAMICS OF INSECURITY IN NIGERIA'S RURAL AGRO-ECOSYSTEM: THE APPARENT STANCE OF GOVERNANCE AND EFFECTS ON NATIONAL FOOD SECURITY

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ABSTRACT
The drives at achieving food security begins with the security of the rural agro-ecosystem of any country, such that stakeholders in agro-development processes could securely be on the farms for crop cultivation and rearing of farm animals, tendering of the farms, harvesting and transportation the farm produce for processing and distribution for home consumption or industrial use. Galvanized security of lives and properties of a rural ecosystem however rests on good governance and prompt responses to threats and risks in the areas. The Nigeria rural agro-ecosystem has however been greatly ravaged by high level of insecurity caused by both natural and human factors. The dynamics of insecurity in Nigeria thus take the forms of farm destruction by grazing cattle, infestation by pests and diseases, flooding and land degradation, outbreak of diseases like the global pandemic, rustling of cattle, attacks by bandits and community/ethnic clashes. Resultant effects of these ranged through wanton loss of lives and properties, abandonment farms, and much more, a heightened spectrum of food insecurity across the country. Insecurity in the rural ecosystem is further festered by poor system of governance and lack of commitment to checkmating the emerging risks of farming and threats to lives and properties. This situation may worsen the food security drives in the in the country unless serious security measures are put in place to checkmate the ravaging insecurity in the nation's rural ecosystem. This calls deployment of information technologies and intelligences gathering which could be achieved with strong political will of governance.
Keywords: Insecurity, rural agro-ecosystem, security governance, safe environment, food security, Nigeria

INTRODUCTION

The rural environment largely constitutes the food resource base of the global society, given that the areas support and provide expanse of land for intensive and sustainable agricultural practice. In essence, the rural farm outputs not only form the basis of the rural economy but equally support the industrial hub of the global economy through the provision of essential and required production resources for the industrial sector. The outflow of rural-based resources and inflow of monetary values from the urban-based industrial form the basis for the rural-urban connectivity and the driver of the overall societal or national/international development. Sustenance of social and economic growth of the human society however depends on safety of the rural areas in all ramifications.

Security, as opined by Ball (2019), is the assurance of safety and protection of people or place against adverse conditions or threats like war and violence, crime, and climate change, through the implementation of rule of law and due process by governmental authorities of nation or community. It implies putting protective measures in place to guaranty the safety of lives and properties in an environment, which may connote the deployment of defense task forces. Security is however beyond protection against physical harm or potential threats. According to Ballin *et al* (2020), protecting the national territory against hostile armies in a world of transnational connections is no longer the major protective task but protection of human rights, economic and social development. Further to this, Ball (2019), expresses that the day-to-day security at individual level is largely about nutrition/food, economic and safety. Alongside this is economic security whereby the national resources are protected or strengthened to sustain the economic growth and enhance the societal social wellbeing. These submissions thus suggest that security actions for sustainable economy and quality living of its citizens is beyond military operation but inclusive strategic actions against all forms of threats and risks to social and economic growth of a country. Attainments of national security however rests on the collective effort of both government and the citizens

Governance and security: Understanding the legal framework

Governance, as expressed by the United Nation Educational, Scientific and Cultural Organisation – UNESCO (2021), refers to structures and processes that are designed to manage a country's economic, political and administrative affairs, though with transparency, rule of law, accountability, and responsiveness; with a view to guarantying stability, equity, inclusiveness, empowerment and broad-based participation. It is about how power is distributed and shared, how policies are formulated, priorities are set and stakeholders are made accountable. Adherence to these framework of governance leads to good governance.

Governance is though embodied in a set of regulations, comprising guidelines, policies and procedures that guides attainment of effective administration or good governance for uplifting of the citizens' wellbeing, security governance is entrenched in a combined set of tools, personnel and processes that provide formalised risk management (Winkler and Gomes, 2017). Although, security governance has its origin in organisational management, it has similar application in the political governance where security governance entails having in place, organisational structure, roles and responsibilities, metrics and processes, and oversight that impact the security programme (Winkler and Gomes, 2017). In the same vein, Fay and Patterson (2018), imply security governance as integration of sets of responsibilities and practices with which the executive management provides strategic direction on appropriate management of risks. Consequently, elected government of any nation has the responsibility to ensure the management of the security sector, providing security as a public good and doing so in line with the democratic best practices.

Governance in Nigeria and the state of insecurity

Since independent in 1960, Nigeria has adopted a variety of governance structure in the range of regional, military and democratic system of governances, with the goal of building an environment that guarantees social stability and equity, economic growth, infrastructure development, accessible and affordable social amenities, and attainment of quality life by the citizens. The fundamental objectives and directive principles of state policy as contained in the 1999 constitution of the Federal Republic of Nigeria, is the goal of providing stable political, economic, social, educational, environmental, cultural, and media structures that support national ethics matters and duties of citizens (Okeke, 2011). Alongside this is the clear indications by Section 14 subsection 2b of the constitution that 'the security and welfare of the people shall be the primary purpose of the government (Adegabmi, 2013). It is however unfortunate that reality of governance in the country has rather proved disruptive than providing the much-expected trust, transparency and accountability necessary for fostering long-term investment, financial stability and business integrity that should lead to attainment of stronger growth and more inclusive society. The country has become much embroiled in a great deal of social, economic, environmental and political insecurity.

Insecurity, as inferred from Vornanen *et al* (2009) submissions refers to a situation in which communities and traditions do not shelter the members of a social system against risks and threats; and to the extent that the people become vulnerable in their close personal relationships, and at the same time, are aware of the threats in the global issues. It is a situation of risk consciousness, which meant living under the threat of hazardous uncertainty in a new cultural dynamic of anxiety (Wilkinson 2001). These definitions reflect the current situation in Nigeria in which security of lives and properties are great risks as a result of daily actions of terrorists and criminals across the country. With the rural areas, particularly forest bases constituting the hideouts and encampment of the criminals and terrorists, the areas are not spared of threats and risks, which are dynamically hatched by the criminals.

The Nigerian rural agro-ecosystem and the dynamics of insecurity occurrence

Rural areas have though served as resort and tourism avenue in most of the developed, and a few of the developing countries, it remains the abode of farm families alongside their crops and farm animals. Interaction among the farm households, visitors or tourists, crops and animals, and other natural resources, such as the soil and land, water and the agro-climatic elements, which constitute the agro-ecosystem, sustains and guarantees steady food and other agro-resources production for human consumption and industrial development. Functionality of the Nigeria's rural agro-ecosystem has however been disrupted by the trending insecurity, which has taken varying dimensions, in the country. A meta-analysis of research, journalist and online publications, coupled the field observations and shared experiences with key actors on security matters in the country reveal the following dynamics of insecurity across the Nigeria's rural agro-ecosystem.

Cattle rustling: Cattle, which is an important economic base of the pastoralists, has been the target of unscrupulous individuals who specialise in stealing or forcefully taking of cows from their owners. According to the Olaniyan and Yahaya (2016), cattle rustling has become a major crime in Nigeria with the northern region being the hardest hit. The rustling is more pronounced in Benue, Nassarawa and Plateau States in the north central of the country where commercial farms, even owned influential politicians, clerics and traditional rulers have been invaded. Highlighting the reasons for cases of cattle rustling, The Conservation (2019) indicated pastoral culture and

tradition, climate change and state failure and proliferation of light weapons across Africa.

Farm disruption by pastoralists' encroachment: Crop production and animal rearing constitute the major components of agricultural practice or farm enterprise production. Poor livestock management system, in which the large ruminant is taken about or let loose for open grazing by the pastoralists has been a long term cultural practice of the Fulani pastoralists and such, in most cases, results in encroachment of farms with resultant destructive grazing of cultivated crops. The open grazing practice though takes place across the country, incursion of farms for grazing is more common in the middle belt and southern part of the country leading to conflicts between the pastoralists and farmers (Onyiama and Iwuoha, 2015)

Kidnapping of farm families: With the rural areas constituting the base of the farm families and that of the bandits and other criminals, kidnapping of farmers and farm workers has become a major threat to farming activities across Nigeria in recent times. On July 6, 2021was News Agency of Nigeria reportage of 4 farmers kidnapped in in Ikosu Farm Settlement, Moba Local Government area, Ekiti State with a demand for N50millium ransom (The Guardian, 2021a). On a similar note is the reportage of the abduction of an unspecified number of farm workers on a fish farm by suspected Fulani herdsmen at Oko-Irese, in Irepodun Local Government Area of Kwara State (Sahara Reporter, 2021). In the same vein the Premium Times (2020a) reportage of the kidnap of young agripreneur on July 10, 2020, in Lanlate, one of the seven farming communities in Igboora, Oyo State, who eventually died in their custody.

Gruesome attacks on rural communities by bandits and terrorists: Not only are farm families intermittently kidnapped, but have become the subject of attacks by the forest-based criminals in an attempts to source food from them or to terrorise them for providing information about the whereabouts or nefarious actions to the nation's security task force. A notable case in this regard was gruesome killings of over 40 rice farmers in Garin Kwashebe rice fields, near Zabamari village, Maiduguri, Borno State (Premium Times, 2020b). According to DW News (2020), which reported the actual buried farmers to be 76, the killing was carried out in retribution for the farmers' cooperation with the Nigerian military for onslaught on their sect. Adding credence to this, the Channels Radio Podcasts (2021), reported that bandits have killed an unspecified number of farmers who were abducted in Buruku and Udawa villages in Chikun Local Government Area of Kaduna State.

Outbreak of communicable disease: Apart from physical threats and risks to the farm families is the possible outbreak of communicable diseases. Although, there exist a number of tropical diseases in human society, attention has largely been given to the more pronounced or death-dealing diseases, mong which are tuberculosis, whooping cough, human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), flu (influenza), hepatitis, human papillomavirus, measles, norovirus, Zika, Ebola, and recently the novel corona virus – COVID-19 etc. (Ewung *et al*., 2019; Agada, *et al*., 2019; Cennimo, 2020; Nicola, *et al*., 2020). Communicable diseases could however be contacted or transmitted through various means, generally classified as direct or indirect contacts. As indicated by Higuera (2017), direct contact could be by person-to-person, spray of droplets; while indirect contact takes the form of airborne transmission, contaminated objects, food and drinking water, animal-to-person contact, insect bites, animal and environment reservoirs. The extent to which a particular disease affects humans depends on its virulence and the strength of individual's immunity to the disease

With the avalanche of threats of insecurity in the Nigerian rural agro-ecosystem, it suggests an infraction on the farming activities across the country with potential widespread food insecurity across the country. Preventing this requires urgent security intervention of the three tiers of government across the country. A look at the at the possible action in this regard reveals the stance of the Nigerian government on the issue.

The stance of the Nigerian governance on insecurity of the rural agro-ecosystem

Insecurity remains a major challenge in Nigeria of today, particularly with severe impacts on the nation's agro-production system and rural life. Generally, attention is mostly on the government to provide the needed and necessary security measures in the country, given the entrusted constitutional power to do so. Consequently, the Nigerian government in its wisdom has taken the following stance in the management of the security situation in the country. Among these are:

We are on top of the situation: Immediate response of the Nigerian government to the issue of insecurity, particularly on attacks by herdsmen or bandits is the reactionary expression of 'being on top of the situation'. This may have been informed by underground investigation and

intelligent gathering to unravel those behind the crime and making such to face the full wrought of the law.

Seek the protection of the security personnel: As a measure of security for the citizens, the directive of the of the Federal and State Government has been that citizens should always seek the intervention of the security personnel's protection and probably for rescuing of victims of the kidnappers.

Defend your selves as you may deem fit: With the high rate of insecurity across the country, and possibly the overpowering of the security personnel, there have been calls from various quarters and government officials for individuals or groups to device the means of protecting themselves against crime and attacks by the bandits and kidnappers.

Criminalisation of ransom payment: As a way to prevent the citizens from giving in to the demands of abductors or kidnappers, the legislative arm of the government had given consideration to criminalizing ransom payment. This in their own wisdom, is a measure to discourage kidnapping and those involved may likely stopped the acts if ransom is not forthcoming.

Anti-open grazing law: The drastic decisions by the State Government, especially in the southern part of the country is enactment of anti-open grazing law with a view to preventing destruction of farms by grazing animals, and its attendant farmers-pastoralists conflict.

Shoot at sight order: This is a proactive action by the Federal Government in an attempt to quell the rampaging insurgency and herdsmen attack on farm families. This directive empowers the security personnel to shoot any unauthorised individuals found with arms and ammunition.

Dialoguing with bandits: As way to persuade the bandits to have a rethink and drop off banditry, the option round table discussion with the group has advocated by concerned stakeholders in the country. Alongside this is the need to pay them off or placement them on monthly remuneration and reintegrate them into the Nigerian army.

Effects of the Nigerian security governance stance on the national food distribution and security

One of the basic needs of mankind for sustainable and quality living is food and live security. This is considered a fundamental human right and as such, it is a constitutional duty of government at all level to ensure the provision of quality and adequate food, at affordable prices to its citizens, alongside security of lives and properties. This could however be possible in secured and functional system and failure to do this may spell a doom for the nation. Nigeria as a nation, is at the moment contending with high level of insecurity with severe impacts on the country as whole, but much more on the food production and distribution system a number of ways.

Farmers' retraction from farms: One of the primary impacts of insecurity on the nation's food production and distribution system is farmers' withdrawal or staying away from farms. This is an inevitable action necessary to be taken by farm families across the country as way to protect themselves from being kidnapped or killed by forest criminals and bandits. This is in line with Ladan and Matawalli (2021) submission that rural households are negatively impacted by conflicts, limiting their engagement in normal livelihood activities, particularly farming and access to markets. In addition, Odoemelam and Alozie (2014) indicated reduction in labour supply, and outputs, and displacement from homes, as effects of kidnapping or human abduction on rural communities and their livelihoods. According to the Federation Atlantique des Agences de Presso Afrcaines – FAAPA (2021), the spokesperson of the Rice Farmers' Association of Nigeria (RIFAN) and Farmers' Association of Nigeria (FAN) in Northwest Nigeria express that no fewer than 350 farmers had been forced to abandon their farms by the criminals in Kebbi State while about 10, 000 households of such in Zamfara State. The cumulative effects of these are food scarcity and rising cost of food across the country.

Food Scarcity: The initiated food scarcity by farmers' retraction from farms is further compounded by fear of farm or rural visitation for collection or purchase of farm produce by agro-product marketers as result of the ravaging insecurity across the country. The insecurity of the roads, where kidnappers and bandits could ambush commenters, made travelling between states and farming communities extremely dangerous, thus causing agro-marketers to scramble for the few farm produce that may be available in the market; with consequential increase in food prices. Alongside this, is the restriction of movement as a result of the COVID-19 lockdown in 2020. According to the Premium Times (2021) restriction made the movement of goods, especially food items, across the country difficult due to the ban on inter-state movement.

High cost of food acquisition: According to the recently conducted survey on food price Dataphyte (Premium Times, 2021), the nation witnessed an average of 66.8% increase in the prices of food items between February 2020 and March 2021. Prices of foodstuffs across 13 states in

the country showed that the price of beans and *gari* nearly doubled within the period under review Beans rose from N1,457 to N2,883 per 4 liters' paint plastic, representing a 97.9% increase. The cost of gari rose from N869 to N1,856, a 97.2% change. The price increases of these two staple foods were the highest in the last one-year period of the coronavirus pandemic. Consequently, FEWS NET (2021), indicated that the impacts of insecurity on households' food insecurity, coupled with the longer-term indirect impacts of the COVID-19 pandemic, are driving above-average assistance needs in Nigeria to care for the shortfall in food security.

Food insecurity: Food situation in Nigeria put the country on the 94th position out of 113 countries on the Global Food Security Index as 2019 (Daily Trust, 2021). This cannot be unconnected with the myriads of insecurity across the country. As expressed by FAN and RIFAN, the displacement, killing and kidnapping of farmers has led to reduction of food production in Kebbi and Zamfara States by 50% (FAAPA, 2021). The implication of these are high cost of food accessibility (Punch, 2020) and limited access to markets for food distribution (Famine Early Warning System Network – FEWS NET, 2021). According to the Guardian (2021b), the low, fixed-income earners and unemployed Nigerians are in for trouble as living under the burden of higher food prices has become unbearable, as a result of grossly inadequate food supply.

CONCLUSION AND RECOMMENDATIONS

Insecurity, arising from insurgency, banditry, kidnapping, and communicable diseases remains s daunting challenge to the rural agro-ecosystem in Nigeria. The insecurity has greatly hampered agricultural production due killings, kidnapping, and displacement of farmers from their farm lots. The destructive encroachment of cultivated farms for grazing by the nomadic herdsmen is a heinous addition additional threats to farmers' lives and their productivity. The widespread of COVID-19 is a compounding 'interest' to production debts of the farmers due to inability to move about to either access agro-inputs or distribute available agro-produce for marketing as result of the lockdown. Provision of protective and health security of the social system is the constitutional duty of the Nigerian Government and as such the call for security has ever remained to the government. In response to the much expected provision of security for the citizens, the government had integrated a number of security measures, which range across stimulation of compliance with COVID-19 protocol and acceptance of vaccination for the health security, and call for intervention of security personnel for protection. However, Nigerians have not really felt secured as, insurgency in particularly remains widespread with daily reportage of kidnapping and killing across the country, and prices of food has continued to increase unabated. Based on this, much still needs to be done by the government basically because it has the wherewithal to front and checkmate the ravaging insecurity. This requires a strong political will and sincerity of concern for the welfare of a common man. In addition, the security architecture of the country needs to be strengthen through intelligence gathering that includes the rural dwellers, given their knowledge of the terrain where the criminals used as their hideouts in the environment. This is essential for the government to be proactive rather being reactive in tackling the nation's insecurity menace.

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ORGANISATIONAL INCENTIVES EFFECTIVENESS AND JOB SATISFACTION OF EMPLOYEES OF AGRO-ALLIED INDUSTRIES IN LAGOS STATE, NIGERIA

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ABSTRACT
The regularity and effectiveness of organisational incentives have become crucial in stimulating employees' job satisfaction. This study examined the effect of organisational incentives effectiveness on job satisfaction of employees of agro-allied industries in Lagos State, Nigeria. A multi-stage sampling technique was used to select 137 respondents for the study. Primary data were obtained on respondents' personal characteristics, job satisfaction and the effectiveness of organisational incentives with the use of a structured questionnaire. Frequency counts, percentages, means, standard deviation and Linear Regression were used for data analysis. Results showed that the mean age, monthly income and work experience of the respondents were 37.9 years, ₦163,766.42 and 10.3 years respectively. The effectiveness of organisational incentives was fair ($\bar{x}$=2.29) while the employees had a moderately satisfying job ($\bar{x}$=3.06). Linear Regression showed that the employees job satisfaction (β=0.595; $p<0.05$) significantly influenced the effectiveness of organisational incentives. It was recommended that agro-allied industries should ensure the prompt effectiveness of various types of organisational incentives in their managerial system such that the employees will derive more satisfaction in their job.
Keywords: Organisational incentives, job satisfaction, of agro-allied employees

INTRODUCTION
Organisational incentives are whereby organisations distribute different types of incentive to employees both in the form of direct and indirect monetary and non-monetary rewards according to their contribution (Setyo *et al*., 2021; Virgiawan *et al*., 2021). It is also an essential part of encouraging employees to work as you want, so that those goals are met. The goal of the reward management is to improve the overall organisation's output and performance by developing a system aimed at rewarding employees of the organisation based on their contribution to the organisation (Wu *et al*., 2019; Vizano *et al*., 2021). In doing so, the employees will feel that they are part of the organisation as their works are being recognised by their superiors. This will at the same time, create a sense of belonging, improve employees' loyalty to the organisation and will give them job satisfaction which measures the employees' contentedness with their job (Mangaleswaran *et al*., 2018; Hapsari *et al*., 2021; Margaretha *et al*., 2021).

The broad objective of this study was to examine the organisational incentives effectiveness and job satisfaction of employees of agro-allied industries in Lagos State, Nigeria.

The specific objectives of the study were to

1. describe the personal characteristics of employees of agro-allied industries in Lagos State, Nigeria.
2. examine the effectiveness of organisational incentives offered in the agro-allied industries.
3. examine the levels of employee job satisfaction in the agro-allied industries.

The hypothesis of the study was stated that there are no significant effects of effectiveness of organisational incentives on job satisfaction.

METHODOLOGY
The study was carried out in Lagos State, Nigeria. It is a major financial centre and bounded by the state of Ogun to the north and east, by the Bight of Benin to the south, and by the Republic of Benin to the west. The study population from which the sample was drawn were employees of selected agro-allied industries in the state.

Stage 1: Lagos State was purposively selected because of the high number of agro-allied industries.

Stage 2: Two (2) out of five (5) identified large scale agro-allied industries were randomly selected.

Stage 3: One hundred and thirty-seven (137) agro-allied industries employees were randomly selected from the two (2) selected large scale agro-allied industries using a disproportionate to size approach.

Descriptive Statistics was used to describe the basic features of the data in the study while Mean Score Analysis was used to understand the interpretation and analysis of data derived from Likert scales. Linear Regression was used to

explain the relationship between one dependent variable and one or more independent variables.

$Y = a + bX + e$ …….. *eq. 1*

Where;

Y = Employees' job satisfaction

X = Effectiveness of organisational incentives

b = Coefficient

e = Error Term

RESULTS AND DISCUSSION

Table 1 showed that the mean age, monthly income and work experience of the respondents were 37.9 years, ₦163,766.42 and 10.3 years respectively. Also, majority of the respondents were male (82.5%), married (83.9%) and bag a BSc Degree (37.2%).

Table 1: Personal Characteristics of respondents

Personal Characteristics		Frequency	Percentage	Mean	Std. Dev.
Age (Years)	≤ 40	96	70.1	37.9	6.1
	> 41	41	29.9		
Monthly Income (per 100,000 Naira)	<1	25	18.2	1.6	0.9
	1 - 2	79	57.7		
	>2	33	24.1		
Work Experience (Years)	≤ 5	14	11.7	10.3	4.4
	5 - 10	68	49.6		
	> 10	52	38.7		
Sex	Male	113	82.5		
	Female	24	17.5		
Marital Status	Not Married	22	16.1		
	Married	115	83.9		
Education Status	OND	40	29.2		
	HND	24	17.5		
	BSc	51	37.2		
	MSc	22	16.1		

Table 2 showed the descriptive statistics of the variables of interest. The entire sample score on the effectiveness of organisational incentives was fair ($\bar{x}$=2.29) while the entire sample score on their job satisfaction scored was moderately satisfying ($\bar{x}$=3.06).

Table 2: Levels of studied variables

Studied Variables	Mean	Std. Dev.	Decision
Organisational Incentives Effectiveness	2.29	0.72	Fair
Employees' Job Satisfaction	3.06	1.38	Moderate

The linear equations presented below explained the regression results of the effect of organisational incentives effectiveness on job satisfaction of employees of agro-allied industries in Lagos State, Nigeria. *Model*

$Y = 0.193^{**} + 0.595X^{**} + e$

R-Square value = 0.538; F value = 12.89^{***}

Note: **= (α0.05)

The results in the table showed that at $p < 0.05$, organisational incentives effectiveness ($\beta = 0.35$) significantly determined the employees' job satisfaction in the agro-allied industries. The implication of this is that for every additional one percent in the organisational incentives' effectiveness, it is expected that employees'' job satisfaction would significantly increase by 59.5 percent.

CONCLUSION AND RECOMMENDATIONS

This study has made contributions to research on the effect of organisational incentives effectiveness on job satisfaction of employees of agro-allied industries in Lagos State, Nigeria. It showed and provided additional insights into the effect of organisational incentives effectiveness on job satisfaction of employees of agro-allied industries in the study area. It was established that organisational incentives effectiveness significantly determined the job satisfaction of employees of agro-allied industries.

From the study, it was recommended that agro-allied industries should ensure the prompt effectiveness of various types of organisational incentives in their managerial system such that the employees will derive more satisfaction in their job.

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ASSESSMENT OF YOUTH INVOLVEMENT IN AGRICULTURAL PRODUCTION IN SABON-GARI LOCAL GOVERNMENT AREA OF KADUNA STATE, NIGERIA

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ABSTRACT
This study assessed youth involvement in agricultural production in Sabon-Gari Local Government Area of Kaduna State, Nigeria. The data for this study were collected using interview schedule administered to 112 respondents who were selected through multi-stage sampling procedure. Frequency, percentages, means and regression were used to analyse the data. The majority of the youth were male (95.5%), had secondary school education (51.4%), with a mean farm size of 1.78ha, mean age 32 years and mean annual income of ₦98,850. Farming was the major occupation of youths as indicated by the majority (64.3%). Youths were more involved in crops (87.5%), and mixed farming (43.8%). Youths are involved in all farming activities, major among which were planting (84.8%), harvesting (83%) and fertilizer application (75.9%). Major constraints limiting youth involvement in agricultural production were identified as inadequate capital ($\bar{x}$=3.8); inadequate modern implement ($\bar{x}$=3.7); difficulty in accessing loan ($\bar{x}$=3.7); prevalence of pests and diseases ($\bar{x}$=3.6); and high cost of inputs ($\bar{x}$=3.4). Farm size and membership of association are major determinants of youths' involvement in agricultural production. The study recommends that the youth should form themselves into functional cooperatives so that they can mobilise funds for their farming activities. Furthermore, government should provide easy access to modern farming equipment.
Keywords: Youth involvement, agricultural production, production constraints.

INTRODUCTION

The insignificant state of youth participation in agricultural production in Nigeria has been a matter of great concern among agriculturist, agricultural researchers as well as administrators. This is because the present high state of decline in agricultural production has dimmed the hope of increasing the level of agricultural production in Nigeria. One of the major setbacks of agricultural development programmes is attributed to the inability of the Federal Government to integrate youth into the main stream of the numerous agricultural development programmes implementation over the years (Adekunle *et al.,* 2012). For a country to attain food sustainability; the agricultural sector must vibrant and the youth encouraged to imbibe farming as a noble profession. The poor state of agricultural productivity and low esteem of agriculture has manifested in rural-urban migration, and low interest in agriculture by the youths. Lack of industrial firms to process agricultural products and skilled labour among others has led to worsening Nigeria food deficit (Akpan *et al.*, 2019).

Youth have the potential to overcome some of the major constraints to expanding agricultural production in developed countries such as pest control, feeding, genetic improvement and protection against predators because they are often more open to new ideas and techniques than adult farmers. The involvement of youth in agricultural production is important to meet the full needs and deep-seated aspiration of self-sufficiency in food production. However, since the youth are the future of any country, it is useful to develop them into patriotic citizens' future progressive farmers and better citizens.

The youth at present, constitute about 60% of Nigeria's population and have the over the years made sufficient contribution to national development. Unfortunately, the present environment makes it even more difficult to explore their full potential in agricultural production. In order to stimulate the interest of our youth in agricultural production, government has to put in place certain measures that will eliminate the associated constraints in agricultural sector. Involvement of youth in agricultural production has suffered nationally in recent years especially in the rural areas. Despite the fast-growing opportunities in the agricultural sector, it is alarming and quite incredible to see many rural youths opting out of farming in search of competitive existing white-collar jobs in cities, leading to unprecedented level of rural-urban migration. This is obviously a potent threat to the aspiration of government to achieve food security (ILO, 2020). The overall effect of this scenario is that Nigeria is going hungry by day and resources that could be used to improve on our infrastructure are spent on importation of food into the country. There is therefore on compelling need to boost and sustain youth interest and participation in agricultural production activities.

Youth are regarded as the young people. The United National defines youth as an individual between 15-24 years of age. This is based on the fact that children attain puberty from between age

12 to 14. The youths were regarded as people between the age group of 12 to 30 (Commonwealth, 1976), they are largely unmarried and economically dependent upon their parents or guardian. They may be within school or out of school, male or female, employed or unemployed or serving and apprenticeship. In Nigerian context, a youth is defined as an individual between the age of 15-30 years as the National Youth Service Corps programme recruit individual within this age group. The psychologists conceptualized a youth as an individual in which his/ her time, energies and potentials are unable to fund full employment. They are people with zeal, exuberance, dynamism and volatile in nature. It can therefore be seen that the latter part of childhood (the late teens) and the early part of adulthood is regarded as the youthful period.

The level of participation and involvement of youth can be seen in both the number of hours spent and the kind of farming activities. Aphunu and Atoma (2010) and FAO (2014) reported active participation of youth in community development activities of which agriculture is inclusive. The involvement of youth in agricultural production has failed to gain much recognition in that youth perceived agriculture as a non-lucrative enterprise in contrast with some other forms of enterprise which they considered more profiting, such as the commercial motor-cycling. Among other problems are lacks of logistic support by the stakeholders, poor governance, rural-urban migration in search of better job, problems of land tenure system, a profession that is generally look down upon because it is seen to involve long hours of physical work with poor income. However, the population of rural farmers are ageing and yet youths still see agriculture as a going back to tradition farming in spite of abundance of employment opportunities therein. In Kaduna State, empirical research on the level of youth involvement in agricultural production is scanty. It is therefore necessary to investigate the level of involvement of youth in agricultural production in Sabon-Gari Local Government Area.

The broad objective of the study is to assess the involvement of youth in agricultural production in Sabon-Gari Local Government Area.

The specific objectives are to:

a. examine the socioeconomic characteristics of the youth;
i. identify the types of agricultural production which the youths are involved in;
ii. assess the level of youths' involvement in agricultural production; and
iii. identify the constraints militating against youth involvement in agricultural production.

It was hypothesized that there is no significant relationship between the socioeconomic characteristics and level of youths' involvement in agricultural production.

METHODOLOGY

The study was carried out in Sabon-Gari Local Government area of Kaduna State. Sabon-Gari Local Government area was carved out of the old Zaria local government in 1989. It has a total land area of about 2,234 square Km with a population of about 293,270 (2006 Census). With 3.2% annual population growth rate, the population was estimated at 424,654 by 2020. Sabon-gari LGA is located at about 74 Km North of the Kaduna State capital. Sabon-Gari Local Government area lies within the region of the tropical savannah climate with distinct wet and dry season.

Multi-stage sampling procedure was used to select respondents for this study. Four wards were purposively selected based on high number of youths. They were: Bomo, Jama'a, Basawa and Dogarawa wards. Two communities were randomly selected from each Ward totaling eight communities. Proportionate sample of respondents were selected randomly using balloting systems. In all, 112 respondents were selected for the study. Structured interview schedule was used to elicit relevant information from the respondents. Personal observation was also used. Secondary sources were also obtained from literature, textbooks, internets, journals and other published items related to agricultural production. Data collected was analyzed using frequency distribution, mean, and percentages. Null hypothesis was tested using regression analysis.

RESULTS AND DISCUSSION

Socioeconomic characteristics

The socioeconomic characteristics of the respondents are presented in Table 1. Result shows that the majority of the youth were male (95.5%). This implies that agricultural production was dominated by male folk and the female might have stayed at home to take care of domestic activities in the study area. Also, the mean age of youth was 32 years. This implies that most of the participants were below 40 years of age. This is in-line with Adesina and Eforuoku (2016) who found that nature of the programme is specifically meant for the youth are for those below 40 years of age. Also, majority had secondary school education (51%). The mean household size was 5 persons while the

mean farm size cultivated was 1.78 ha. These results are similar to the findings of Etim and Udoh, (2018). Furthermore, the mean annual income of youths was ₦98,850. This implies that the youth with lower income dominates the agricultural production. This could be due to inadequate capital to boost production and dependency ratio on them by their household and the struggling to increase their level of income as then plough back some resources to improve their standard of living in the study area.

Table 1: Socioeconomic characteristics of youths (n=112)

Categories	Variable	Frequency	Percentage	Mean
Gender	Male	107	95.5	
	Female	5	4.5	
Age (years)	16 – 25	44	39.3	
	26 – 35	63	56.2	
	36 – 40	5	4.5	
Educational status	Islamic	19	17.0	
	Primary	10	8.9	
	Secondary	61	54.4	
	Tertiary	22	19.6	
Household size	1 – 5	61	54.4	
	6 – 10	28	25.0	
	Above 10	25	20.6	
Income (₦) per Annum	< 100,000	67	59.8	
	101,000 – 200,000	28	28.0	
	201,000 – 300,000	5	4.5	
	301,000 – 400,000	3	2.7	
	Above 400,000	9	8.0	
Major Occupation	Farming	72	64.3	
	Trading	9	8.0	
	Civil Service	9	8.0	
	Artisan	22	19.6	
Membership of association*	Youth Club	44	39.3	
	Farmers Association	26	23.2	
	Religious Association	71	63.4	
Farm size (Ha)	1 – 2	64	57.2	
	3 – 4	36	32.1	
	5 – 6	9	8.0	
	Above 6	3	2.7	
Agricultural Enterprises engaged in*	Crops	98	87.5	
	Livestock	24	21.4	
	Fisheries	1	2.7	
	Mixed farming	49	43.8	

Source: Field survey, 2020
*Multiple responses indicated

Farming was the major occupation of youths as indicated by the majority (64.3%). This implies that the youth in the study area were predominantly farmers. Furthermore, the highest proportion of the youth belongs to youth club and religious association. In extension, associations are one of the major linkages to reach farmers in any given community. Girei *et al.* (2016) also found similar result. Youths were more involved in crops (87.5%), and mixed farming (43.8%).

Level of youths' involvement in agricultural production

Result in Table 2 revealed that youths are involved in all farming activities, major among which were planting (84.8%), harvesting (83%)

and fertilizer application (75.9%). Planting, harvesting and fertilizer application are very sensitive farming operation as they all matter in input and output in farming. Ataneh (2012) and Aphunu and Atoma (2010) found high proportion of youth participated in making ridges, weeding and fertilizer application.

Table 2: Distribution of youths' involvement in agricultural development

SN	Farming operations/activities	Frequency	Percent
1	Bush clearing	69	61.6
2	Land cultivation	81	72.3
3	Ridge-making	75	66.9
4	Planting	95	84.8
5	Weeding	80	71.4
6	Fertilizer application	85	75.9
7	Herbicides application	77	68.8
8	Harvesting	93	83

Source: Field survey, 2020

Relationship between youths' socioeconomic characteristics and level of involvement in agricultural production

Multiple linear regression analysis was used to determine youths' involvement in agricultural production in the study area. Result in Table 3 indicated significant relationship between involvement and farm size (β = 0.309), membership of association (β = 0.058) and constraints (β = -0.068). While there are positive (direct) relationships between farm size and membership of youth association, constraints (as expected) were inversely related to involvement. Also, the R^2 value is 0.235 indicating that the independent variables in the regression model explain 23.5% of contribution to the dependent variable. Farm size is a main predictor of youth involvement in agricultural production, that is, the probability of youths' involvement in agricultural programme increases positively with increase in farm size.

Table 3: Result of relationship between youths' socioeconomic characteristics and level of involvement in agricultural production

Explanatory variables	Standardized error	β -value	t-value
Constant	4.139		2.217
Gender	0.613	0.152	1.765
Age	0.073	0.101	1.073
Level of education	0.525	0.042	0.441
Farm size	0.065	0.309	3.011*
Membership of youth association	0.754	0.058	2.013*
Annual income	0.075	0.056	0.562
Constraints	0.057	-0.068	-0.745*

*P≤0.05

R^2 = 0.287, adjusted R^2=0.235, *p≤ 0.05

Agbonlahor *et al.* (2012); Adesina and Eforuoku (2016), and Kimaro *et al.* (2015) found similar result where farm size significantly influenced the intensity of participation/involvement in farming activities. The number and intensity of constraints faced by youths prevents them from active involvement in agricultural production. Cheteni (2016) noted that educated people could have a moderate degree of awareness about agricultural activities. However, level of education was not found to influence youth's involvement in agricultural production.

Constraints militating against youth involvement in agriculture

Result in Table 4 indicates the constraints militating against youth involvement in agriculture production. Major ones are inadequate capital ($\bar{x}$=3.8); inadequate modern implement ($\bar{x}$=3.7); difficulty in accessing loan ($\bar{x}$=3.7); prevalence of pests and diseases ($\bar{x}$=3.6); and high cost of inputs ($\bar{x}$=3.4). This substantiates the finding of Ng'atigwa *et al*., (2020) that access to credit, modern implement and input subsides have a positive significant association. Youth with access to credit, modern implements and input subsidy are more likely to be involved in agricultural production compared with youth who have no access.

Table 4: Distribution of youths based on constraints militating youth involvement in agriculture

Variables	Weighted Sum	Weighted Mean $\bar{x}$	Rank
Inadequate capital	425	3.8	1st
Inadequate modern implement	412	3.7	2nd
Difficulty in accessing loan	416	3.7	2nd
Prevalence of pests and Diseases	400	3.6	3rd
Inadequate extension services	404	3.6	3rd
Inadequate basic amenities	393	3.5	4th
High cost of inputs	382	3.4	5th
Unrewarding nature of the job	312	2.8	6th
Poor yield	304	2.7	7th
Inadequate storage facility	286	2.5	8th

Source: Field survey, 2020

CONCLUSION AND RECOMMENDATIONS

There was a high involvement of youth in agricultural production in the study area. Major constraints militating against youth involvement in agricultural production include inadequate capital, inadequate modern implement, and difficulty in accessing loan. This study recommends that functional cooperatives should be formed by the youths so that they can combine their resources to access more farm input, loan easily from agricultural and commercial banks and these would help to increase productivity and ensure food security. Also, access to modern farming implements should be provided by the government to ease farm drudgery and to attract youth to farming. This can be achieved through provision of efficient hiring services.

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CLIMATE CHANGE AND INSECURITY IN NIGERIA

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ABSTRACT
Nigeria is one of the most vulnerable to the change to climate with erratic pattern in rainfall, temperature, and elongated drought, among others. An example of the adverse effect of climate change is the migration of Fulani herdsmen in search of water and pasture for cattle from arid regions as a result of seasonality, drought, and desertification to southern part of the country where they often reportedly feed on arable crop farms, thus, resulting in conflicts and insecurity of lives and properties in farming communities. In this view, several studies have supported climate and environmental factors as major triggers of conflicts and insecurity in farming communities. Some have also argued that climate and environmental factors account for the worsening incidence of insecurity in Nigeria. It is against this background that this paper reviewed recent literature to synthesis relevant information on the incidence of climate change and its relationship to insecurity in Nigeria. Papers were gathered from scholarly journals and reviewed. It was concluded that climate change, as a concept in itself, does not reflect threats to national security, but the impact and gradual dynamics of manifestation translate into dire consequences on livelihoods, social order, peace and stability. Therefore, national policy formulation on climate smart practices to address the menace is needed.
Keywords: Climate change, conflict, insecurity, mitigation, Nigeria

INTRODUCTION

Climate change refers to changes to the average weather and weather variability of a region or the planet over time. It is measured by changes in temperature, precipitation, wind, storms and other indicators. Other important indicators which include sea level rise, are also used to measure climate change. This prompted Ayoade (2004) that a change in climate usually takes place over a long period of time of at least 150 years with clear and permanent impacts on the ecosystem.

Insecurity is the state of being subject to danger or injury. The anxiety that is experienced when one feels vulnerable and insecure. Michael Ezemonye (2011) affirms the above definition of insecurity as "a state of being not secure, lack of confidence'. To enable us understand this term, we now turn to the meaning of the word 'insecure' which the Advance English Dictionary defines as 'not confident about yourself or your relationships with other people; not safe or protected'. AdebanjokoandUgwuoke (2014) opine that insecurity is the State of being subject in every respect to terror, threat, risk, molestation, bullying, harassment, etc. Insecurity, for example, can be conceived as a threat to the state that often accounted for the arms and nuclear weapons race to protect the state.

Nigeria is recognized as being vulnerable to climate change. Nigeria's climate has been changing evident in increases in temperature, variable rainfall, rise in sea level and flooding, drought and desertification, land degradation, frequent extreme weather events,affected fresh water resources and loss of biodiversity(Elisha 2017; Ebele and Emodi, 2016; Olaniyi, 2013). The durations and intensities of rainfall have increased, producing large runoffs and flooding in many places in Nigeria (Enete IC, 2014). Rainfall variation is projected to continue to increase; precipitation in southern areas is expected to rise and rising sea levels are expected to exacerbate flooding and submersion of coastal lands (Akande, A., Ana, Jorge and Roberto, 2017; Ebele and Emodi, 2016). Droughts have also become a constant thing in Nigeria, and are expected to continue in Northern Nigeria, arising from a decline in precipitation and rise in temperature (Amanchukwu, 2015; Olapido, 2010). Lake Chad and other lakes in the country are drying up and at risk of disappearing (Dioha and Emodi, 2018; Elisha, 2017). Temperature has risen significantly since the 1980s (Enete IC, 2014, Federal Ministry of Environment, 2014). Climate projections for the coming decades reveal a significant increase in temperature over all the ecological zones (Akande *et al*., 2017). It is fundamental to state that one basic feature of herdsmen is migration and at the heart of migration is climate change and this automatically makes them desperate guests with their unwilling hosts, this of course triggers conflict. Within the context of herdsmen and farmers' conflict, the eco-violence theory is capable of capturing the intricate linkages that can develop between climate change and conflict. As a result of climate change, seas have dried up leading to shortage of fish and fresh water. Drought and desertification have also eaten up crop lands and forest thereby making these environmental resources that trigger violence in short supply. To avert these situations, individuals especially herdsmen drift to where they will get moderate

weather, market opportunity, green-vegetation, forage and food, thereby threatening the means of production and reproduction of some other people who would not like such encroachment. This in itself engenders conflict. And when they are accepted, the long run effect will be pressure on land, food shortage, conflict of interests, over population, social disorganisation, religious, social, and cultural intolerance which are in themselves conflict triggers.

Impact of climate change in Nigeria

According to Brown, (2007), climate change initially emerged as an environmental issue and has serious implications for human health in Nigeria. Indirect effects of climate change can arise from malnutrition due to food shortages; from the spread of infectious disease and food- and water-borne illness; and from increased air pollution (Abdulkadir *et al*., 2017; BNRCC, 2011). However, it became an energy problem before becoming recast as a security threat; and then lifted to the level of the United Nations Security Council (UNSC) involvement. Climate change is expected to negatively impact the already limited electrical power supply in Nigeria, through impacts on hydroelectric and thermal generation (Ebele and Emodi, 2016).Increasing temperature (global warming) and decreasing precipitation in most parts of the world are the greatest impacts of climate change. These bring about either negative or positive ecological impacts in different parts of the world. The increasing temperature has led to increased land-based ice instability and its melting. The thawing of the Arctic, cool and cold temperate ice, the increasing rainfall in some parts of the world and expansion of the oceans as water warms has started impacting on sea level rise, coastal inundation and erosion. The increasing temperature and decreasing rainfall have led to frequent drought and desertification. The Sahara Desert is observed to be expanding to all directions trying to engulf the Sahellian region of Africa with annual expansion of 1-10 km (Odjugo and Ikhuoria 2007; Yaqub 2007). Nigeria experiences dry and rainy seasons. Too much heat can damage crops and vegetation and too much rainfall can produce widespread flooding and forced relocation (Amanchukwu, 2015). In addition, extreme weather events, such as floods, can undermine economic growth through production and infrastructure losses and the need for extraordinary spending (Federal Government of Nigeria, 2013).

According to (Elisha, 2017; Ebele and Emodi, 2016; Olaniyi, 2013), There is evidence of impacts of climate change on Nigeria arising from the following;

- Increases in temperature: Temperature increases of approximately 0.2 to 0.3°C per decade have been observed in the various ecological zones of the country (Enete IC, 2014, 234; Federal Ministry of Environment, 2014; BNRCC, 2011; Olapido, 2010).
- Variable rainfall (decreasing rainfall amount in the continental interiors, increasing rainfall in the coastal areas:
- Sea level rise, flooding and erosion: Loss of roads and road tracks as a result of floods is yet another impact of climate change especially in the farming communities of Nigeria. This has always caused some losses of farmlands, crops, livestock, fish ponds and hence livelihoods. At least, 5 months of inundations/year occur and when experienced, women reduced marketing opportunities, high mortality rate of livestock and children are prevented from attending schools. Losses of lives of pupils due to turbulent flood have also been reported.
- Drought and increasing desertification:
- Land degradation:
- Extreme weather events (thunderstorms, lightning, landslides, floods, droughts, bush fires):
- Affected fresh water resources and loss of biodiversity:

Evidence also shows that changes in weather conditions will continue to have a major impact on human life and ecosystems (Amanchukwu, 2015). All sectors of the country's socioeconomic development, including agriculture, are vulnerable to climate change. Promote, extreme weather events have become a yearly occurrence, for which people have not learned to prepare. (Enete, 2014; BNRCC, 2011). Further, most of the impact of climate change is directly on agriculture, the theory helps us to explain the link between climate change and insecurity. That agriculture has been neglected in Nigeria is no longer news. This situation has worsened considerably over the years as a result of government insensitivity to climate adaptation and mitigation and puts more pressure on the populace who suffer more as a result of climate change. As a result of low yield, farmers cultivate more lands now than they hitherto do, living little land for grazing of cattle. It is within this context that the link between climate change and insecurity in Nigeria can be understood

Relationship between climate change and insecurity in Nigeria

Climate change is a global source of insecurity. This is because there is virtually no country across the word that is not affected by the devastating effects of climate change. It is even speculated that by 2050 there would not be any glacier in the world (Nelson, West and Finan 2009; Adger 2005; Leary, 2008)). This presents a gloomy picture for human lives and suggests a need to examine the specific impact of climate so as to make provision for adaptation and mitigation. Climate Change and Insecurity are like a chain reaction. Climate change can pose threats to the security situation in Nigeria through conflict over resources. This is exacerbated by increasing water and food scarcity; growing land scarcity stemming from desertification; increasing climate-induced migration; and rising poverty (Madu, 2016; Madu, 2012; BNRCC, 2011). Desert encroachment and steadily depleting vegetation and grazing resources in the North Sahelian zone has prompted massive emigration and resettlement of people to areas less threatened by desertification (Elisha, 2017; Amobi and Onyishi, 2015). There are incidences of cattle rearers from the north encroaching on lands in southern parts, destroying farmlands (Nkechi, 2016). This has exacerbated communal clashes among herdsmen and farmers and inter-ethnic clashes, some of which have turned deadly (Elisha, 2017; Nkechi, 2016; Amobi and Onyishi, 2015). Efforts to address the impacts of climate change through adaptation must consider the potential for climate change to fuel violence in Nigeria. Although experts are currently divided about the precise causal links between climatic shifts and violence, there is strong agreement that responses must consider the potential for climate change to increase the risk of conflict (Sayne, 2011). OnuohaandEzirim (2010) are also clear in their study on human insecurity in Nigeria that climate change is one of its causal factors. In other words, the reality of growing aridity (i.e. insufficient rain) of several parts of northern Nigeria has been universally acknowledged. The extensive insecurity attests to numerous challenges caused by climate change in Nigeria. This climate related challenges have multiplier effects, especially in aggravating insecurity

Possible solution to climate change

Mitigation and adaptation are the two main responses to climate change. Mitigation refers to "measures that may either reduce the increase in greenhouse emissions (abatement) or increase terrestrial storage of carbon (sequestration)", while adaptation refers to "all the responses to climate change that may be used to reduce vulnerability" (Ifeanyi-obi and Nnadi, 2014). Climate change mitigation and adaptation initiatives should be integrated in development projects and programmes in order to reduce the vulnerability of people to the impact of climate change (Akeh and Mshelia, 2016). Nigeria should not fold their arms and wait for international donor agencies and Research Institutes to provide wholesale solutions to their global warming issues. They must take up the challenge and seek cooperation and collaboration with International Agencies in other to create opportunities for technology transfer. There are a number of adaptation and mitigation options that the country can embark upon using the existing government institutions, which do not require any elaborate capital outlay. The Agriculture and Research Institutions should commence research into crops that are resistant to drought and heat. The River Basin Authorities should commence the study, design and construction of new water projects for drought management and erosion control. The Ministries of Environment should start addressing the rapid erosion of the nation's sandy coast by construction of dykes and storm surge barrier against sea level rise; while further development on wetlands, flood plains, and areas close to sea level, especially by the poor who are most vulnerable to disasters, should be stopped. Proper legislation should be done to remedy the impact of climate change and provide alternate measures in revamping stopping it and in conclusion Government should help develop a proactive template to preach genuine co-existence amongst citizens since climate change alone put threats to the security situation in Nigeria through conflict with factors such as intolerance, economic competition, insensitivity, ethnicity and poor state response.

CONCLUSION AND RECOMMENDATION

It was concluded that climate change, as a concept in itself, does not reflect threats to national security, but the impact and gradual dynamics of manifestation translate into dire consequences on livelihoods, social order, peace and stability. Therefore, need for national policy formulation on climate smart practices to address the menace is needed.

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THE ROLE OF COOPERATIVE SOCIETIES ON RURAL WOMEN'S LIVELIHOOD SUSTENANCE IN EKITI STATE, NIGERIA

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ABSTRACT
Cooperative society is a voluntarily association of persons united to meet the economic, social and cultural needs of its members. It has long stood to empower its members, specifically women in rural communities. Against this background, the study sought to investigate the role of cooperative societies in sustaining the livelihoods of women in rural communities in Ekiti State, Nigeria. The study employed a descriptive survey design with the use of questionnaire, interviews and observation. A total of 200 participants were sampled for the study. The study revealed that cooperative societies were established by the rural women as a mechanism from which they generate funds/money promote their petty trades and support self-employment The study also established that cooperative societies help in food production. It as well promoted social integration among them. Joining cooperative societies has assisted in alleviating poverty by improving the livelihoods of the rural women. Cooperative societies in rural communities always encounter monetary challenges. Consequently, it was recommended that members should be committed to strengthening the cooperatives by remitting contributions and paying back any obtained loans promptly.
Keywords: Cooperatives, Livelihoods, Women, Rural Communities, Ekiti, Nigeria

INTRODUCTION

Globally, over the years, cooperative societies have been playing imperative roles in improving the livelihoods of people specifically women in rural communities. Literature had shown that cooperative society emanated from Europe in the late 19th century and accepted by other countries as a result of industrial advancement (Ugoh and Ukpere, 2009, Abbas, 2013). In the main, the establishment of cooperative societies was to serve as schema to tackle and alleviate poverty among people. Nigeria remains one of the nations of the continent of African, where cooperative societies are being practiced and have brought an imperative support to the economic growth and development since independence (Wanyama, Develtere and Pollet 2008). Either directly or indirectly, over 75% of Nigerians derive income or support their livelihoods from the activities of cooperative societies they belong to (Wanyama, 2009). According to Ezekiel (2014), cooperative societies are one of the most significant catalysts for community and enterprising individuals to growth. This is possible basically because they rally support by assisting themselves and also accumulation finance from the surpluses realized from the monetary transactions.

On the whole, there have been challenges of viable socioeconomic capabilities in most rural communities in Nigeria and Ekiti State in southwest Nigeria is never an exception. However, looking at the Nigerian context, one can note that the country has been experiencing an economic downturn over few years specifically the last pandemic year as a result of Covid-19. As a result of such prevailing conditions in Nigeria, rural cooperative societies are becoming a force to reckon with as they have a potential to boost food security, increase women empowerment, financial opportunities and improve household sustainability. As such, this study sought to investigate the role of cooperative societies had played in sustaining the livelihoods of women in rural communities of Ekiti State, Nigeria. The objectives of the study were, therefore, to identify the reasons for the establishment of rural cooperative societies in the district, to assess the role of rural cooperative societies in improving the livelihoods of rural communities and to analyse the challenges faced by rural cooperative societies in their attempt to address the socioeconomic challenges faced by rural women households. There had been various poverty alleviation programmes targeting rural dwellers in Nigeria. The salient rationale behind these programmes had been to sustain the livelihoods of rural communities specifically women such as Better life, which was to give women quality of lives, improve women's income and eradicate poverty, which had yielded no result. However, the livelihoods of women in rural communities in Ekiti State are still not sustainable despite the presence of activities of the cooperative societies. If this scenario is not addressed, unemployment, food insecurity and poverty levels would increase with greater margins in the state. In the main, if the livelihoods of women in rural communities in Ekiti State are to be sustained, there is a need for improvement in the role of the cooperative societies

METHODOLOGY

The survey method was employed as the research design for this study, based on the fact that it allows the collection of information from a representative sample of a target population. The study utilised structured questionnaire, in-depth interview and key informant interview for primary data collection. A total of 200 participants were sampled for the study, through purposive sampling, which is a non-probability technique. The study was carried out in six rural communities (Ara Ikole, Ewu Ekiti, Eporo Ekiti, Erijiyan Ekiti, Ipere Ekiti and Epe Ekiti) across the three senatorial districts in Ekiti State, Nigeria. The central focus of the study was on the role of cooperative societies on the livelihood sustenance of women in the rural communities in order to have a standard of living. 200 copies of questionnaire were administered to participants, who were members of various cooperative societies namely; Ire-Akari, Yam dealers, Mojere, Omoremi, Ifesowapo, Oreniwa, Isokan. Responses to the survey were coded, entered into a data base, analyzed using Statistical Package for Social Sciences (SPSS V22). Quantitative data were analysed using both descriptive and inferential statistics while the qualitative data were subjected to content analysis. All necessary ethical procedures were complied with within the conduct of the study.

RESULTS AND DISCUSSION

This part focuses on the presentation of the results and their discussion. This part seeks to answer the objectives of the study, which are to identify the reasons for the establishment of rural cooperative societies, to assess the role played by cooperative societies in addressing socioeconomic challenges faced by rural households and to analyse the challenges faced by women in rural cooperative societies in their attempt to address the socioeconomic challenges faced by women in rural households.

Reasons for the establishment of rural cooperative societies in Ekiti State

Data gathered from the interviews conducted with different members of the cooperative societies indicate that there were several reasons or motives as to why women in rural communities in Ekiti State decided to join cooperative societies. The following are the reasons why women in the rural communities join cooperative societies (Table 1).

Table 1: Reasons for joining cooperative societies, n = 200

Reason	Frequency	Percent
Economic development – to meet members' economic needs	46	23
Empowerment tool	40	20
As a defence against adverse social-economic conditions	33	16.5
To cater of the children school fees	39	19.5
To start or boost businesses	42	21

From 1, it is clear that 20% of the respondents indicated that women join cooperative societies in rural communities in Ekiti State for economic development (23%). Other reasons for their joining cooperative societies were to empower themselves (20%), as a defence against adverse socioeconomic conditions (16.5%), to cater of the children school fees (19.5%) and to start or boost businesses (21%). It seems to achieve economic development was the main reason why the women in rural communities in Ekiti State join cooperative societies were. The study findings are in agreement with previous studies that cooperative societies have contributed to building sustainable livelihoods by providing needed services, providing access to basic services in the rural community and enabling members to live a better life, and that this has resulted in members' productive agriculture, small and medium enterprises and stable community development (Ferguson, 2012).

Impact of cooperative societies on improving livelihoods of rural women in rural communities

This session showcased analysis on the impact of rural cooperative societies as a livelihood strategy on women in rural communities. In discussing these impacts, specific focus is made on how rural cooperative societies have helped in improving the standards of living among the rural women. The findings indicated the respondents' views on the role of cooperative societies as that of poverty alleviation, employment creation, improved standard of living, women empowerment, human capital development and social integration (Table 2).

Table 2: Role of cooperative Societies in Improving Livelihoods, n = 200

Impacts	Frequency	Percent
Poverty alleviation	50	25
Employment creation	32	16
Improved Standard of Living	28	14

Women empowerment	27	13.5
Human capital development	22	11
Social integration	41	20.5

From the findings, the salient impact of the cooperative societies on women in the rural communities in Ekiti State as indicated by the respondents is that of poverty reduction (25%), followed by social integration (20.5%), employment creation (16%), improved standard of living (14%), women empowerment (13.5%) and human capital development (11%).

The study findings were able to establish that joining cooperative societies has led to alleviation of poverty, which is a converse to a study carried out by Churk (2015), who found that cooperative societies had little on promoting rural livelihoods, the feature that made poverty situation to persist to the community members. The findings by this study, that cooperative societies improve the living standard of women is in agreement with the results from a previous study, which concluded that cooperative societies members have immensely improve the standar of living of its member, making better gain and returns with the efforts of cooperative societies (Kumar *et al*. 2015).

Challenges faced by cooperative societies in sustaining livelihoods of women in rural communities in Ekiti state

The session focuses on the challenges the rural cooperative societies in Ekiti State face. The notable challenges that were identified included poor management, lack of access to credit facilities and lack of government assistance (Table 3).

Table 4: Challenges for cooperative societies in sustaining livelihoods, n = 200

Challenge	Frequency	Percent
Poor management	40	20
Lack of access to credit facilities	96	48
lack of government assistance	64	32

Form the findings as indicated in table 3 above, cooperative societies are faced with some challenges in sustaining the livelihoods of women in rural communities in Ekiti State. As indicated by the participants, the main challenge is lack of access to credit facilities (48%), followed by lack of lack of government assistance (32%) and poor management (20%).

Poor management implies that training programmes, which were observed to be in place in most of the rural cooperative societies, are insufficient to cultivate the necessary leadership skills for proper management of the business of the cooperative societies at a professional level. These findings support the previous results that for cooperative societies to be viable, there is need for capable management and governance, as well as the ability to adapt to the prevailing business conditions, whereby rural cooperative societies are expected to develop professional management which is democratic, inclusive, fair, transparent and with strong leadership (Mbeiyererwa 2000; Mohammed and Lee 2015).

CONCLUSION AND RECOMMENDATIONS

This study also concluded that cooperative societies have a significant impact on sustaining the lives of women in rural the communities. In the main, women in rural communities have a lot to benefit from joining cooperative societies in their communities and participate in the cooperative programmes. Women in rural communities that continue to exist without joining cooperative societies may likely to find themselves entangled in high levels of poverty. The study further concluded that women in rural communities join cooperative societies for various purposes, including economic development, reasons for their joining cooperative societies were to empower themselves, as a defence against adverse socioeconomic conditions, to cater of the children school fees and to start or boost businesses. In the study, it has been established that cooperative societies have impacted on the women in rural communities in various way which include poverty reduction, social integration, employment creation, improved standard of living, women empowerment and human capital development. On the whole, apart from the significant impacts rural cooperative societies had infused in sustaining the livelihoods of women in rural communities in Ekiti State, most of these cooperative societies face a number of challenges which prohibit them from operating at full capacity. Such challenges need to be effectively dealt with so that there is smooth running of cooperative societies in rural communities. Lastly, the study concluded that cooperative societies would continue to be part of rural life, as such cooperative societies have a propensity to sustain livelihoods of women in rural communities. Consequently, it was recommended

that members should be committed to strengthening the cooperatives by remitting contributions and paying back any obtained loans promptly.

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DETERMINANTS OF PERCEIVED JOB SECURITY OF THE FORESTRY RESEARCH INSTITUTE OF NIGERIA EMPLOYEES, NIGERIA

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ABSTRACT
Several employees grieve from low perceived job security that distresses their well-being and performance during work. Due to this fact, this research aimed to fathom the factors determining the perceived job security of employees. This study examined the determinants of perceived job security of the Forestry Research Institute of Nigeria employees. A multi-stage sampling procedure was used to select 174 employees in the study organisation. Primary data were obtained on respondents' characteristics and the determinants of the employees' perceived job security through the use of a structured questionnaire. Frequency counts, percentages, means, standard deviation and Linear Regression were used for data analysis. The results showed that the respondents had a high perceived job security ($\overline{x}$ = 5.79), self-efficacy ($\overline{x}$ = 6.22), trust ($\overline{x}$ = 6.71), task-oriented leadership ($\overline{x}$ = 7.29), relationship-oriented leadership ($\overline{x}$ = 5.58) and organisational identification ($\overline{x}$ = 6.86). Linear Regression showed that at $p < 0.05$, self-efficacy ($\beta = 0.35$), trust ($\beta = 0.37$), task-oriented leadership ($\beta = 0.41$), relationship-oriented leadership ($\beta = 0.31$) and organisational identification ($\beta = 0.38$) significantly influenced the employees' perceived job security in the organisation. This study concluded that employees' jobs are secured despite the various factors determining their perceived job security. It was recommended that the organisation should improve the factors determining employees' perceived job security through collective capacity building and training programmes to enhance the organisational corporate security, governance and communication; thereby, an improved organisational efficiency, productivity, performance, and effectiveness would be attained in this dynamic organisation.
Keywords: Forestry Research Institute of Nigeria, job security, employees

INTRODUCTION
Job security plays a crucial role in today's society. Nearly everybody is employed and the financial situation depends on it because permanent employment guarantees regular income. No regular income massively restricts everyday life because with less salary one can afford fewer things (Hur, 2019). This might lead to an abandonment of a car, a smaller flat and even affects the usual lifestyle with for instance not being able to go on holidays. The loss of job can also massively affect the social life (Adebayo, 2006). This starts with a lack of meeting your colleagues at work on a daily basis. Studies showed that people who lose their job have a decreased social life in their private time (Liu *et al.*, 2021). Specifically, that could mean having fewer friends or risking a partnership. These facts are well known, so it is logical that even the perceived job security, being the high or low assessed probability to lose one's job or the individual evaluation of the probability to keep one's job, has an influence on an employee. Put differently, perceived job security influences the employee' organisational attitudes and health (Konya *et al.,* 2021).

Organisational attitude describes the position someone takes concerning the organisation he works for (Zou *et al.*, 2016). An effect of a low organisational attitude is for instance that the employee works with less commitment for the organisation (Konya *et al.,* 2021). In the end, this will influence the employees' performance again, most probably in a negative manner. Moreover, there are effects on the employee's morbidity and blood pressure (Wang *et al.,* 2016). This indicates that the perceived job security evokes stress in an employee because morbidity and a high blood pressure are symptoms of stress (Hur, 2019). All these effects result in a reduced performance on the job. On basis of negative attitudes towards the own organisation, decreased health, and increased stress, the employee cannot concentrate on his assignments during work, which leads to a decrease in performance (Adebayo, 2006).

The broad objective of this study was to examine the determinants of perceived job security of the Forestry Research Institute of Nigeria employees.

The specific objectives of the study were to:

1. describe the personal characteristics of Forestry Research Institute of Nigeria employees.
2. examine the determinants of the employees' perceived job security.
3. examine the level of the employees' perceived job security.

The hypothesis of the study was stated that there are no significant factors affecting on perceived job security.

METHODOLOGY

The study was carried out in the Forestry Research Institute of Nigeria (FRIN). The Forestry Research Institute of Nigeria was established in 1973. The headquarters is situated in Ibadan, Oyo State. Its mandate is to conduct research while the vision is to ensure true scientific research activities and manpower development, sustainable forest resources production, management utilisation, biodiversity conservation, forest-based raw materials provision, food production and security through agroforestry and wildlife employment opportunities thereby alleviating poverty, and environmental conservation and management. Cross-sectional primary data were collected using a structured questionnaire with open and closed-ended questions. Simple random sampling technique was used for selecting five work locations out of fifteen work locations. Stratified sampling technique was subsequently implemented for choosing employees on the basis of employee status at management, senior and junior staff levels from the list of employees delivered (aiding as the sample frame). The sampling procedure was used to select 174 employees in the study organisation.

The study used standard questions adopted from earlier studies. The job security was measured using items of Oldham *et al.* (1986). The self-efficacy was measured using items of Schwarzer *et al.* (1997). The trust was measured using items of Cummings and Bromiley (1996). The leadership style was measured using items of Kellett *et al.* (2006). The organisational identification was measured using items of Mael and Ashforth (1992). The rating used was centred on a 9-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (9). To check reaction predisposition, a limited statement was adversely phrased and thereafter reverse-scored. Information collected were afterwards subjected to Mean Score analysis and Regression analysis.

Linear Regression was used to explain the relationship between one dependent variable and one or more independent variables.

$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + \mu$... *eq. 1*

Where;
Y = Employees' perceived job security
X_1 = Self-efficacy
X_2 = Trust
X_3 = Task-oriented leadership
X_4 = Relationship-oriented leadership
X_5 = Organisational identification
μ = Error Term

RESULTS AND DISCUSSION

Table 1 shows the descriptive statistics of the variables of interest. The entire sample scored relatively high on job security ($\bar{x}$ = 5.79). Further, the sample scored relatively high on self-efficacy ($\bar{x}$ = 6.22). The participants showed a relatively high score on trust ($\bar{x}$ = 6.71). The mean score of the relationship-oriented leadership was 5.58 while the mean score of the task-oriented leadership was 7.29. The mean score of the organisational identification was 6.86.

Table 1: Levels of studied variables

Studied Variables	Mean Score
Job security	5.79
Self-efficacy	6.22
Trust	6.71
Task-oriented leadership	7.29
Relationship-oriented leadership	5.58
Organisational identification	6.86

The linear equations presented below explained the regression results of the determinants of perceived job security of the Forestry Research Institute of Nigeria employees.

Model

$Y=6.37^{**}+0.35X_1{}^{**}+0.37X_2{}^{**}+0.41X_3{}^{**}+0.31X_4{}^{**}+0.38X_5{}^{**}+\mu$

R-Square value = 0.79; F value = 26.42^{***}

Note: **= (α0.05)

The results in the table showed that at $p < 0.05$, self-efficacy ($\beta = 0.35$), trust ($\beta = 0.37$), task-oriented leadership ($\beta = 0.41$), relationship-oriented leadership ($\beta = 0.31$) and organisational identification ($\beta = 0.38$) significantly determined the employees' perceived job security in the organisation. The implication of this is that for

every additional one percent in the determining variable of employees' job security, it is expected that job security of employees would significantly increase. This implied that all the examined predictors add unique explanatory value to the model.

CONCLUSION AND RECOMMENDATIONS

This study has made contributions to research on the factors determining the perceived job security of employees in Forestry Research Institute of Nigeria. It showed and provided additional insights into the determinants of perceived job security of the Forestry Research Institute of Nigeria employees. It was established that self-efficacy, trust, task-oriented leadership, relationship-oriented leadership and organisational identification significantly determined the employees' perceived job security in the organisation.

From the study, it can be concluded that employees' jobs are secured despite the various factors determining their perceived job security. It was recommended that the organisation should improve the factors determining employees' perceived job security through collective capacity building and training programmes to enhance the organisational corporate security, governance and communication; thereby, an improved organisational efficiency, productivity, performance, and effectiveness would be attained in this dynamic organisation.

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THE IMPACT OF MASS MEDIA IN THE DEVELOPMENT OF AGRICULTURAL EXTENSION IN IREPODUN/ IFELODUN LOCAL GOVERNMENT AREA OF EKITI STATE

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ABSTRACT
The purpose of this research was to investigate the socio -economic effect of mass media on farmers in Ekiti State, Nigeria. It was fashioned to determine the kind of services provided by extension workers to improve farm output. A total of one hundred (100) farmers were randomly selected and interviewed. From the tables, descriptive statistical tools were used such as frequency table and percentage. The findings showed that visit of extension officers to farmers were aimed at teaching them modern technologies, majority of the benefits from extension services were due to usefulness of the innovations. More efforts are expected from the extension agent to convince the non- adopting farmers to adhere to their teaching. The major constraints militating against the used mass media were language, frequency modulation, power shortage, time of programmes and price of battery.
Keywords: Mass media, Development and Agricultural extension

INTRODUCTION
The production of food started right from Neolithic revolution which was associated with the adoption of early farming techniques, crop cultivation and the domestication of plant and animals (Diamond, 2002. One of the primary aims for stimulating agricultural development is through disseminating relevant information to farmers (Mgbakor etal, 2013). Mass media is the major vehicle for wide and rapid transmission of information to farmers. Radio and Television have been discovered to be the most effective media for diffusing scientific knowledge to the masses (Dare, 1990). In the study area where literacy level is low, the choice of communication media is of vital importance (Ogionwo, 2000). In this regard, the television and radio are significant, as they transfer modern agricultural technology to literate and illiterate farmers alike even in interior areas, within short time to enlighten farmers on the use of various technologies to boost agricultural development. The mass media have an important role to play in the communication of agricultural information among the literate farmers (Aboyade and Olalimpe, 1997). Increasing rate of literacy in the country offers new promises and prospects for utilising print medium as a means of mass communication. The print media widened the scope of communication. It is cheap and people can afford it and read them at their convenience.

The objective of this study was to examine the contribution of mass media to the development of agricultural extension in Irepodun/Ifelodun Local Government Area of Ekiti State.

METHODOLOGY
The study was conducted in Irepodun/Ifelodun LGA of Ekiti comprises of 12 towns but 5 were selected since there were few registered farmers in the Local Government Area. The multi staged random sampling was used to select the respondents for the research work. The first stage involved random selection of 5 communities from the 12 communities that made up the local government. The second involved random selection of 20 farmers from the 5communities thus gave total 100 farmers in the study area.

The instrument that was used for the study validated structured interview schedule; the literate farmers responded to questionnaire while interview was organised for illiterate farmers.

Data was being analyzed using simple statistical tool such as frequency counts and percentages tables

RESULT AND DISCUSSION
Socioeconomic characteristics of the respondents discussed are sex, age, educational level, marital status, religion and farm size. Table 1 shows that majority of the respondents were male (80%). It also shows in the table that majority of the respondents are between age of 31-50 years.10% of the respondents were below 20 years, Table 1 also shows that 90% of the respondents were married, it also shows further that 50% of the respondents were Christians, and also shows that 37% of the respondents attended primary school. This result shows that 73% of the respondents, it also revealed that majority of the respondents (40%) had 1 to 2 hectares of farm size

Table 1: Socioeconomic characteristics of the respondents

Variables	Frequency	Percentage
Sex		
Male	80	80
Female	20	20
Age (years)		
Below 20	10	10
20-30	15	15
31-50	55	55
50 and above	20	20
Marital status		
Single	10	10
Married	90	90
Religion		
Muslim	40	40
Traditional	10	10
Christianity	50	50
Educational level		
No formal education	30	30
Primary education	37	37
Secondary education	20	20
Post-secondary education	13	13
Farm size		
Less than 1 hectare	10	10
1-2 hectare	40	40
3-4 hectare	30	30
Above 4 hectares	20	20

Source: Field Survey, 2020

In the table 2 below was obtained. Great percentages of the respondents were on input supply and distribution (70%).

Table 2: Types of programmes listened to or viewed or read by farmers

Types of programmes	Frequency	Percentage
Distribution of input supply	70	70
Chemical application	2	2
Variety of trials	3	3
Policy announcement	25	25
Total	100	100

Source: Field Survey, 2020

Analysis in Table 3 shows that 50% of respondents became aware of new farm practices through extension agents. From the studies carried out, Table 4 shows that 75% agreed that the mass media affected their crop production.

Table 3: Distribution of Farmers Based on Sources of Information on New Farm Practices

Source of information	Frequency	Percentage
Extension agent	50	50
Radio / television	15	15
Fellow farmers	25	25
Neighbor	5	5
Discussion group	5	5
Total	100	100

Source: Field Survey, 2020

Table 4: Distribution of Farmers to their view on how Mass Media affect their Farming Practices

Type of programme	Frequency	Percentage
Crop production	75	75
Livestock production	10	10
Crop processing	2	2
Marketing	13	13
Total	**100**	**100**

Source: Field Survey, 2020

Table 5: Distribution of Available Media to the farmers

Available media	Frequency	Percentage
Radio	80	80
Television	15	15
Print	5	5
Total	**100**	**100**

Source: Field Survey, 2020

Analysis in table 5 shows that Radio was available to 80% of the respondents. Table 6 shows that 80% use the mass media for agricultural information only.

Analysis in table 7 shows that 70% acquire planting techniques innovation through the media.

Table 6: Distribution of Farmers according to their Purpose of Mass Media

Type of programme	Frequency	Percentage
Agricultural information	80	80
Entertainment	10	10
News	5	5
Others	5	5
Total	**100**	**100**

Source: Field Survey, 2020

Table 7: Distribution of Respondents Based on acquired Innovation

Acquired innovation	Frequency	Percentage
Planting technique	70	70
Fertilizer application	30	30
Total	**100**	**100**

Source: Field Survey, 2020

Table 8: Distribution of Respondents based on their Access to the Media

Mass media	Frequency	Percentage
Radio	90	90
Television	9	9
Prints	1	1
Total	100	100

Source: Field Survey, 2020

Table 8 shows that out of the 90% respondents that has access to the radio. This shows that radio is always available for the majority of the respondents.

Table 9: Distribution of Respondents according to Constraints Militating the use of Mass Media

Constraint	Frequency	Percentage
Price of battery	25	25
Frequency modulation	40	40
Shortage of power	15	15
Time of programme	10	10
Language barrier	10	10
Total	100	100

Source: Field Survey, 2020

The result of table 9 shows that frequency modulation affects 40% of the respondent's use of the media.

CONCLUSION AND RECOMMENDATION

The result of this study showed that majority 80% of the farmers in Irepodun / Ifelodun Local Government Area of Ekiti State were males. The results also revealed that majority of the farmers (37%) were primary school attempted who cannot read or write well. Majority of the farmers (55%) were able-bodied, middle-aged men. The survey also revealed that Radio was the most widely used mass media system by the farmers with 90% of the farmers who had access to it claiming that they listened to it for agricultural information.

RECOMMENDATIONS

To promote and ensure the adoption of innovations and relevant agricultural information by farmers in Irepodun /Ifelodun Local Government Area, government needs to ensure adequate availability of social infrastructures and facilities so as to enable more of the rural farmers to cultivate the habit of utilising mass media as source of agricultural information.

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KNOWLEDGE AND PRACTICE OF CLIMATE SMART AGRICULTURE AMONG SMALL HOLDER FARMERS IN KWARA STATE, NIGERIA

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ABSTRACT
Climate-Smart Agriculture (CSA) could be a means to address climate change and help achieve global sustainable development goals. This study was designed to assess knowledge and practice of CSA among smallholder farmers in Kwara State, Nigeria. Three stage sampling technique was used to select one hundred and fifty (150) respondents for the study. Data was collected through the use of structured interview schedule and analyzed using both descriptive and inferential statistics. The study established that a high percentage of smallholder farmers in Kwara state were conversant with weather prediction (70.0%), soil water conservation (46.0%), feed conservation and utilisation (38.7%), awareness campaigns on climate change (39.3%), and establishment of tree planting (36.0%). Farmers also made use of personal experience to predict weather events and obtain weather information from radio, television and internet. Farmer-to-farmer knowledge sharing (71.3%) and membership of farmer associations (80.7%) are significant sources of CSA knowledge and practice among smallholder farmers. Findings revealed a significant relationship between farmers' level of knowledge and their use of climate smart agriculture (p=0.001). This implies that, the farmer level of knowledge contributes to the efficient and effective usage of CSA. Capacity building and strengthening of extension service delivery is therefore recommended to enhance awareness, skill and knowledge for adoption of climate smart practices among farmers.
Keywords: climate smart agriculture, weather prediction, capacity building

INTRODUCTION

Climate is an environmental factor with a great impact on agriculture; it influences the types of crops that can be grown as well as the length of growing season of any crops planted. Unfortunately, the world is presently experiencing change in the climate pattern which is now affecting agriculture in a number of ways (Agboola and Fayiga, 2016). These are through changes in average temperatures, rainfall and climate extremes (e.g. heat waves); pests and diseases infestation; changes in atmospheric carbon dioxide and ground level ozone concentration; and changes in the nutritional quality of some foods. Between now and 2050, the world's population will grow from the current 6.7 billion to 9 billion i.e. by one-third of the present population. If current income and consumption growth trends continue, Food and Agriculture Organisation of the United Nations (FAO, 2013) estimates that agricultural production will have to increase by 70 percent by 2050 to satisfy the expected demands for food and feed. Agriculture must therefore transform itself if it is to feed a growing global population and provide the basis for economic growth and poverty alleviation. Climate change will make this task more difficult, due to its adverse impacts on agriculture. As a result of increased prevalence of extreme events and increased unpredictability of weather pattern, it is more likely that this can lead to a reduction in production and lower incomes in vulnerable areas, which may likewise increase global food prices.

Developing countries and smallholder farmers are more affected by these changes. It is therefore necessary to device a strategic means of achieving a sustainable agricultural development for food security against the influence of climate change without causing depletion to the natural state of the soil (Schwab *et al.,* 2015). One such intervention is climate-smart agricultural practices. It is not a new agricultural system but a new approach, a way to guide the needed changes of agricultural systems particularly to address food security and climate challenges. Climate-smart agriculture (CSA) may be defined as an approach for transforming and reorienting agricultural development under the new realities of climate change (Olaniyi *et al.,*2019).

Climate smart agriculture (CSA) as explained by Food and Agricultural Organisations (FAO) during the Hague Conference on Agriculture, Food Security and ecological) by mutually tackling food safety and climate issues. That is why, it was developed on the three major pillars: i) Sustainably increasing agricultural productivity and incomes; ii) adapting and building resilience to climate change; iii) reducing and/or removing greenhouse gases emissions, where possible; Thus, CSA is a technique to Climate Change in 2010, takes part in the achievement of sustainable progress. It combines three ways of sustainable progress (financial, community based and improve the scientific rule and investment setting to attain sustainable agricultural progress to ensure the food availability under climate change (FAO, 2013).

Farm households experience the risk of output losses because of climate change due to

being less adaptable. The worst issues of climate change could be controlled by successful adaptation, which would probably be less than the cost of impacts that would occur without adjustments. In spite of the critical role that knowledge plays in the decision and adoption of innovations, studies (Dzanku *et al*., 2011, Rockstrom *et al*, 2009), have shown that small scale farmers are often isolated from information. Knowledge and awareness of sustainable agriculture practices and climate events are essential in climate change adaptation and mitigation. This research was therefore designed to answer the following questions:

1 What is the level of knowledge of farmer on CSA practice in Kwara State?
2 What is the level of use of CSA practices amongst farmers in Kwara State?

The general objective of the study was to assess the knowledge and practice of climate smart agricultural practices among small holder farmers in Kwara State, Nigeria. This was achieved through the following specific objectives, which were to:

1. assess the level of knowledge of farmers on available climate smart Agriculture practices.
2. ascertain level of use of climate smart agricultural practices among farmers in Kwara State

METHODOLOGY

The study was conducted in Kwara State, Nigeria. The population of this study comprised of all small holder farmers in Kwara state. A randomized selection was used to select 150 small scale farmers from three local governments in Kwara state. One local government area was randomly selected from each of the three senatorial districts in Kwara State. These include; Moro, Asa and Ifelodun Local Government Areas from Kwara North, Central and South respectively. Two rural communities were selected from each of the local government areas and respondents were selected from each community through house listing. A well-structured interview schedule was used to collect data from the respondents. Descriptive and inferential statistics were used to analyze the result of findings of the study.

RESULTS AND DISCUSSION

The results in Table 1 shows the farmers level of knowledge of the diverse climate-smart agricultural practices. Many of the farmers were aware of weather prediction (70.0%), soil water conservation (46.0%), feed conservation and utilisation (38.7%), awareness campaigns on climate change (39.3%) and establishment of tree planting (36.0%). Moreover, some of the respondents have also heard about improved fodder production (38.3%), agroforestry and fodder trees (43.3%) and establishment of tree nurseries (35.3%). In addition, some of the farmers are still using manure management (29.3%) and better livestock management practices (32.7%). This result shows that the farmers have heard about climate-smart agricultural practices and are even using some of them. Level of awareness, knowledge and use is however still very low.

Table 1: Level of knowledge of climate-smart agricultural practices

SN	CSA Practices	Yes	No	I have heard about it	I have used it before	I am still using it
1	Weather prediction	106(70.7%)	12(8.0%)	31(20.7%)	1(0.7%)	0(0.0%)
2	Soil water conservation	69(46.0%)	12(8.0%)	58(38.7%)	10(6.7%)	1(0.7%)
3	Improved fodder productions	39(26.0%)	19(12.7%)	58(38.7%)	29(19.3%)	5(3.3%)
4	Agroforestry and fodder trees	37(24.7%)	26(17.3%)	65(43.3%)	12(8.0%)	10(6.7%)
5	Manure management: composting and biogas use	25(16.7%)	32(21.3%)	32(21.3%)	17(29.3%)	44(29.3%)
6	Better live stock management	41(27.3%)	13(8.7%)	24(16.0%)	23(15.3%)	49(32.7%)
7	Feed conservation and utilisation	58(38.7%)	13(8.7%)	26(17.3%)	27(18.0%)	26(17.3%)
8	Awareness campaigns on climate change	59(39.3%)	17(11.3%)	23(15.3%)	28(18.7%)	23(15.3%)
9	Establishment of tree nurseries	49(32.7%)	14(9.3%)	53(35.3%)	18(12.0%)	16(10.7%)
10	Establishment of tree planting	54(36.0%)	16(10.7%)	51(34.0%)	15(10.0%)	14(9.3%)

Source: Field Survey, 2021

Level of use of Climate-smart agricultural practices

The result presented above shows the rate to which climate-smart agricultural practices (weather smart) are used among farmers in the study area. It can be observed that 64.0%, 62.0%, and 48.0% of respondents indicated that, they are always using personal experience to predict weather events, radio/TV for weather information, and access weather information over the internet

respectively. Moreover, 42.7%, 41.3%, and 42.7% of the respondents indicated that, they occasionally received education/training on how to access weather information by an organisation, received weather information through community information centre, and used mobile phone to access weather information respectively. This result is an indication that farmers in the study area are aware of weather changes in their locality and are seeking useful information to assist in their farming activities.

Table 2: Use of weather smart practices

	Weather smart	Always	Sometimes	Never
1	Use personal experience to predict weather events	96(64.0%)	50(33.3%)	4(2.7%)
2	Usage of radio/TV for weather information	93(62.0%)	53(35.3%)	4(2.7%)
3	Received education/training on how to access weather information by an organisation	40(26.7%)	64(42.7%)	46(30.7%)
4	Received weather information through community information centre	42(28.0%)	62(41.3%)	46(30.7%)
5	Take Index-Based Insurance (IBI) to protect my farm	43(28.7%)	50(33.3%)	57(38.0%)
6	Use mobile phone to access weather information	50(33.3%)	64(42.7%)	36(24.0%)
7	Access to weather information on the internet	72(48.0%)	36(24.0%)	42(28.0%)

Source: Researcher's Field Survey, 2021

Use of water smart practices

The table above represented the rate at which water smart CSA practices were used among farmers in the study area. The result shows that 51.3%, 56.7%, 45.3% and 36.0% of the respondents always engage in mulching to reduce excessive use of water, control the water used in watering crops, plant at early season to make use of rain water, and harvest and store rainwater to be used later in the dry season. Some of the respondents (43.3%) also indicate that, they sometimes plant cover crops to maintain soil moisture. The result shows that the farmers were observant of the change in climate particularly the rainfall pattern. Since agricultural practices in Nigeria and sub-sahara Africa generally is rain fed, farmers need to be water smart in order to mitigate the effects of climate change.

Table 3: Use of water smart practices

	Water smart	Always	Sometimes	Never
8	Engage in mulching to reduce excessive use of water	77(51.3%)	55(36.7%)	18(12.0%)
9	Regulate/control the water used in watering crops	85(56.7%)	52(34.7%)	13(8.7%)
10	Plant at early season to make use of rain water	68(45.3%)	61(40.7%)	21(14.0%)
11	Plant cover crops to maintain soil moisture	57(38.0%)	66(43.3%)	28(18.7%)
12	Harvest and store rainwater to be used on my farm	54(36.0%)	48(32.0%)	48(32.0%)

Source: Researcher's Field Survey, 2021

Use of carbon smart practices

The result presented above shows the rate at which nitrogen smart CSA practices were used among farmers in Kwara State. It can be seen that 50.0%, and 56.7%, of the respondents indicated that, they always plant legumes among crops, and use specific fertilizer/manure based on the type of soil (Site specific nutrients application) respectively. While, 58.7% of the respondents indicated that, they sometimes estimate the amount of fertilizer/manure needed at a time (Precision fertilization).

Table 4: Use of carbon smart practices

	Carbon smart	Always	Sometimes	Never
13	Use less heavy equipment on my farm (minimum tillage)	107(71.3%)	23(15.3%)	20(13.3%)
14	Use plants and animal manure on my farm (Organic manuring)	77(51.3%)	52(34.7%)	18(12.0%)
15	Plant different type of crops together (Mix cropping)	71(47.3%)	60(40.0%)	19(12.7%)
16	Plant trees in and around my farm (afforestation)	64(42.7%)	50(33.3%)	36(24.0%)
17	Change the type of crop planted on this land in some seasons (Crop rotation)	72(48.0%)	44(29.3%)	34(22.7%)

Source: Researcher's Field Survey, 2021

Use of nitrogen smart practices

The table above present level of use of carbon-smart CSA practices among farmers in Kwara State. The result reveals that most of the farmers always engaged in the activities listed under carbon smart practices. This can be seen from the responses that the farmers always use less heavy equipment i.e., the practice minimum tillage (71.3%), use plants and animal manure (Organic manuring) (51.3%), plant different type of crops together (Mix cropping) (47.3%), they also practice planting trees in and around the farm (afforestation) (42.7%) and crop rotation (48.0%).

Table 5: Use of nitrogen smart practices

	Nitrogen smart	Always	Sometimes	Never
18	Plant legumes among crops	75(50.0%)	28(18.7%)	47(31.3%)
19	Estimate the amount of fertilizer/manure needed at a time (Precision fertilization)	47(31.3%)	88(58.7%)	15(10.0%)
20	Use specific fertilizer/manure based on the type of soil (Site specific nutrients application)	85(56.7%)	60(40.0%)	5(3.3%)

Source: Researcher's Field Survey, 2021

Test of hypothesis

Significant value of 0.001 is recorded for the CSA level of knowledge in the tested hypothesis. Since the p-value is less than the level of significance 0.05, it can be concluded that, there is significant relationship between farmers' level of knowledge and their use of climate smart agriculture. This implies that, the farmers' level of knowledge contributes to the efficient and effective usage of climate smart agricultural practices.

Table 6: Regression analysis showing relationship between farmers' level of knowledge and use of CSA practices

Model		Unstandardized Coefficients		Standardized Coefficients		
		β	Std. Error	Beta	t - value	Sig.
1	(Constant)	49.837	1.663		29.966	.000
	PRA	.221	.064	.273	3.451	.001

a. Dependent Variable: USG

CONCLUSION AND RECOMMENDATIONS

The study revealed the level of knowledge and use of climate smart agricultural practices, among smallholder farmers in Kwara State. There is high general awareness of weather prediction, soil water conservation, feed conservation and utilisation, awareness campaigns on climate change, and establishment of tree planting and frequent usage of manure management: composting and biogas use, and better livestock management. Level of knowledge of farmers had a positive and significant effect on their use of CSA practices. Based on the findings of this research, the following recommendations were made:

The concept of agricultural extension should be strengthened to promote easier and more efficient dissemination of CSA information to farmers.

There should be prioritisation of CSA in agricultural policy and research to facilitate general acceptance, easy adoption of CSA practices with their up-scaling at all levels with financial and institutional support.

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

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

INTRODUCTION

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

The National Agricultural Extension Research and Liaison Services (NAERLS) is one of the Agricultural Research Institutes in Nigeria and one of four Agricultural Research Institutes run under the University system. The Institute has been existing as an autonomous Agricultural Extension and Research Liaison Services since 1975, In 1989, the then Federal Ministry of Science and Technology gave it the national mandate to cover the extension services for the entire country. NAERLS currently uses three approaches to extension dissemination methods which are Participatory, demand driven and Training of Trainers (TOT). Some of the extension methods used by NAERLS in technology dissemination include: Farm and home visits, Farmers call or office call, personal letter/telephone call, result demonstration, method demonstration, group meeting, field day or farmers day, broadcast media, TV, Print media Leaflet, bulletin, guides, newsletter, magazine, projected media, film, video exhibition, campaign, mass meeting and agricultural festival and National farmer's helpline.

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

The NAERLS has a mandate of delivering agricultural technologies to farmers in its area of jurisdiction. This, it does through its extension department. The department uses variety of methods in disseminating the technologies to

farmers. These methods have different levels of appropriateness in their appeal to farmers. Naturally, extension delivery methods are first prepared by subject matter specialist and forwarded to Extension agents in order to transfer information to farmers on the field. In preparing the extension methods, they are selected generally based on the new technologies being disseminated to the farmers. Technologies and technology delivery approaches designed by scientist at research institutes are not necessarily appropriate to or in tandem with expectations of farmers. There is therefore, the need to find out the farmers' point of view as to what method best suits them.

The specific objectives are therefore to:

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

METHODOLOGY

The study area is located in Kaduna State. The study was conducted in NAERLS adopted villages in Kaduna State. The adopted villages for NAERLS in Kaduna State are situated in Giwa, Sabon Gari and Zaria Local Government Areas. It has a projected population of 1,473,636 people based on 2006 population census (NPC 2006). The study area is characterised by a natural ecosystem in the Northern Guinea Savannah zone, with a discontinuous layer of sparsely distributed short trees followed by relatively continuous layers of tall, medium and short grasses (Mortimore, 1970). The mean annual rainfall is 1000 mm (Useh, *et al*, 2006). The dry season lasts from November to April and the wet season from May to October. There is also the predominance of grasses and browse shrubs in the area. Major crops cultivated in the area include maize, sorghum, millet, cowpea, rice, ground- nut, soybeans, cotton and vegetables. Agriculture forms the principal means of livelihood for most of the working population in the area. Livestock keeping is a common activity among most households in the area, ranging from poultry, cattle, goats and sheep.

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

The primary data were collected with the aid of questionnaires, which were administered by the researcher to the respondents. Data were collected on the socioeconomic characteristics of the farmers, as well as on the extension methods through which the respondents get information accordingly. Secondary data/information were obtained from NAERLS published materials, textbooks, book of proceedings of conferences and relevant websites. SPSS version 16 was used to carry out the Chi-square analysis to achieve objective (iii) which Determine the relationship between socioeconomic characteristics of the farmers and the preferred extension delivery method.

RESULTS AND DISCUSSION

Table 1 shows the distribution of the Farmers in the Adopted villages by socioeconomic Characteristics. The results reveal that more than half of the respondents were male (57.2%). This shows that male respondents are higher in percentage in farming activities in the Adopted Villages. This is expected because the culture and religion of the area have placed male as head of households. But also, despite the dominance of the male, the female in the adopted villages are not few which were 42.8% showing an improvement to women participation in agriculture compared to previous studies by Salifu *et al* (2016) which shows few women participation. This came as a result of the economic and security situation of the country which makes women to also take part in helping their families financially. The mean age of respondents was 41 years meaning that the farmers in adopted villages are adults and responsible for the upkeep of their families. This indicates that, most of the respondents were within their productive age with the mean age of 41 years. It is also in line with the findings of Okwu *et al* (2011), who showed that the middle-aged group of 40 to 59 years has the highest frequency stating that the respondents were adults. The implication of this result show that respondents are adults can make decisions on their own on the choice of extension method. Majority of the respondents 80.6% were married, 11.6% were single and few (7.8%) were divorced. This showed that a large proportion of the farmers in the adopted villages were married and therefore implies that married people were mostly involved in agricultural production.

Table 1. Socioeconomic characteristics

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

Source: Field Survey, 2018

High percentage (64.3%) of the respondents had one form of education or another, with 43.4% attaining secondary school level and above. The mean household size of respondents was 7 persons. This large figure is expected as most farmers depend on family members for farm labour and less on hired labour. The farm size result show that most of the respondents 57.4% had farm sizes of 1 – 2 hectares. The mean value of years of experience is 11 years which shows that the respondents were more experienced in farming. This implies that the respondents are experienced in variety of extension methods and can easily choose what's best for themselves. This is in line with Oluwatayo, Sekumade, and Adesoji (2008) who noted that farmers with more experience are more efficient, have better knowledge of climatic conditions and market situation and are thus, expected to run a more efficient and profitable enterprise. Lastly, the result for the means of land acquisition revealed that about 41.5% of the respondents acquired land through inheritance, 29.1% got it through rent, 24.8% percent acquired

it by purchase while only a few (4.7%) were gifted land for free.

Preference of extension delivery method

The extension delivery methods preferred by the farmers in the study area are presented in table 2. The findings reveal that farm and home visit was the most preferred (81.4%) extension delivery method by the farmers in the adopted village followed by results/method demonstration (79.5%). The percentage of respondents who chose Group meeting, agricultural festivals and farmer field day as the most preferred method of extension delivery are 77.5%, 73% and 72% respectively. This is in addition to the respondents who preferred personal letters, public campaigns, radio/television and telephone calls accounting for 58%, 57%, 56% and 50% of the respondents accordingly. The possible reason for the preference of farm and home visit is linked to the situation whereby farmers in rural areas prefer one-on-one contact with extension workers as they adopt faster. The implication of least preference for telephone calls may be due to inadequate or lack of network coverage for telecommunications. This is supported by Oladele (2005), Suvedi *et al* (1998), Okwu *et al* (2016) who all revealed that farm and home visits are the most preferred extension methods in their studies.

Table 2 Preference of extension delivery methods

Extension Delivery Method	Most preferred*	Least preferred	Not preferred	Rank
Farm and home visit	81.4	16.7	1.9	1st
Results/method demonstration	79.5	18.2	2.3	2nd
Group meeting	77.5	20.2	2.3	3rd
Agricultural Festival	73.6	24.0	2.3	4th
Field day	72.9	24.8	2.3	5th
Personal letter	58.1	34.1	7.8	6th
Campaign	57.8	34.9	7.4	7th
Leaflet bulletin	56.6	34.9	8.5	8th
TV and Radio	56.2	34.9	8.9	9th
Video exhibition	53.5	37.2	9.3	10th
farmers call or official call	49.2	39.9	10.9	11th

Source: Field survey, 2018
*Multiple Responses

Relationship between the socioeconomic Characteristics and the preferred extension method

Table 3 reveals the results on chi-square analysis of the relationship of socioeconomic characteristics of the respondents and the most preferred extension delivery method. The result indicated that age, education, household, farm size, farming experience and land tenure system all had positive significant relationship with the preferred extension method. This implies that, an increase in age, education, household size and farm size influence the choice of extension method. On the other hand, sex and marital status with the p values of 0.409 and 0.082 respectively showed insignificance at 5% level. This implies that sex and marital status doesn't influence preference of extension delivery method. The results also support the findings of Boz and Ozcatalbas (2010) which show that farmers' educational level and farm size have significant effect on their use of modern information sources.

Table 3. Relationship between Socioeconomic characteristics and Preferred Extension Method

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

Note: * are significant at 5% level.

Problem associated with extension delivery method to farmers

The problems associated with extension delivery methods in the study area are presented in Table 4. The problems were ranked in order of magnitude. The findings reveal that irregular visit by extension agents (89.5%) was the first in rank. Limited time given to agricultural programme was ranked second (82.2%), as well as 76.7% of the respondents selected no opportunity for interactive session ranked third. This is in addition to the respondents who chose message content not relevant, languages spoken not understood as well as locality is outside network coverage ranking 11th (20.9%), 10th (26%) and 9th (32.9%) respectively. The possible reason for the high percentage of respondents stating irregular visit by extension agents as a major constraint is linked to the situation of inadequate number of extension agents we have in the country. Also, the respondents' opinion on message content not relevant shows that the content of the messages delivered seems to be relevant. It also shows that languages used in communicating to the respondents are understood by the majority and that the localities are inside network coverage area. The findings of the study is similar to that of Gaya *et al* (2016) who found that most of the respondents disclosed irregular visits by agricultural extension agents constitutes their major problem. The findings are therefore not in support of Gwary *et al* (2013) who stated that Untimely/lack of or inadequate supply of essential inputs were indicated by most of the respondents as a major factor that hinders the delivery of extension services to them.

Table 4. Constrains of Extension Delivery Methods

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

Source: Field Survey, 2018
*Multiple responses

CONCLUSION AND RECOMMENDATION

The study concluded that male dominated the study area with a small margin and majority of them were married and in their active stage. The respondents had basic formal education with large household sizes and most of them were experienced in agricultural production. The study found that farm and home visits was the most preferred extension method by the respondents. Based on their reason for preferring various extension methods, majority of the respondents opined that they understood message best when it is face to face. Respondents also experienced several constraints among which is irregular visit by extension agents. Based on the findings of the study, Adequate time should be given to agricultural programmes in the Adopted villages as farmers need more time for interactive sessions as it creates more room for problem solving. Government should make available and extend network coverage to all localities in the Adopted Villages for effective dissemination of information through different extension methods.

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UTILISATION OF WEB 2.0 TECHNOLOGIES FOR GENERATING AND SHARING AGRICULTURAL INNOVATIONS AMONG EXTENSION WORKERS IN EKITI STATE, NIGERIA

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ABSTRACT
This study assessed the utilisation of web 2.0 technologies in generating and sharing agricultural innovations among agricultural extension workers in Ekiti State. All the 112 extension workers in Ekiti State Agricultural Development Programme were sampled for the study. Only 97 (87%) complete responses received were analysed. Frequency counts, percentage, mean, Chi-Square and Pearson product moment correlation were used to analyse the data at $\alpha_{=0.05.}$ Mean age of the respondents was 43.99±16.03years. They were mostly males (58.8%), Christian (66.0%), married (66.0%) with BSc/HND certificate (61.9%). The mean work experience and communities covered were 12.26±10.67 years and 6.79±3.28, respectively. Whatsapp ($\bar{x}$=2.52±0.72) and facebook ($\bar{x}$=2.51±0.60) were the most prominent web 2.0 tools utilised. However, the level of use of web 2.0 tools was low among the majority (77.3%). Lack of power supply ($\bar{x}$=2.22±0.65), network problem ($\bar{x}$=2.09±0.66) and high cost of subscription ($\bar{x}$=1.98±0.59) were the major constraints to utilisation of Web 2.0 tools. There were significant relationships between educational qualification (χ^2=9.519, p=0.049), constraints (r=0.201, p=0.049) and utilisation of web 2.0 technologies. The study concludes that there was a low level of utilisation of web 2.0 technology due to inadequate power supply, network issues and unbearable cost of data subscription.
Keywords: Agricultural innovations, extension workers, web 2.0 tools

INTRODUCTION
The inefficiency of web 1.0 has resulted in advocacy and recommendation of professional use of web 2.0 technologies. The Internet has moved from being a very large collection of static information (a virtual library) to being a large collection of people interacting and collaborating online. This 'new' Internet is being referred to as web 2.0 (O'Reilly, 2007), to show the significant change that has occurred. Web 2.0 is a collaborative web development platform that has tremendous usage in building effective, interactive and collaborative virtual societies (Hossain and Aydin, 2011). Web 2.0, in contrast to the earlier web, also called web 1.0, is more participatory and interactive, and emphasises online collaboration and communication with users by taking advantage of new software services and tools (O'Reilly, 2007). A participatory set-up in the form of web 2.0 has helped to overcome the barriers to communication and the distance between users (Stuart, 2010). The degree of experimenting with web 2.0 in open access journals in Agriculture and Food Sciences is evident and can prove an excellent platform for the dissemination of agricultural information in a more advanced mode (Sumeer *et al*., 2014). A great deal of research has proven the benefits of web 2.0 in educational quality (Athanassios *et al*., 2013; Echeng and Usoro, 2014; Nazatul, 2014; Shuaibu and Ishaq, 2014; Okello-Obura and Ssekitto, 2015), among others.

Despite the promising potential of Web 2.0 for facilitating knowledge creation, sharing and collaboration among various practitioners, little is known on the extent of its use in generating and sharing agricultural innovations among extension workers in Ekiti State. Hence, this study was designed to assess the utilisation of web 2.0 technologies in generating and sharing agricultural innovations among extension workers in Ekiti State.

METHODOLOGY
The study was carried out in Ekiti State, which is one of the states in south western part of Nigeria. The population of the study comprised all the extension workers in the three Agricultural development programme (ADP) zones in the state. Census sampling technique was used to select all the (112) extension workers in the ADP zones. However, 97 (87%) complete responses on well-structured questionnaires were received. The dependent variable which is the utilisation of web 2.0 technologies was measured on a 4-point scale of not used, rarely used, occasionally used, and frequently used, which attracted the scores of 0, 1, 2 and 3, respectively. The mean score was obtained and used to categorise the respondents based on their level of use of web 2.0 technologies. Frequency counts, percentage, mean, Chi-square and Pearson product moment correlation were used to analyse the data.

RESULTS AND DISCUSSION
Socioeconomic and enterprise characteristics
Table 1 presents the results of the analysis of selected socioeconomic and enterprise

characteristics of the respondents. The results indicated that the mean age of the respondents was 43.99±16.03 years. This is slightly corroborated by Obabire, *et al*., (2021) who in their study reported the mean age of extension workers as 41.35 ± 10.46 years. The mean age implies that the respondents were mostly in their active age range, which could afford them the opportunity to effectively discharge their duties and appreciate the use of technologies in carrying out their duties. More than half (58.8%) of the respondents were male while 41.2% were female. This corroborates the findings of Adeola and Ayoade (2011) which state that male dominated Agricultural Development Programme (ADP) service. The male dominated extension workforce could mean that extension service delivery in the study area may be gender biased. The mean income, work experience and communities covered were ₦59,432.99 ± ₦3,608.19, 12.26 ± 10.67 years and 6.79 ± 3.28 communities, respectively. The income of the respondents could be considered grossly inadequate given the prevailing economic situation in the study area and number of communities they covered. This could have negative impact on the utilisation of web 2.0 technologies among the respondents. The respondents were well experienced to understand the importance of web 2.0 technologies in generating and sharing agricultural related innovations.

Table 1: Distribution of respondents based on their socioeconomic and enterprise characteristics

Variables	Freq.	%	Mean
Age			43.99±16.03
Gender			
Male	57	58.8	
Female	40	41.2	
Income/month			59432.99±3608.19
Work experience			12.26±10.67
Communities covered			6.79±3.28

Source: Field survey, 2019

Constraints to the utilisation of web 2.0 technologies

Table 2 shows the results of the analysis of constraints to the utilisation of web 2.0 technologies. According to the table, lack of /inadequate power supply ($\bar{x}$=2.22±0.65) ranked highest among the constraints to utilisation of web 2.0 technologies. This was followed by network problem ($\bar{x}$=2.09±0.66) and high cost of subscription ($\bar{x}$=1.98±0.59). However, Insufficient training on the application ($\bar{x}$=1.63±0.74) ranked lowest among the constraints. These findings revealed that the prominent constraints to the utilisation of web 2.0 technologies were; inadequate power supply, network problem and high cost of subscription, among others. The implication is that the utilisation of web 2.0 technologies may be negatively affected by the constraints.

Table 2: Distribution of respondents based on constraints to the utilisation of web 2.0 technologies

Constraints	Mean	Rank
Lack of /inadequate power supply	2.22±0.65	1st
Network problem	2.09±0.66	2nd
High cost of subscription	1.98±0.59	3rd
Limited resources	1.68±0.81	4th
Inadequate awareness of web 2.0 tools	1.66±0.79	5th
Limited technological support	1.66±0.78	6th
Insufficient training on the application	1.63±0.74	7th

Source: Field survey, 2019

Utilisation of web 2.0 technologies

Table 3 shows that WhatsApp ($\bar{x}$=2.52±0.72) was the most frequently used web 2.0 technology. This was closely followed by facebook ($\bar{x}$=2.51±0.60) and twitter ($\bar{x}$=2.07±0.86). However, web 2.0 technologies such as blogs ($\bar{x}$=0.46±0.82), slide share ($\bar{x}$=0.42±0.76) and podcasting tools ($\bar{x}$=0.32±0.72) were least utilised by the extension workers for generating and sharing agricultural innovations. These findings show that whatsapp, facebook and twitter were the prominent web 2.0 technologies utilised by the extension workers in the study area. This could be as a result of the fact that whatsapp, facebook and twitter are user friendly and may require little or no technical-know-how. This corroborates the findings

of Mtega, et. al., (2014) which found out that Facebook and Wikipedia were the most used Web 2.0 tools by many respondents in their study.

The mean categorisation of the utilisation of web 2.0 technologies as presented in Table 3 unveiled that majority (77.3%) of the respondents inadequately utilised web 2.0 technologies for generating and disseminating agricultural innovations. This implies that web 2.0 technologies may still be at its rudimentary stage in terms of agricultural use. It may also be that web 2.0 technologies were not adequately embraced by the extension workers for generating and sharing agricultural innovations. This may be ascribed to a range of factors which Echeng and Usoro (2014) depicted as principally technical, personal, economical and time related; in nature.

Table 3: Distribution of respondents based on utilisation of web 2.0 technologies

Web 2.0 tools	Mean	Rank
WhatsApp	2.52±0.72	1st
Facebook	2.51±0.60	2nd
Twitter	2.07±0.86	3rd
YouTube	1.70±1.00	4th
Google drive	1.03±0.91	5th
Wikis	0.65±0.90	6th
Google+	0.63±0.91	7th
Referencing tools	0.49±0.72	8th
Blog	0.46±0.82	9th
Slide share	0.42±0.76	10th
Podcasting tools	0.32±0.72	11th
Mean categorization	Freq.	%
Low/inadequate use of web 2.0	75	77.3
High/adequate use of web 2.0	22	22.7

Source: Field survey, 2019

Tests of association/relationship between the respondents' socioeconomic characteristics, constraints and utilisation of web 2.0 technologies

Table 4 reveals that gender (χ^2=3.743, p=0.053) and marital status (χ^2=5.816, p=0.121), had no significant relationship with the utilisation of web 2.0 technologies. However, educational qualification had a significant relationship with the utilisation of web 2.0 technologies. The implication is that gender and marital status may have little or no influence on utilisation of web 2.0 technologies while educational status may have influence on the utilisation of web 2.0 technologies. This supports the assertion of Mtega, et. al., (2014) that adoption and usage of Web 2.0 also depends much on the literacy level of using the tools.

Table 4: Chi-square and correlation analyses of the association/relationship between the respondents' socioeconomic characteristics, constraints and utilisation of web 2.0 technologies.

Variable	df	χ^2-value	r- value	p-value
Gender and utilisation of web 2.0 technologies	1	3.743		0.053
Marital status utilisation of web 2.0 technologies	3	5.816		0.121
Educational level utilisation of web 2.0 technologies	4	9.519		0.049
Age and utilisation of web 2.0 technologies			-0.077	0.453
Monthly income and utilisation of web 2.0 technologies			-0.023	0.821
Constraints and utilisation of web 2.0 technologies			0.201	0.049

Source: Field survey, 2019

In the same vein, age (r=-0.077, p=0.453) and monthly income (r=-0.023, p=0.821) were not significantly correlated with the utilisation of web 2.0 technologies. However, constraints (r=0.201, p=0.049) and utilisation of web 2.0 technologies were significantly correlated. By implication, age and monthly income had little or no influence on the utilisation of web 2.0 technologies while utilisation of web 2.0 technologies was influenced by the constraints encountered.

CONCLUSION

Inadequate/lack of power supply, network problem and high cost of subscription were the major constraints to the utilisation of web 2.0 technologies in the study area. Whatsapp, facebook

and twitter were the prominent web 2.0 technologies utilised by the extension workers to generate and share agricultural innovations. However, the utilisation of web 2.0 technologies for generating and sharing agricultural innovations was low/inadequate among them. Therefore, the use of web 2.0 technologies should be encouraged among the extension workers in the study area and all identified challenges should be addressed by the relevant authorities.

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RURAL LIVELIHOOD DIVERSIFICATION AMONG RURAL HOUSEHOLDS IN IJEBU NORTH LOCAL GOVERNMENT AREA, OGUN STATE

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ABSTRACT
The study identifies the livelihood diversification and its constraints among rural households in Ijebu North Local Government Area of Ogun State. A two-stage sampling technique was used to select 120 respondents for the study. Primary data were collected with the aid of a structured questionnaire. The data covers socioeconomic characteristics, livelihood activities and their level, diversification strategies, and constraints of the sampled households. Data were analysed using descriptive statistics, and the Simpson diversification index. The results show that most households diversify their diversification into micro and petty businesses (0.619), technical works (0.548), agro-allied businesses (0.501), transportation (0.348), and wage labour (0.225). Furthermore, the results show that limited access to credit, risk-averse attitude, low level of awareness and skills are the leading constraints to livelihood diversification of the rural households. The study suggests a need for an improved level of livelihood diversification awareness, training, and credit support for rural households.
Keywords: Livelihood, diversification strategies, rural households, Simpson index

INTRODUCTION

Agriculture is the major source of rural livelihood, notwithstanding, off-farm and non-farm diversification will serve as a safety net to the rural dwellers. Subsequently, for the rural dwellers to attain full potential, it is necessary to diversify into other economic activities beyond the traditional crop and livestock farming, which will consequently serve as the basis for economic survival and sustainable livelihood. In line with this assertion, Jatto *et al*., (2021) reported that the majority of rural households are diversifying their livelihoods into off-farm and non-farm activities to achieve a sustainable source of income. This is consequent upon several constraints being faced in agriculture which is primarily the source of livelihood in most rural areas in Nigeria. In the same vein, International Fund for African Development (IFAD, 2001), posited that the farm sector employs about 75% of the country's total labour force and provides a livelihood for about 90% of its rural populace.

Despite the contribution of Agriculture to the GDP of Nigeria, many rural dwellers are relatively poor due to the subsistence nature of farming among rural households, climate change, amongst others. Nyiatagher *et al*., (2019) indicate that the situation in the rural areas has negative welfare implications and predisposes the rural populace to various risks which threaten their livelihoods and their existence. As a result of this struggle to survive and to improve their welfare, off-farm and non-farm activities have become an important component of livelihood strategies among rural households in Nigeria. According to Olowa (2012), Nigeria is mainly characterised by rural settlement with high poverty index. To this end, agricultural activity remains the major occupation of the people, however, agriculture cannot alone reduce the level of poverty recorded in the rural areas (Briones, 2017).

Thus, both farm activities and livelihood diversification will foster a more viable and sustainable rural economy. This is supported by Odoh and Nwibo (2016) who opine that agriculture enhances livelihood diversification activities because farm labour can be deployed to off-farm and non-farm economic activities for production, processing, distribution, and marketing.

The Promotion of livelihood diversification is one of the important strategies of sustainable economic development. Agbarevo and Nmeregini (2019) affirm that rural people have diversified their livelihood means and income-earning portfolio across farm, non-farm and off-farm activities. Thus, livelihood diversification activities have become an essential component of livelihood strategies among rural households. Ovwigho (2014) equally asserts that farmers particularly, rural farm families usually engage in different non-farm income-generating activities apparently to balance the shortfall of income due to the seasonality of primary agricultural production and create a continuous stream of income to cater for the various household needs.

Furthermore, rural dwellers in the Ijebu North Local Government Area of Ogun State can enjoy a relative advantage in the production of certain goods and provision of services as a result of its proximity to Lagos the commercial center of the country. Therefore, the development of the livelihood diversification strategies may henceforth bestow rural economic advantage due to market accessibility, and invariably income generated can

be used to meet household needs and provide buffers during the off-season.

From the aforementioned, there are numerous opportunities inherent in livelihood diversification strategies. However, several factors could constrain the rural people from participating in livelihood diversification strategies, which cannot be ignored. Hence, it becomes necessary to assess the determinants of livelihood diversification among the rural households in Ijebu North Local Government Area, Ogun State. Specifically, the objectives are to describe the socioeconomic characteristics of the rural households; identify livelihood activities available; assess livelihood diversification strategies, and identify the constraints to participation in livelihood diversification strategies.

METHODOLOGY

A survey research design was used for the study. The study covers rural communities in Ijebu-North Local Government areas of Ogun State. Primary data were collected with the aid of a structured questionnaire. The data covers A two-stage sampling technique was adopted. Rural communities in the study area were purposively sampled. A total of 175 rural households were selected from rural communities in the Ojoo, Ijapara, and Oke-Agbo areas of the study area. Meanwhile, 150 copies of the questionnaires were found useful for further analysis. socioeconomic characteristics of the rural households, livelihood activities available, livelihood diversification strategies, and constraints to participation in livelihood diversification strategies. Data for the study were analysed using descriptive statistics, Simpson diversification index (SID), and multiple regression analysis. The SID, a diversification index is measured as:

$SDI = 1 - \sum_{i}^{n} = 1P^2_i$ (1)

N represents the total number of income sources of respondents, and P_i indicates the proportion of the income of the *i*th household. The value of P lies between 0 and 1. The index takes a value of 0 when the income source is one, indicating a single source of income, and moves closer to one of the levels or choices of livelihood diversification is more than one.

RESULTS AND DISCUSSION

Socioeconomic characteristics

Results in Table 1 show the socioeconomic characteristics of the respondents. The results indicate that most (61.3%) of the sampled households are male while 38.7% are female. The age distribution of the respondents shows that 27.3% are less than 30 years of age; 41.3% are between 31 and 40 years of age; 19.3% are in the age bracket of 41 and 50 years; 10.7% are between 51 and 60 years of age. Less than 2% (1.3%) are above 60 years of age. The results suggest that most of the respondents are still in their active age bracket. The descriptive statistics of the marital status show that 23.3% are single while 62.0% are married. Also, 11.3% are divorced while 3.3% are widowed. The distribution statistics of the household size show that 56% of the sample have between 1 and 3 members in their households; 26.7% have between 4 and 6 household sizes while 14.6% have a household size ranging between 7 and 9. The results further show that 2.7% have up to 10 members in their household. The statistics of the level of education indicate that 24.7% have no formal education, 46.7% have primary education, 17.3% have secondary education while 11.4% have post-secondary education. The descriptive statistics show that the respondents are in their active age bracket to pursue diversified means of living with an appreciable level of education to manage information relating to their livelihood.

Table 1: Socioeconomic characteristics of respondents

Variable	Description	Frequency	Percentages
Sex	Male	92	61.3
	Female	58	38.7
Age (years)	< 30	41	27.3
	31-40	62	41.3
	41-50	29	19.3
	51-60	16	10.7
	60 and above	2	1.3
Marital Status	Single	35	23.3
	Married	93	62.0
	Divorced	17	11.3
	Widowed	5	3.3
Household size	1-3	84	56.0
	4-6	40	26.7

	7-9	22	14.6
	10 and above	4	2.7
Education (years)	No Formal Education	37	24.7
	Primary Education	70	46.7
	Secondary Education	26	17.3
	Post-secondary	17	11.4

Source: Field Survey, 2021

Livelihood diversification options

Table 2 shows the level of diversification among the households. The Simpson Index indicates that most households diversify largely into micro and petty businesses (0.619), technical works (0.548) agriculture, and agribusiness related activities (0.501). Other livelihood diversification options chosen by the rural households include transport (0.384) and wage labour (0.225)

Table 2: livelihood diversification options

Livelihood categories	Simpson Index
Agriculture and Agribusiness activities	0.501
Wage labour	0.225
Micro and petty business	0.619
Transport	0.384
Education	0.195
Technical works	0.548

Source: Data Analysis, 2021

Constraints to diversification among rural households

The identified constraints to diversification among the rural households are presented in Table 3. The constraints are ranked according to the level of difficulties they pose to livelihood diversification. Lack of access to credit is ranked as the most difficult constraint limiting livelihood diversification. This constraint is followed by risk-averse attitudes of the households (2nd), lack of awareness (3rd), poor infrastructure (4th), and transportation problems (5th).

Table 3: Constraints to diversification

Constraints	Rank
Risk-averse attitude	2nd
Lack of access to credit	1st
Lack of awareness and training	3rd
Poor infrastructural facilities	4th
Transportation	5th

Source: Field Survey, 2021

CONCLUSIONS

The study identified the livelihood diversification options among rural households. The constraints affecting livelihood diversification are also identified. The findings lead to the conclusion that the ability of the households to diversify their means of living could be determined by their age composition, the size of the households, and the level of access they have to credit acquisition. The diversification strategy of the households may however be constrained by credit, attitude to risk, level of awareness, and the available infrastructural facilities. The study recommends support to rural households through the provision of credit support and useful training on the most effective means to diversify livelihood.

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PERCEIVED EFFECTS OF COVID-19 PANDEMIC ON POULTRY PRODUCTION IN OYO STATE

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ABSTRACT
The study examined the perceived effects of Covid-19 on poultry production in Oyo state. Specifically, it described the socioeconomic characteristics of the respondents, ascertained the activities carried out by poultry farmers and the perceived extent to which Covid-19 pandemic affect poultry production. A total of 120 respondents were selected using a multi-stage sampling procedure. Data were collected with the aid of a structured interview schedule and were analysed using frequency counts, percentages and mean. The activities carried out most frequently includes serving water to birds ($\bar{x}$ =2.9), serving feed ($\bar{x}$ =2.9), cleaning of watering and feeding troughs and pens ($\bar{x}$ =2.2) respectively. While the activities carried out frequently were hatching of eggs, drug administration ($\bar{x}$ =1.9) respectively, chick breeding, and proper disposal of waste/dungs, disposal of dead bird and selling of birds ($\bar{x}$ =1.8) respectively. The respondents perceived that Covid-19 pandemic resulted in low demand for egg ($\bar{x}$ =3.65), and reduced customer purchasing power ($\bar{x}$ =3.58), closure of some farms ($\bar{x}$ =3.18), and hike in the price of poultry drugs ($\bar{x}$ =3.1) to a very large extent respectively. They perceived that it increased the cost of delivery of poultry products ($\bar{x}$ =3.0) and poses serious threat to the health of poultry workers ($\bar{x}$ =3.0), to a large extent. However, the respondents could not decide whether it led to poor feeding in some farms ($\bar{x}$ =2.3) as well as reduced processing capacity ($\bar{x}$ =2.2). The study recommends insuring farms against outbreak and provision of subsidy to weak farms.
Keywords: Covid-19, farmers, health, poultry production and farm loss

INTRODUCTION
Animal protein is an essential part of human nutrition because of its biological significance. Proteins are essential for the growth of young ones, the construction of ligaments in reproduction, the synthesis of digestive juices, the repair of worn-out tissues or cells, the production of anti-bodies, as well as enzymes and hormones in the body (Alders *et al*., 2019). Nwandu *et al.,* (2016) reaffirmed that animal proteins are more biologically complete than vegetable proteins with regards to their amino-acids composition. According to Oji and Chukwuma (2016), the poultry goes a long way in providing animal protein for the populace because it yields quickest returns and provides meat and eggs in a very short time. Eggs are the major sources of animal protein in human diet.

Nigeria hosts more than 45% of the poultry in the West African sub region (WHO, 2006) and its poultry population is estimated at 140 – 160 million comprising of 72.4 million chicken, 11.8 million ducks, 4.7million guinea fowl, 15.2 million pigeon and 0.2 million turkeys WHO, 2006; FAO, 2016; Oladimeji *et al*., 2017; FAO, 2018). This figure accounts for 71.38% of the total livestock kept in the country and supplies 17% of animal protein need of the population (Oji and Chukwuma, 2016). Alders *et al.,* (2019) stated that Nigerian poultry industry is dominated by small-holder farmers who on the aggregate raise the bulk of the birds for egg and meat production but individually rear less than 1000 birds using different production strategies in consonance with little resources available to them. Hence, they must use available inputs as efficiently as possible to achieve optimum production (Etim *et al*., 2005).

However, the advent of a novel corona virus strain that caused viral pneumonia in late December 2019 has thrown the world into chaos. Coronavirus disease (COVID-19) is a contagious respiratory ailment caused by Coronavirus 2 (Severe Acute Respiratory Syndrome (SARS-CoV-2)). COVID-19 was declared a pandemic by the World Health Organisation (WHO) due to an increase in the number of confirmed cases and death rate around the world (Cucinotta and Vanelli, 2020). As the hunt for an effective COVID-19 drug and vaccination continues, social separation (approximately 2 meters apart), stringent personal hygiene, travel bans, and vehicle movement limitations with waivers for human food products are all part of the global preventative methods to stop the spread. Farmers are affected differently by the structuring offered by covid-19spread methods. Meanwhile, demand for raised birds (broiler chickens, turkeys, and cockerels) has decreased, resulting in an oversupply issue and a decline in the unit price of poultry meat of between 8.4% and 37%. (Fafiolu and Alabi, 2020).. Livestock production and commerce have decreased because of the coronavirus pandemic, owing to market closures and farmers' fears of low patronage. Majority of rural smallholders were able not able to sell their farm products as and when due, thereby depriving them of a source of income. United Nations (2020) estimated that about 2.7 billion workers across the globe lost their jobs due to partial or full closure of their workplaces.

Though poultry was regarded as one of the essential services and the farmers was listed as exempted from restriction imposed during Covid-19 pandemic, however, the policy was not strictly implemented thus, affecting some poultry farmers, however, the extent of the perceived effects among the poultry farmers were not known as there is a dearth of information on it, thus, the primary objective of the study was to access the perceived effects of covid-19 restriction strategies on poultry production in Oyo state. The specific objectives include to: describe the socioeconomic characteristics of the respondents, ascertain the activities carried out by poultry farmers and determine the extent to which Covid-19 pandemic affect their activities

METHODOLOGY

The study was carried out in Oyo State, whose capital is Ibadan. Oyo State is bordered to the north by Kwara State, to the east by Osun State, and to the southwest by Ogun State and the Republic of Benin. With a projected population of 7,840,864 in 2016, Oyo State is the fifth most populous state in the country. The state economy remains largely agrarian with Cassava, cocoa, and tobacco dominating the crops and poultry birds dominting the animal production section of the economy. Oyo State covers approximately an area of 28,454 square kilometers and is ranked 14th by size. The Climate is equatorial, notably with dry and wet seasons and a relatively high humidity. The dry season lasts from November to March while the wet season starts from April and ends in October. Average daily temperature ranges between 25 °C (77.0 °F) and 35 °C (95.0 °F), almost throughout the year.

The descriptive research of the survey type design was used for the study. A random sampling technique was used to select four Local Government Areas for the study. A snowball technique was used to select six poultry farms from each LGA while Five (5) respondents were purposively selected from each poultry farm to make a total of 120 respondents. A structured interview schedule was used to elicit information from them. The data were analyzed using Frequency counts, percentages and mean. The mean was determined using Likert-type scale. The activities carried out were measured on a three-point Likert-type scale of Most Frequently (MF), frequently (F) and rarely (R). The Mean Scores was two (2). Therefore, any mean score greater than two MF (>2.0) was regarded as most frequently carried out activities. While the mean scores between 1.5 and 1.99 were regarded as frequently carried out activities while those below 1.5 were regarded as rarely carried out activities. Also, the perceived effects of Covid 19 pandemic on poultry production was determined on a five- point Likert-type scale of very low extent, low extent, undecided, large extent and very large extent. The mean score was three (3). Very low extent ranges from 1-1.5, low extent ranges from 1.51- 2.0, Undecided ranges from 2.01. 2.5, Large extent ranges from 2.51-.3.0, while to a very large extent was above 3.0.

RESULTS AND DISCUSSION

The result in Table 1 shows that 52.5% of the respondents were male while 47.5 % were female. This shows that both the male and female gender were involved in poultry production, although the males were a little bit higher than the females. Seventy-six-point seven percent (76.7%) of the respondents were between 31-60 years of age, an implication that they are likely to be active.

Also, 35.8% of the respondents were single while 58.3% of the respondents were married, and 5.8% were widowed. Also**,** 97.5 of the respondents were literate. Some of the respondents engaged in other occupations such as artisan, 22% were civil servants and 13% were traders. Thirty percent (30%) of the respondents did not have any other occupation aside farming. The respondents belonged to all the religious groups in the environment, though there were more Christians than other religion.

Table 1: Socioeconomic characteristics of the respondents

Categories	Variables	Frequency	Percentages
Gender	Male	63	52.5
	Female	57	47.5
Age	<30 years	25	20.8
	31-60	92	76.7
	>61 years	03	2.5
Marital status	Single	43	35.8
	Married	70	58.3
	Widow	07	5.8
Secondary occupations	Farming	36	30.0
	Artisan	42	35.0

	Civil servants	30	25.0
	Trading	16	13.0
Highest Qualification	No formal education	3	2.5
	Adult education	35	29.2
	Primary education	23	19.2
	Secondary education	22	18.3
	Tertiary education	37	30.8
Religion	Islam	56	47.0
	Christianity	60	60.0
	African Traditional Religion	03	2.5

Activities carried out on the poultry farm

The result in Table 2 indicates that the activities carried out most frequently includes serving water to birds ($\bar{x}$ =2.9), serving feeds ($\bar{x}$ =2.9), cleaning of water, and feeding troughs ($\bar{x}$ =2.1), cleaning chicken house ($\bar{x}$ =2.2). The activities carried out frequently includes drug administration, hatching of eggs, chick breeding, proper disposal of waste/dungs, disposal of dead bird and selling of birds (mean values between 1.5 and 1.99). Activities carried out rarely includes selling of eggs, vaccination, and disposal of dead birds, with mean values of 1.2, 1.3 and 1.4 respectively. The study confirms that the respondents were frequently involved in most of the activities carried out in the poultry farms. All these activities would require regular monitoring and visitation to the farm. The restriction by Covid-19 pandemic might have a negative effect on poultry production.

Table 2: Activities carried out on poultry farms

SN	Activities carried out	MF	F	R	Total	Mean
1.	Serving water to birds	357	-	1	358	2.9
2.	Serving feeds	354	-	2	356	2.9
3.	Cleaning of water and feeding troughs	192	4	54	250	2.1
4.	Hatching of eggs	-	234	3	237	1.9
5.	Chick breeding	3	192	23	218	1.8
6.	Cleaning chicken house	219	-	47	266	2.2
7.	Proper disposal of wastes/dungs	1	184	27	214	1.7
8.	Vaccination	-	88	76	164	1.3
9.	Drug administration	162	4	64	230	1.9
10.	Disposal of dead birds	-	100	70	170	1.4
11.	selling of eggs	27	24	99	150	1.2
12.	Selling of birds	72	104	44	220	1.8

Legend: MF (>2.0), Mos frequent; F (1.5-1.99), Frequent; R (<1.5), Rarely

Perceived effects of Covid-19 restriction on poultry production

Going by the mean score, the respondents perceived that Covid-19 pandemic resulted in low demand for egg ($\bar{x}$=3.65), reduced customer purchasing power ($\bar{x}$ =3.58), closure of some farms ($\bar{x}$=3.18), and hike in the price of poultry drugs ($\bar{x}$=3.1) to a very large extent respectively. They perceived that it increases the cost of delivery of poultry products ($\bar{x}$=3.0) and poses serious threat to the health of poultry workers ($\bar{x}$=3.0), to a large extent. However, the respondents could not decide whether it led to poor feeding in some farms ($\bar{x}$=2.3) as well as reduced processing capacity ($\bar{x}$=2.2). It could be affirmed that Covid-19 pandemic resulted in the low demand for egg, reduced customer purchasing power and closure of some farms to a very large extent. It also causes a hike in the price of poultry drugs as well as increases the cost of delivery of poultry products and poses serious threat to the health of poultry workers to a very large extent respectively. This is expected because of the restriction in movement imposed during the pandemic. This supports the findings Abdullah *et al.,* (2021) that the poultry sector was damaged by the COVID-19 pandemic, partly because of the lockdown and by rumors that poultry and their products could transmit the disease. The findings show that any stakeholder hardly escape hardship because of Covid-19 pandemic. Abdullah *et al* affirmed that covid-19 pandemic which causes disruption in movement have resulted in declining consumer demand and volatile markets brought huge financial difficulties, even leading to the permanent closure of many farms.

Also, Hafez *et al.,* (2021) affirmed that Egg prices have increased dramatically during the

lockdown as consumers have started to change their behaviors and habits. They speculated that COVID 19 pandemic might also substantially impact the international poultry trade over the next several months. ILO (2020) affirmed that Covid-19 is causing losses in labour and such negative effects are anticipated to be far worse than the financial crisis of 2008-2009. Omekwe and Obayori (2020) further emphasized that the Outbreak of Coronavirus (Covid-19) impacts negatively on feed inputs and vaccine distribution as there is no readily free movement of commercial transport to convey feeds and other materials from point of sales

Table 3: Extent to which covid -19 affects poultry production

SN	Items	VL	LOE	U	SE	LE	Total	Mean
1.	Covid-19 pandemic poses serious threat to the health of poultry workers	1	52	168	144	5	370	3.0
2.	It increases the cost of delivery of poultry products	5	34	222	72	30	363	3.0
3.	It led to closure of some farms	23	30	39	120	170	382	3.18
4.	It resulted in the hike in the price of poultry drugs	27	50	24	104	170	375	3.1
5.	It resulted in poor feeding in some farms	43	64	45	48	90	280	2.3
6.	Covid-19 pandemic results in low demand for egg	7	54	45	92	240	438	3.65
7.	Reduced processing capacity	36	80	72	64	20	272	2.2
8.	Reduced customer purchasing power	5	40	90	120	175	430	3.58

CONCLUSION AND RECOMMENDATION

The study examined the perceived effect of covid-19 on poultry production in Oyo state. The descriptive research design of the survey type was used in this study. A total of 120 respondents were involved in the study. The data were analyzed using frequency counts, percentages and means. The study revealed that both the male and female gender were involved in poultry production, most of them are young, married and literate. A good percentage of them (30%) did not have any other occupation aside farming and they cut across all the religious practices in the study area. The activities carried out most frequently includes serving water to birds, serving feeds, cleaning of water, and feeding troughs, cleaning chicken house, and drug administration. While the activities carried out frequently were hatching of eggs, chick breeding, proper disposal of waste/dungs, disposal of dead bird and selling of birds. The respondents perceived that Covid-19 pandemic resulted in low demand for egg ($\bar{x}$=3.65), and reduced customer purchasing power ($\bar{x}$=3.58), closure of some farms ($\bar{x}$=3.18), and hike in the price of poultry drugs ($\bar{x}$=3.1) to a very large extent respectively. They perceived that it increases the cost of delivery of poultry products ($\bar{x}$=3.0) and poses serious threat to the health of poultry workers ($\bar{x}$=3.0), to a large extent. However, the respondents could not decide whether it led to poor feeding in some farms ($\bar{x}$=2.3) as well as reduced processing capacity ($\bar{x}$=2.2).

In Conclusion, the respondents were frequently involved in all the activities carried out on poultry farms and they were adversely affected by Covid-19 pandemic because covid-19 pandemic resulted in the low demand for egg, reduced customer purchasing power and closure of some farms to a very large extent. It also causes a hike in the price of poultry drugs as well as increases the cost of delivery of poultry products and poses serious threat to the health of poultry workers to a very large extent respectively.

The recommendations are:

a. To resuscitate the poultry industries from the effects of Covid-19 pandemic in Oyo state, efforts should be made to assist farmers who have closed their farms by given them day old chicks and all other inputs at a subsidized rate.
b. Credit facilities should be given to poultry farmers to enable them to afford the high cost of feeds and drugs
c. Farmers should be encouraged to secure their farm by patronizing viable insurance companies in the state.

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REVIEW OF IMPACT OF IRRIGATION PROJECTS ON THE LIVELIHOOD OF SMALL-SCALE RICE FARMERS IN NORTH-WESTERN NIGERIA

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ABSTRACT
Rice is one of the major irrigated crops, is a staple food for about 2.6 billion people in the world It is the leading cereal crop of south and east Asia, which are thickly populated regions of the world and the global output shows that the Asian continent account for about 92 percent Therefore this paper reviewed the impact of irrigation projects on the livelihoods of small-scale rice farmers in north western Nigeria. Also reviewed the concepts of irrigation, livelihood and impact. Furthermore, it explored the impact of irrigation projects on livelihood of rural farmers and as well the challenges facing rice processing in Nigeria, they reported that several factors are militating against rice production/processing in Nigeria. these include inadequate knowledge on the use of herbicides and pesticide, postharvest handling, processing and marketing, pest and diseases, soil fertility management, irrigation and water, harvesting skills as the factors affecting small scale farmers in the area.
Keywords: Impact, irrigation, projects, livelihoods, rice, north western Nigeria

INTRODUCTION

Irrigation practices was initially mostly traditional, used by small scale farmers inform of *Fadama* through gravity or natural flow, calabash/bucket and pump methods. The facilities were provided and maintained by farmers with no assistance from government or donor organisations (Bashir *et al.,* 2018). Agriculture including rice production is one of the major sources of livelihood to rural people in the area.

Irrigation is a science of planning and designing a water supply system, usually man-made, for agricultural land to produce crops where there is virtually little or no precipitation, and to protect the crops from bad effect of drought or low rainfall (Oladimeji and Abdulsalam*,* 2014). Irrigation practice across the world is vital to successful green revolution all year round to achieving sustainable development goals in food security, socioeconomic and rural development. However, irrigation practice in Nigeria has not achieved the set goals despite the huge investment involved (Bashir *et al.,* 2018).

Impact refers to the broad, long-term economic, social environment effects resulting from project intervention. Impact of a programme can be manifested in relation to whether the services actually resulted positively on the people who receive them. Manyong *et al.* (2001) opined that impact assessment is the process of identifying the future consequences of a current or proposed action. It is used to ensure that projects programme and policies are economically viable, socially equitable and environmentally suitable (Manyong *et al.,* 2001). Impact assessment of Agricultural development projects is a continuous process and therefore being a process. It is better conceptualized to use the "participant" and "non participant" impact assuagement approach

The paper reviewed focus in Northwest zone, which located between latitude $9^{0}10^{1}$N and $13^{0}50^{1}$N and longitude $3^{0}35^{1}$E and $9^{0}00^{1}$E, covers about 168, 719 km^2. It consists of Jigawa, Kaduna, Kano, Kebbi, Sokoto and Zamfara States. It leads the other zones in terms of population with 35,786,944 million people National Population Commission (NPC) (2006). It is located between latitude $10^{0}05^{1}$N and $13^{0}50^{1}$N and longitude $03^{0}35^{1}$E and $07^{0}13^{1}$E. They covered a total land of about 102, 535 km^2. The zone's vegetation consists of Northern Guinea Savannah and Sudan Savannah, a vegetation belt covering most parts of the zone stretching from the Sokoto plains in the west, through the northern sections of the central highland. The low annual rainfall of usually less than 1000mm and the prolonged dry season (6-9 months). Majority of the inhabitants of the zone are peasant farmers who reside in rural settlements, particularly along the bank of the existing rivers. Upland crops produced include millet, sorghum, rice, cowpea and maize, while the vegetable crops include tomato, pepper, onions, okra, lettuce, carrots etc. Other occupations in the area include fishing and livestock rearing (Kebbi State Diary, 2008)

Rice production

Rice (*Oryza sativa*) one of the major irrigated crops, is a staple food for about 2.6 billion people in the world (Oyewole and Ebukiba, 2010). It is the leading cereal crop of south and east Asia, which are thickly populated regions of the world and the global output shows that the Asian continent account for about 92 percent, while American and Caribbean account for 5 percent and 3 percent for Africa (Oyewole and Ebukiba*.,* 2010). It is also the most important staple food for large part of the world human population. It is the second highest worldwide production after maize (Food

and Agriculture Organisation Corporate Statistical Database, FAOSTAT, 2016).

Concept of livelihood

A livelihood is defined as a set of activities that involves securing food, water, clothing, fodder, machine, shelter, as well as the capacity to acquire the above needs. This can be achieved by working either as individual or as a group, using endowments (human and material) for meeting the requirements of self, or together with the household on a sustainable basis (Ndanitsa *et al.,* (2011).

The term livelihood refers or attempt to capture not just what people do in order to make a living, but the resources that support or provide them capability to build a satisfactory living, in other words, the livelihoods could also been seen or refers to the various ways in which individuals or households make sure there is enough food on the table and at same time provide the basic necessities for a good life, such as house, clothing and so on.

A rice farmers livelihood may likely depend on the availability and accessibility of rice and everything needed for its production.

Impact of irrigation project on livelihood of people

Agricultural Development projects has been shown to improve crop productivity, enable households to grow higher valued crops leads rates for family, labour, deficit the poor and landless through increased food availability and lower food prices (Hussaini and Minnr, 2003). Kudi *et al.* (2008) reported that majority of the respondent had high and very high improvements in their farm income. The implication is that better income gives better purchasing power and hence the improvements in level of living. Msheliza, *et al* (2018) discovered that the PROSAB project improved the well-being of the beneficiaries. This is because the beneficiaries bought more land for farming, paid children's school fees easily, bought fertilizes and agrochemicals, built/renovated their house etc. Abdullahi (2010), discovered that the crop output, income and level of living of the beneficiaries improved greatly when compared with the non-beneficiaries.

Table 1: Distribution of agriculture irrigation schemes by states in Northwest Nigeria

State	Dam	Capacity million of m^3	Surface area hectares	Primary usage
Sokoto	Bakolori	450	8,000	Irrigation
Sokoto	Goronyo	943	20,000	Irrigation
Katsina	Jibiya	142	4,000	Irrigation
Kano	Tiga	1,874	17,800	Irrigation
Kebbi	Zauro polder	NA	NA	Irrigation

Source: Oladimeji *et al* (2019)

Factors affecting small scale rice farmers

According to Nyunza and Mwakaje (2012), there number of factors affecting smallholder farmers' participation in markets developing countries including Tanzania. These constraints can be grouped into five broad categories, namely; access to financial services, access to Input and Output Markets, poor marketing infrastructure, inadequate land tenure and management system, policy-related and institutional Nyunza and Mwakaje, 2012 and Chiara *et al.,* 2012). Under institutional and market constraints the following specific constraints exist, there is a serious lack of sufficient and timely market information on the prices of agricultural products especially on their supply and demand (Dayo *et al.,* 2008). As a result, there no reliable market information at the time it is needed for decision-making leading to uninformed decisions making by smallholders when it comes to marketing their crops (Koskei *et al.,* 2013). Tanzania is one of the five East African countries where Smallholder farmers have been facing numerous constraints. Some constrains are unique to each of the countries while most are of a similar nature. Balogun *et al.,* (2012) revealed that, less than half of the credit needs of households which also include farmers considered in their study were met through the help of friends/family and cooperatives sources. These financial sources offer households greater access to credit in terms of volume, pay-back period and interest rates.

Nevertheless, Ndanitsa *et al.* (2011) reported that some of the constraints faced by farmers were those of poor rural infrastructure, limited capital to increase volume of coverage, lack of trained manpower, low level of educational status, and lack of availability of extension education. These factors have jointly led to the large gap observed in rice demand and domestic production over the years. Therefore, the purpose of the study was to single out key findings that could guide the government in coming up with

appropriate interventions for the challenges of small-scale rice farmers.

Sa'adu *et al.* (2017) analyzed the Constraints to Effective Participation of Women in Irrigation in Bakolori Irrigation Project, Zamfara, Nigeria. They found out that access to land and credit facility are the major constraints to agricultural production in the study area. It shows that 31% could not participate fully in irrigation in the area due to limited access to land. Culture is a limitation to 9.6% of the respondents and this may be linked to modernization. These findings corroborate Peterman *et al.* (2010) who reported that in rural Nigeria where 80% depends on agriculture for livelihood, landownership is one of the key limiting factors of production. Other studies supported by this finding are World Bank (2009) and FAO (2011) who reported that well-documented gender inequalities and male bias in women farmers' access to technical information, credit, and extension services, critical inputs such as fertilizers and water, and marketing exist in most developing countries.

CONCLUSION AND RECOMMENDATIONS

The paper reviewed the impact of irrigation projects on the livelihood of small-scale rice farmers in North-Western Nigeria.

It reviews the concepts of irrigation, livelihood and impact. It also review literatures on the impact of irrigation projects on the livelihood of rural people, also gender inequalities and male bias in women farmers' access to technical information, credit, extension services, critical inputs such as fertilizers and water, and marketing exist in the study area as the factors affecting small scale farmers

- It is suggested that, environmental education of all stakeholders on the need for sustainable use of irrigation projects should be provided.
- There is need for policy that regulates the use of water resource for all water users.
- There should be an awareness creation campaign to educate the farmers on the importance of mulching, planting of cover crops and planting of trees for soil conservation.

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RURAL SOCIAL SECURITY AND BANDITRY CONTROL IN NIGERIA: ROLES OF HUMAN CAPACITY DEVELOPMENT ON RURAL CRIME MITIGATION

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ABSTRACT

The roles of rural areas in global development could not over-emphasized. This calls for attention to rural social security scheme. The rural security scheme depicts social and economic programmes put in place to uplift the living conditions of rural population. One of the reasons for these activities is to engage the time of rural dwellers to mitigate incidence of rural criminalities. Banditry is a criminal activity that involves the taking up of arms against innocent people. Banditry includes kidnapping, armed robbery and murder. These criminalities have led to loss of lives and properties, reduction in rural productivity and psychological fear. Therefore, this study investigates rural social security and banditry control in Nigeria. The study adopts qualitative research method and data were sourced secondarily through the content analysis of peer reviewed journals, edited textbooks, and credible online sources. It anchors on social strain theory by Robert King Merton and routine activity theory by Marcus Felson. Findings show that inadequate social security scheme is ground for criminalities. The study recommends effective provision of social security scheme in the rural communities by the government at various levels, Non-governmental Organisations and well-meaning individuals to discourage banditry. This study will be useful to individuals, security organizations, government at various levels, non-governmental organisations and researchers in social sciences.

Keywords: Banditry, Crimes, Human Capacity Development, Rural Communities, Social Security

INTRODUCTION

The rural communities are crucial to national transformational processes. However, these communities are affected by various security challenges. The security challenges prevent rural communities from discharging their roles as custodian of culture and customs. Banditry is one of the security challenges bedeviling peace and harmony in the rural areas. To checkmate the immediate and remote causes of banditry in the rural areas, social security is pit in place. Rural social security are the transformational processes that will put the rural areas in the right place in global development. As noted by examples of rural social security are rural cooperative scheme, rural credits schemes, rural road network, educational scheme, health services, local security network and other social economic infrastructures that aid development in the rural areas. Both rural and urban setting face various security challenges globally. One of the challenging insecurity rural communities are facing in Nigeria is banditry. According to Ibrahim and Mukhtar (2017), banditry is an organised crime where a group of people raise aims and ammunition against others in a community. Currently, rural communities in Nigeria, especially in the Northern Region are being threatened by bandits. These offenders subject rural dwellers to insecurity conditions like killings, rape, theft of farm products, illegal grazing, arson of houses and farmlands. Some rural communities have been disserted. Consequently, the ability of rural farmers to continue with food production has been weakened. The aftermath of this is food insecurity and poverty not only among rural dwellers but urban communities that depend on food supply from rural areas. There are many studies on rural criminalities. Ibrahim and Mukhtar, (2017), examined an analysis of the cause and consequences of kidnapping in Nigeria. In the same vain, Mesko (2020), assessed rural criminality- a challenge for the future Europe. In the UK illegal puppy trade. Trafficking and trade in man best friend. To the best of the authors` knowledge, no study has been conducted on rural social security and banditry control in Nigeria. Therefore, this study is necessary to fill the knowledge gap. The specific objectives are to; examine the various types of social security programmes, to evaluate the importance of social security progammes in checkmating rural crimes and their challenges in the rural areas.

METHODOLOGY

As explained by Mesko (2020), methods are the strategies put in place to achieve research objectives. This study will be based on the content analysis of peer reviewed journals, edited textbooks, dailies and credible internet sources. The major objective of the paper is to investigate rural social security and banditry control. Thematic literature reviewed was conducted on the various types of rural social security existing in Nigeria. The roles these social security play in alleviating rural crimes. The reports of journals and other literature on types of rural banditry and their effects on rural community. The validity of the method was conducted by the main author in the person of Professor Fasoranti.

Meanings of Rural Social Security. As defined by Social Security Administration, (2021), rural social security are the social, economic and infrastructural amenities put in place to improve the wellbeing of the rural dwellers. In reasonable society, there is no demarcation between rural and urban dwellers in access to decent living.

Social security schemes in rural areas

Rural Credit Scheme. This is a form of agricultural cooperatives at the rural level that alleviates financial constraints rural dwellers encounter. Rural communities are majorly agrarians, the credit scheme is extended to petty traders and other eligible members of rural communities.

Health Service Scheme. The physical, emotional, psychological and social well-beings of farmers is necessary for daily activities. The primary health care delivery services are detailed in the rural areas to advise and attend to rural health-related challenges. This could be malaria fever, cholera, dysentery and other communication diseases that cause health emergency.

Rural Road Network. The majority of rural dwellers in Nigeria depends on road transport system for the supply of agricultural produce to semi-urban or urban markets. Effective road network also assists in emergencies like fire outbreak, disaster management and health emergency. It also aids response to crime situations (Social Security Administration, 2021).

Rural Security Outfits. This type of rural security scheme makes use of traditional power to provide security of lives and property in their domain. They view security as social responsibilities to assist government in in rural community. In the Souths-Western, Nigerian, rural security networks involve association that makes up of hunters, youths, age-group, priests, herbalists, the elderly groups, and other stakeholders in the community. The essence is to come together to find solutions to banditry in the communities.

Banditry. This is a criminal act whereby a group of people come together to raise arms against innocent people in the society. As noted by Chinwokwu (2019), the following banditry in Nigeria.

Kidnapping. This criminal activity involves abduction, transportation and incarceration of individual and a group of people. It is also referred to as false imprisonment. There are various kinds of kidnapping. In the submission of Mesko (2020**),** kidnapping could be express. In this type of kidnapping, abductors arrange kidnapping of victims and demand for ransom to satisfy quick financial interest. Other types of kidnapping are kidnapping for ransom. This is type of kidnapping whereby ransom is demanded as prerequisite releasing victims.

Effects of kidnapping. Kidnaping is a criminal act that leads to loss of lives and properties, diminished national pride. It scares aware local and foreign investors; no reasonable investor wants to put his or her money in business venture that is surrounded by conflicts and fear. Kidnaping results in food insecurity as farmers and transporters of agricultural produce are under serious threats.

Armed Robbery. This is an organised crime that involves taking arms to dispossess people of their belongings. Armed robbery in the rural areas is perpetrated in the form of theft of agricultural products, cattle rustling and other criminal activities.

RESULTS AND DISCUSSION

From Table1, in the six years under review, the largest ransom was paid in Naira in the year 2017. The year recorded a whopping sum of NGN 582,005,000:00. This portends serious danger for the development of rural communities. The rural dwellers felt victims of kidnapping and armed robbery in recent times. The fear of being kidnapped or robbed of hard-earned money is responsible for high cost of food items.

Table 1: Kidnapping for Ransom in Nigeria from 2015 to 2020

S/N	YEAR	Ransom Paid in Naira	Position
1	2015	105,200,000=00	Fourth
2	2016	469,990,000=00	Second
3	2017	582,005,000=00	First
4	2018	79,750,000=00	Fifth
5	2019	373,035,000=00	Third
6	2020	32,950,000=00	Sixth
6	**Total**	1,638,930=00	

Source: SBM Intelligence, CFR

CONCLUSION

This paper deals with rural social security and banditry in Nigeria. To address the wave of rural crimes, social security arrangement should be

strengthened and all challenges facing them should be ameliorated for rural populace to discharge their responsibilities in national and global development. This study will be useful to individuals, rural farmers, governments and non-governmental bodies.

RECOMMENDATION

The rural populace should mobilise resources at their disposal to facilitate rural security and crime control. Government at various levels should put in place security measures to discourage ransom payment. There should be synergy between local security outfits and other formal law enforcement agents to curb crimes at the grassroots.

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EFFECTIVENESS OF INTEGRATED COMMUNITY SEEDS AND SEEDLINGS PRODUCTION SCHEME IN IFE CENTRAL, OSUN STATE NIGERIA

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ABSTRACT
In most agrarian communities of rural Nigeria, consistent food production is impeded by inadequate seed availability, and it affects the quantity and type of crops that can be produced. This study assessed integrated community seeds and seedlings production scheme in Ife Central of Osun State Nigeria. Purposive sampling was used to select 70 farmers actively involved in the scheme. Data were collected using an interview guide and analyzed with descriptive analysis and Pearson Product Moment Correlation (PPMC). Findings showed that most (81.4%) of the farmers were male, with a mean age of 54yaears and average income of ₦939,449 annually. An average of 1880kg and 1250kg of maize and cocoa were produced among other crops. Benefit-derived from the scheme includes increased income generation (97.1%), timely supply of seeds/seedlings (94.2%) and development of local seed market (95.7%). The challenges of the scheme include laxity of the attitude of the farmers (79.7%) and poor funding (54.9%). Findings revealed that there was a significant relationship between the scheme ($r= 0.250$, $p<0.05$) and the seed quantity produced. The study concluded that the activities of the scheme are effective, and they influence local seed production with derived benefits for the farming households. It is therefore recommended that government and community leaders should support the scheme to ensure seed self-sufficiency for food production.
Keywords: Seed production, seedling, effectiveness, derived benefits and agrarian communities

INTRODUCTION
In an agrarian community, farmers share membership, influence, integration, fulfilment of needs and emotional connection for the betterment of agricultural production (Amaza *et al*, 2010). Most of the farmers engage in crop production alongside other categories of farming activities. Seed is one of the most vital essentials in agricultural livelihoods and farmers depend largely on it for huge yields and harvest. Most of the time, seeds that are obtained from the previous harvest is what is been used to continue farming activities which is not sustainable. Louwaars (1999) stated that a formal seed system is to describe clear and verified seeds that have been certified for a sustainable seeds supply and this must be a deliberate effort that will lead to well-fabricated system with a chain of activities for a reliable seed supplying scheme. Although, at the local level farmers make efforts to create a scheme that serves the seed and seedling production among other activities for sustainable food production but its effectiveness to achieve this goal should be appraised and not just been ignored. In this view, this study examined the effectiveness of integrated community seeds and seedlings production .The study will specifically describe socio-economic characteristics of the farmers, determine quantity of seed produced, ascertain benefit derived from the scheme and identify constraints to the scheme. The hypothesis tested the relationship between the effectiveness of the schemes' activities and the quantity of seed production.

METHODOLOGY
The study was conducted in Ife of Osun state Nigeria. The study area is located on latitude: 7.55, longitude: 4.53. It has an area of 111 km² and a population of 167,254 (National Population Commission [NPC], 2006). A simple random sampling technique was used to select 70 farmers. An interview schedule was used to elicit information from the farmers. The measurement of variables is as follows: (a) Quantity of seed produced was measured in Kilograms (b) Effectiveness of the schemes' activities were measured using Four-point Likert scale: Excellent, Good, Fair and Poor which were assigned a score of 4 to 1 respectively. (c) Benefits derived and challenges encountered in the seed production scheme were measured at a nominal level using Yes =1 and No = 0. Data were analyzed using descriptive statistics and PPMC to determine the relationship between effectiveness of schemes' activities and quantity of the seed produced by the scheme.

RESULTS AND DISCUSSION
Socio-economic characteristics - Table 1 revealed that the average age of farmers is 54 years, 81.4 percent were male with an average household size of 8person. Most (52.5%) of them were married and had an average household size of 8persons. The mean age of the farmers was 54years. This implies that many of the farmers are within age bracket that relatively old that are not likely to migrated to better life elsewhere but stay back to invest in farming. Some (40.0%) of the

farmers had primary education, which means that they can read and write, which can enhance their learning skills in technicality involved in the seed and seedlings production scheme. The farmers earned more than ₦500,000.00 per annum this is because of crops like cocoa and kola nut from where they obtain more income.

Table1. Socio-economic characteristics of the farmers

Variables	Mean	Mode Frequency (Percentage)
Age (years)	54 years	
Sex		57 (81.4%) Male
Marital status		53 (75.7%) Married
Household size	8 persons	
Level of education		28 (40.0%) Primary education
Income per annum	₦939,449.00	
Religion		27 (38.5%) Christianity
Farmers' experience	23years	

Quantity of seed produced by the farmers through the seed and seedling production

The entries in Table 2 shows the quantity of various seeds produced by the farmers most of the farmers (57.1%) produced a quantity of cocoa between 401kg - 1000kg while more than 70 percent produced less than 400kg for citrus, cashew, kolanut, mango and bitter kola. The quantity of the seed produced will affect the supply of the seed for the production in the next farming season for the farmers who wish to cultivate the crop mentioned. The quality and quantity of the informal seed sector through the community seed production system can be improved by encouraging farmers to make their own selection of traditional varieties to multiply and store seeds of such varieties and develop varieties at research stations according to findings of (Setimela *et al*.,2004) The value of the seeds considering its viability and varieties are important farmers the seed supply system (Tripp and Rohrbach 2001).

Table 2: Distribution of respondents based on the quantity of seed produced

Variables	**≤400kg %**	**401-1000kg %**	**1100-5000kg %**	**Above 5000kg %**	**Mean**	**Rank**
Maize	8(11.43)	28(40.0)	28(40.0)	6(8.6)	1880	1st
Cocoa	21(30.0)	40(57.1)		9(12.9	1250	2nd
Citrus	63(90.0)	7(10.0)			376	3rd
Cashew	57(81.4)	13(18.6)			362	4th
Kola	55(78.6)	15(21.4)			352	5th
Bitter kola	66(94.3)	4(5.7)			315	6th
Mango	68(97.1)	2(2.86)			310	7th
Pawpaw	17(24.29)				241	8th
Coconut	8(11.43)				217	9th
Bread fruit	7(10.00)				208	10th
Shea butter	3(4.28)				203	11th
Bush mango	2(2.86)				188	12th

Note: Figures in the bracket are percentages

Effectiveness of community seed production scheme

The entries in Table 3 shows that (59.4%) of the farmers indicate that it is good to conserved lost varieties of seeds while (37.7%) indicate excellent. Most (55.1%) restored lost varieties while (42.0%) indicated excellent which agrees with the findings of (Omolehin *etal*, 2008). About (56.5%) indicated good to shortage responsiveness and insurance while (39.1%) indicated excellent.

Table 3: Effectiveness of the schemes' activities

Activities	Excellent	Good	Fair	Poor	Mean
Preservation of endanger and neglected varieties	26(37.14)	42(60.00)	2(2.86)		**4.34**
Re-establishment of lost species	29(41.43)	39(55.71)	1(1.43)	1(1.43)	**4.36**
Insurance and responsiveness to crop crises	27(38.57)	40(57.14)	3(4.29)		**4.34**
Secure shortage of seeds against in areas affected by stealing, strife and crop damage	29(41.3)	36(51.43)	4(5.71)	1(1.43)	**4.31**
Provision of eeds at cheaper rates	16(22.86)	46(65.71)	6(8.57)	2(2.86)	**4.06**
Encourage exchange of seeds	21(30.00)	45(64.29)	4(5.71)		**4.24**
Assurance of seed dominance	23(32.86)	45(64.29	1(1.43)	1(1.43)	**4.27**
Assistance for groups to obtain and supply seeds	32(45.71)	26(37.14)	10(14.29)	2(2.86)	**4.23**
Participatory seed breeding at local level	22(31.43)	39(55.71)	7(10.00)	2(2.86)	**4.13**
Earn income via the selling of seeds	18(25.71)	35(50.00)	16 22.86)	1(1.43)	**3.99**
Facilitate knowledge sharing of agricultural biodiversity	20(28.57)	35(50.00)	15(21.43)	0	**4.07**
Creation of communal-based variety organisation	12(17.14)	29(41.43)	25(35.71)	4(5.71)	**3.64**
Connection with the in situ and ex situ for the scheme	18(25.71)	32(45.71)	13(18.57)	7(10.0)	**3.77**

Note: Figures in the bracket are percentages

Most of the farmers (66.1%) indicate good to offer seeds at lower costs than the commercial sector while (23.2%) indicate excellent which negates the findings of (Maiangwa and Oguntolu,2008). More so, (46.6%) indicate excellent help to groups to obtain seeds while (37.7%) indicated good. Majority of farmers (50.7 %) indicated good while (26.1%) indicated excellent. About (49.3%) of the farmers indicate good to share agricultural biodiversity knowledge and Expertise while (27.5%) indicated excellent. Furthermore, most of the farmers (42.0%) indicated good to a platform for community-based biodiversity management and (17.4%) indicated excellent which is in the agreement of Osman (2007).

Benefit derived from community seed production scheme

The entries in Table 4 show that 100.0% of the farmers agreed the system has helped in increasing income generation through the selling of seeds. Most of the farmers 97.1% agreed that the scheme has facilitated the production of seeds locally and the development of local seed markets and the allocation of seeds through distribution. Most 94.2% of the farmers accepted that the scheme increased productivity and food security through timely supply of improved varieties, and 91.3percent said the scheme help them to be empowered, build skills and capacity. FAO (2014) opined that the community seed bank development contributes toward promoting economic empowerment of farmers.

Table 4. Benefit derived from community seed production scheme

Variables	Frequency	Percentage (%)
Increase income generation	68	97.1
Timely supply of improved seed varieties	66	94.2
Availability of seed all season	66	94.2
Provision of preferred varieties	53	75.4
Development of local seed market	67	95.7
Empowerment and capacity building on seed produce	64	91.3

Constraints to community seed production scheme

Figure 1 shows that 79.7 percent of the farmers exhibit laxity in their attitude towards the scheme. Attitude goes a long way in affecting the performance of any system because negative attitudes affect the participation and progress of the system. Poor funding for the scheme is another challenge, without adequate financing, the scheme will be constrained and less effective because certain technicalities and facilities require money to achieve success. Poor mobilizations of resources for the scheme and storage facilities also debar the smooth running of the scheme. Peter *et al, (*2014) opined that among other problems management and mobilization affect the community seed production.

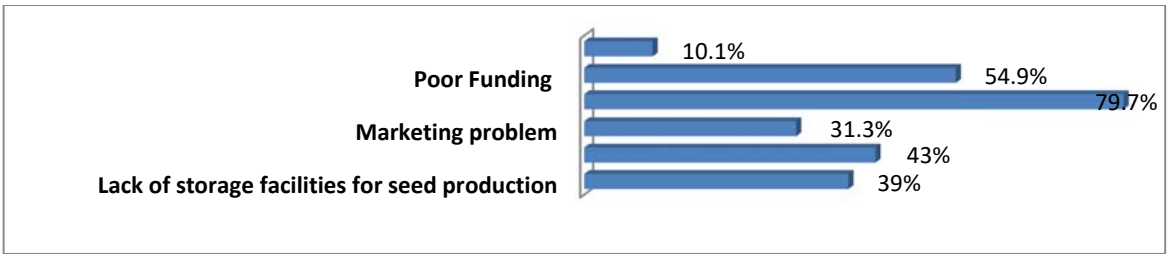

Figure 1: Constraints in community seed production scheme

Test of hypothesis

Entries in Table 5 showed that there is a significant relationship ($r = 0.250$ $p < 0.05$) between the effectiveness of the scheme and seed produced. This means that the more farmers are committed to the activities of the integrated seed and seedling scheme, the better seed will be produced both in terms of quantity and quality. This is because the schemes ensure that activities of the scheme aid production of standard seed for present and future use. If the scheme will be sustained then the active task and activities of the scheme must be effective and not compromised.

Table 5: Relationship between activities and seed produced by the scheme

Variables	r value	p-value	Decision
Effectiveness of schemes and seed produced	0.250	0.038	S

CONCLUSION AND RECOMMENDATIONS

The study concluded that the scheme is effective and if it is supported can ensure the availability of seed for the agrarian communities. Most of the farmers derived benefits such as increased income, timely supply of seed among other benefits and much experience in farming could help in building the scheme. It is recommended that National Agricultural Seed Council (NASC) should promote production, distribution and marketing of seed among small local farmers involved in community seed the production. The agency and local farmers' association could encourage local farmers to improve their attitude towards the integrated community seed and seedlings scheme and open to knowledge and training that can be government agencies can offer them. The integrated community-based seeds and seedling scheme aids mobilization of resources among local farmers to ensure an adequate supply of seeds for sustainable food production.

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