

**KNOWLEDGE, ATTITUDE AND USE OF AGRICULTURAL INFORMATION
AS PREDICTORS OF INCREASED PRODUCTIVITY AMONG SMALL-
SCALE FARMERS IN SOUTHWESTERN, NIGERIA**

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CERTIFICATION

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DEDICATION

This work is dedicated to The Holy Trinity: God the Father, Son and Holy Spirit; to Mary, my mother of perpetual help; and to Saint Rita; my patroness.

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ABSTRACT

Small scale farmers facilitate food production in order to play significant roles in stabilising economy and mitigate hunger in Nigeria. However, the level of productivity of these farmers in the South-western, Nigeria has been seemingly low; not keeping pace with the population growth rate. This trend has been partly attributed to inadequate access to or absence of agricultural information. Previous studies have concentrated more on delivery methods and the sources of agricultural information without focusing on its knowledge, attitude and use among the small scale farmers. This study, therefore, examined the extent to which knowledge, attitude and use of agricultural information predict increased productivity of small scale farmers in the South-western, Nigeria.

Theories on attitude change, perception and information processing provided the framework while descriptive survey design was adopted. Oyo, Ogun and Ondo states with high yearly production index of yam, maize and cassava were purposively selected. Stratified and proportionate random sampling techniques were used in selecting 1,172 small scale farmers who are registered members of the Agricultural Development Programmes in each of the three states (Oyo-591; Ogun-479; Ondo-102). Agricultural Information Questionnaire with three sub-scales (Knowledge- $r=0.72$, Attitude- $r=0.78$ and Use- $r=0.74$) and Agricultural Productivity Scale ($r=0.70$) were used for data collection. These were complemented with six and three sessions of focus group discussion and key informant interviews with farmer's union executives and extension agents respectively. Data were analysed using descriptive statistics, Pearson product moment correlation and Multiple regression at 0.05 level of significance, while qualitative data were content analysed.

The farmers were: male (72.1%) and female (27.9%) with a mean age of 47 ± 5 years; cultivating: less than 1 hectare (21.3%), 1-2 hectares (35.7%), 2-3 hectares (24.4%), 3-4 hectares (11.9%) and 4-5 hectares (6.8%). Their levels of education were: no formal education (36.6%), primary education (29.5%), secondary education (21.5%), diploma (9.9%), first degree/equivalents (2.0%) and higher degrees (6.5%). Agricultural information sought for are: technical (82.3%), economic (78.4%), socio-cultural (52.5%) and legal (8.1%); preferably sourced from: extension agents (82.5%), radio (67.2%) and fellow farmers (75.8 %). Agricultural information use ($r=.73$), attitude ($r=.66$) and knowledge ($r=.56$) had significant correlations with small scale farmers' productivity. Agricultural information use ($\beta=.57$), attitude ($\beta=.46$) and knowledge ($\beta=.05$) had significant relative contributions to farmers' increased productivity. There was a joint prediction of knowledge, attitude and use of agricultural information on small scale farmers' productivity ($F_{(1168)}=1200.71$); accounting for 75.5% of its variance. Irregular visits by extension agents, poor loan access, poor radio transmission signals, and poor electricity supply were some of the constraints hindering their access to agricultural information.

Dissemination of agricultural information, adoption of positive attitude and the effective use of knowledge positively influenced small scale farmers' productivity in the Southwestern, Nigeria. Therefore, extension agents' visits to small scale farmers should be regularised. Constant electricity supply, strong radio transmission signals and easy access to soft loans with low interest rates should be adequately provided.

Keywords: Agricultural Information, Knowledge of agricultural information, Attitude agricultural information, Small scale farmers, Agricultural productivity.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

The small-scale farmer is central in food and fibre production in the world. They play significant roles in economic stabilization and in hunger mitigation (Ibeawuchi, Obiefuna, Ofor, Ithem, Nwosu, Nwocha and Ezeibekwe, 2009). However, recent production trends in Africa indicate a serious farming challenge. International Food Policy Research Institute, IFPRI, (2004). Low productivity by small-scale farmers has been attributed to inadequate or absence of agricultural information, (Franzel, Denning, Illeso and Mercado, 2004). Limited access to or use of inappropriate technology are among some of the factors attributed to food deficiency in many parts of the developing world (von Braun et al., 2007).

There are about 450million small-scale farmers throughout the world; these are farms of two hectares of land or less (International Fund for Agricultural Development IFAD, 2008). These 450 farmers according to Singh (2009) support a population of about 2.2 billion people. They represent roughly 85% of the world's farm (Murphy, 2012). The agricultural sector in Nigeria is dominated by small-holder farmers and the middle- scale farmers. Afolabi (2010) states that over 80% of the farming populations in Nigeria are small-scale, residing mostly in rural areas. The Nigerian agricultural sector is characterized by a multitude of small-scale farmers who have between 0.05 and 3.0 hectares of farm land scattered over wide expanse of land area. (Ogundari and Ojo, 2007).

Idachaba (2006) observes that small-scale farmers account for 90% of the total food and fibre production. Similarly, Murphy (2012) opines that small-scale farmers are a large subset of the world's farmers and a large subset of the rural poor who are not just suppliers for niche markets, but also the primary source of staple food for most of the world's people.

Nigeria earns 40% of her gross domestic product (GDP) from agriculture whereas it earns only 20% from oil. The foreign exchange earnings of oil (85%) is higher but, in terms of GDP, agriculture has a upper hand almost doubling that of the oil sector. (Bello, 2002). The agricultural sector, in terms of contribution to growth and share of the gross domestic product, has been documented as the most dominant sector of the Nigerian

economy (Central Bank of Nigeria (CBN), Report, 2009). According to this report, despite the growth of industries, oil and commerce, agriculture continues to be the principal economic activity of the people of Nigeria. This makes agriculture the most important sector of the national economy.

However, despite the various agricultural policies and fiscal incentives put in place by the government to boost agricultural production, food production is not keeping pace with the population growth rate. For example, in the CBN analysis of the sectoral contribution to growth rates of GDP at 1990 Constant Basic Prices (percentage points), agricultural products were found to have persistently declined from 2.8 in 2008 to 1.6 in 2012/2013. Also, a sectoral analysis of the real GDP showed that the share of agriculture in total GDP stood at 39.2 per cent in 2012/2013, compared with 40.2 per cent in 2011. The problem in the opinion of Bello (2002), is that about 65% of the Nigerian people are producing 41.5% of the GDP. This shows that the percentage of Nigerians engaged in agriculture is more than that of the world average of 45.7 % (Aina, 1995). The implication of this is that the productivity of this sector of the economy is declining persistently. The resultant effect is that food production is not at par with population growth rate. For example, while the annual population growth rate is estimated at between 2.5 and 3%, that of food production is between 1 and 1.5% (Opara, 2010). This implies that the greatest challenge to the development of the agricultural sector is low productivity. This connotes that urgent actions in improving capacity and farmer support systems are needed among all competing tasks (IFPRI, 2011). There is no gainsaying the fact that small-scale farmers are important if substantial increase is to be recorded in food production. There is a growing body of evidence that small scale farmers can and often do achieve high levels of productivity, especially when all the indicators start to take into account more environmentally sensitive indicators (Murphy, 2012).

Agricultural information has been seen as a key parameter for agricultural development all over the world (IFPRI, 2011). However, absence of a functional agricultural information delivery system has been a major constraint to agricultural development in Nigeria (Okwu, Kuku and Aba, 2007). Stefano, Hendricks, Stillwell and Morris (2005) observe that “a major problem experienced by farmers is their low access to knowledge and information.” Therefore, farmers need to have access to agricultural information if their efforts are to yield good results (Motkojo and Kalusopa, 2010). Agricultural information can be augmented by relevant and useful information and knowledge which

are crucial for farmers, who need it both for their intellectual development (Hassan, Hayrol, Bahaman, Muhamad, Nor Sabila and Zaheir, 2012).

In their own view, Lwoga, Stilwell and Ngulube (2011) posit that only a small amount of agricultural information is accessible to rural farmers, despite the large body of knowledge that exists in research institutions, universities and libraries. The situation is largely attributed to weak linkages between researchers, extension libraries and farmers. As a result, technologies have neither reached nor been adopted by their intended beneficiaries to improve their farming activities in developing countries (Tire 2006). An improved information and knowledge flow to, from and within the agricultural sector is a key component in improving small-scale agricultural production and linking increased production to remunerative markets, thus leading to improved rural livelihoods and improving quality yields/food (Asaba, Musebe, Kimani, Day, Nkonu, Mukhebi and Wesonga, 2006).

Aina (1990; 1995) and Iriwieri (2007), categorise agricultural information as technical/scientific information, commercial information, social/cultural information and legal information. Technical information includes information on weather forecast, soil management, cropping systems, diseases and pest control, food processing technique, crop storage, livestock feed formulation and livestock drug administration. Social/cultural information includes the various pieces of information on cooperative association, social welfare/rehabilitation programme, personal education, and disaster relief, community self-help and risk management in agriculture.

Commercial/marketing information entails all information on current market prices, future market prices, market locations, budgeting methods, credit/loans sources, credit management, procedure for credit procurement, and so on. Legal information deals with all information on farmer's rights, land tenure, land dispute settlement landlord/tenant agreement procedure, land compensation procedure, government regulation or environment protection, export/import regulations, agricultural insurance, farming contract agreement and loan-collateral procedures.

In this study, agricultural information was measured in terms of the following: knowledge of improved practices to stakeholders, knowledge in the use of high-quality seeds and fertilizer, knowledge of properly irrigating land, developing strong institutions, linking producers to markets, and appropriately addressing diseases and conflict.

Generation and development of agricultural information without adequate knowledge on the part of the farmers could affect the utilization of such information. Wilson (2002) opines that knowledge can be considered as what we know and involves a mental process of comprehension, understanding and learning that goes on in the mind.

From the aforementioned, it can be deduced that knowledge leads to attitude, which can either be positive or negative and determines the utilization or otherwise of the knowledge received. Corroborating the above, Tiwana (2002) states that knowledge is considered to be information that is applied and results in action in the form of decision made.

It is universally known that the outcome of in-depth knowledge and utilization of agricultural information is improved farming techniques and productivity of farmers. Over the years, rural farmers have depended on indigenous or local knowledge and farming implements in their day-to-day activities on their farm. Such indigenous or local knowledge were gained through oral tradition and long-time farming practices used over many generations. However, in modern times, this indigenous or local knowledge is not sufficient to meet the pace of population growth in relation to food production.

Despite Nigeria's rich land mass of about 98 million hectares, out of which 83 million hectares are suitable for cultivation (Oyelade and Anwanane, 2013), there is widespread hunger and food insecurity (Adejare and Arimi, 2013). Some of the reasons adduced for this in the literature are: little access to financial resources by the producers and weak modern technologies and their organizational structures (Olagunju, 2013); lack of improved technologies or non-adoption of the technologies by farmers (Adekoya and Tologbonse, 2011); the wide gap between the level of production and that which farmers achieve, that is lack of technological innovation transfer (Oladele, 1999); as well as rudimentary farm systems, low capitalization, and low yield per hectare (Onekwusi and Okorie, 2008) It is important to note that Nigeria has been ranked in the bottom in the indices of countries with low use of agricultural input while having about 20%-50% of potential yield per hectare (IFPRI 2012) There is no doubt that the Nigerian agricultural sector, if well managed, is strategically positioned to have a high multiplier effect on the nation's quest for socio-economic and industrial transformation (Ehigiator, 2012) Therefore, farmers need to be informed and educated about improved agricultural practices to enable them to increase their productivity and income (Okwu, Kuku ,Aba

2007). Thus, increased productivity becomes the central focus of agricultural information. For this study, productivity is measured or determined by total land area (measured in hectares) in relation to total output (measured in tons)

$$\text{Agricultural productivity} = \frac{\text{Total output of crop (In tons)}}{\text{Total land area (per hectare)}}$$

Since the small-scale farmers are placed in a strategic position in the Nigerian agricultural sector, it becomes imperative to undertake an in-depth study to find out the amount of knowledge they possess on agricultural information and the extent of use of these pieces of agricultural information on their farming techniques and productivity. Therefore, this study was carried out to add to existing knowledge on agricultural information in relation to small-scale farmers and their productivity.

1.2 Statement of the problem

Despite the availability of about 83 million hectares of land suitable for cultivation and an agricultural sector dominated by small-scale farmers who own about five hectares of farm land or less, hunger and food insecurity still persist, as a result of low yield per hectare on the farms.

A serious communication gap has been observed between the key players in the agricultural sector, that is researchers, extension agents, government and the farmers, as they operate independent of one another. This gap in information and communication has led to poor awareness or unawareness by small-scale farmers of improved technologies and hybrid varieties coming from the agricultural research institutes, resulting in an encouraging productivity trend. At the same time, farmers are not consulted before innovations are made, leading to non-adoption or abandoned adoption of these innovations because they do not meet their immediate farm needs.

The extension agents who are expected to bridge the information gap between all the key players in agriculture are unable to function effectively as a result of poor mobilization and inadequacy of staff. Ideally, the ratio of extension agent to farmers is 1:750 but recent trends indicate that the ratio is 1: 2000-3000 and this varies from state to state. This makes it difficult for extension agents to communicate the needs of farmers to the appropriate quarters (Ekong 2005; Adebowale, Ogunbode, and Salawu, 2006).

Various efforts have been put in place by the Federal Government in terms of policies and incentives aimed at bridging the information and communication gap with a view to getting research findings closer to the farmers. The intension is to achieve high and quality yields on their farms, yet farm productivity is not on the increase.

This study, therefore, becomes important in the light of this gap on detailed data on small-scale farmers in relation to their knowledge, attitude and use of agricultural information and the impact of this on their productivity level.

1.3 Objectives of the study

The specific objectives of this study were to:

- i. identify the types of agricultural information that small-scale farmers are exposed to;
- ii. establish the attitudinal disposition of small-scale farmers in adopting agricultural information;
- iii. ascertain the extent of utilization of these pieces of agricultural information in increasing their productivity;
- iv. identify the types of capacity support initiatives received by the small-scale farmers in their farming practice;
- v. identify problems militating against small-scale farmers productivity;
- vi. determine the relative effect of knowledge, attitude and use of agricultural
- vii. determine the joint effect of knowledge, attitude and use of agricultural information on small-scale farmers' productivity;

1.4 Research Questions

This study was guided by the following questions;

- i. What are the types of agricultural information that small-scale farmers are exposed to?
- ii. What is the attitudinal disposition of small-scale farmers to adopting agricultural information?
- iii. To what extent are these pieces of agricultural information utilized by small-scale farmers?
- iv. What are the other capacity-support initiatives available for small-scale farmers?

- v. What are the problems militating against small-scale farmers productivity?

1.5 Hypotheses

The study tested the following hypotheses;

Ho1: There is no significant effect of each of knowledge, attitude and use of agricultural information on small-scale farmer's productivity.

Ho 2: There is no significant joint effect of knowledge, attitude and use of agricultural information on small-scale farmer's productivity.

1.6 Scope of the study

This study investigated the provision of agricultural information to rural farmers in the South Western Nigeria. It focused on the knowledge that farmers have of the available agricultural information, their attitude to these sets of information as well as the level of use in order to achieve increased productivity on their farms. The farmers studied were rural farmers that planted food crops, such as maize, yam and cassava, both literate and non-literate. The choice of the crops was based on the Annual Production Survey (APS) Report/Farm Output Survey (2012) released by the Federal Ministry of Agriculture and Rural Development (FMARD 2012) with indications that these crops are grown in the south-west in good quantity and quality.

1.7 Significance of the study

Since it is a widely accepted fact among Nigerian policy-makers and experts in the field of agriculture that the wealth of this country can be derived from agriculture, it is essential that the agricultural information providers know the psychology of rural farmers and what determines their adoption of agricultural information to increase their productivity.

This study is important for farmers because it is an avenue for them to state their knowledge level in terms of agricultural information available to them and their disposition towards these information in making a decision either to make use of this information to achieve increased productivity or not. The extension workers will be able to know the exact reasons why rural farmers do not adopt new technologies or innovations or why they abandon such technologies half way with a view to getting back to the researchers who are the originators of these innovations. The government, through

this work, will be informed of the areas where rural farmers need more assistance and how to help ameliorate their sufferings. The researchers themselves will benefit from this work as it will point out the specific areas where farmers need more innovation and, as such, researchers would not be rolling out innovations that the farmers would not perceive as being relevant to their needs. It will serve as databank for future researches in agriculture, and it will enrich the literature and build the courage and enthusiasm of small-scale farmers.

Each of the aforementioned sectors contributes in no small way to the improvement of agriculture. Therefore relevant information provided for each category of these user populations will enhance the development of agriculture in Nigeria.

1.8 Operational definitions of terms

- ❖ **Small-scale farmer:** This refers to a male/female farmer who owns or hires a parcel or parcels of farmland for cultivation either on part-time or full-time basis and who farms on two hectares of land or less.
- ❖ **Agricultural Information:** This refers to all pieces of information, ideas, and opinions on the three major crops selected for this study (maize, yam, and cassava) that ought to be possessed by small-scale farmers. Agricultural information is measured, in this study, in terms of the following: knowledge of improved practices to stakeholders, knowledge in the use of high-quality seeds and fertilizer, knowledge of properly irrigating land, developing strong institutions, linking producers to markets, and appropriately addressing diseases and conflict. In short, it is all the information that a farmer needs from his pre-planting, planting to post-planting operations.
- ❖ **Knowledge level of agricultural information:** This refers to the amount of information, opinions, ideas, and so on possessed by small-scale farmers on the three major crops selected for this study (maize, yam, and cassava).
- ❖ **Attitudinal disposition of small-scale farmers to agricultural information**
This is the totality of the mental disposition of small-scale farmers towards agricultural information available on the three major crops selected for this study. This was measured using a set of attitudinal statements with which farmers'

responses were ranked as either positive or negative in relation to agricultural information.

- ❖ **Agricultural information utilization:** This means the use of agricultural information by small-scale farmers by applying such information to farming operations with the hope of having increased productivity.
- ❖ **Selected crops for the study:** The selected crops for the study were: maize, yam, and cassava. The choice of these crops was informed by the fact that the consumption of these crops cuts across virtually every household and they top the chart on the Annual Production Survey Report of the Federal Ministry of Agriculture (2012).
- ❖ **Increased Productivity:** This was determined in terms of total farm output (measured in tons) being commensurate with total land area cultivated (measured in hectares).

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

This chapter presents a review of the literature and theoretical framework used for the study.

2.1 Concept of Agricultural Knowledge and Productivity

Knowledge can be referred to as organized or processed information or data and it is crucial in any innovation process (Azman D'Silva, Samah, Man and Shaffril, 2013). Increasing agricultural productivity is critical to meeting the expected rise in demand such, it is instructive to examine recent performance of modern agricultural techniques (Food and Agricultural Organisation, 2011).

In the opinion of Ajayi and Gunn (2009), knowledge and information are essential for people to respond successfully to opportunities and challenges of social, economic and technological changes, including those that help to improve agricultural productivity, food security and rural livelihood. Knowledge and information, in a broader sense, can enable farmers to improve their environment and agricultural activities while creating sustainable income and employment opportunities (Odiaka and Criscent, 2008). The Food and Agricultural Organization FAO,(2011) assert that, despite rapid yield growth in agricultural production all over the world, the realized yields are still well below their genetic potential. Deviations from potential yields appear to vary remarkably among countries and regions even after adjusting different soil, moisture and temperature environment. Other conditioning factors, such as different farm sizes, management capacities, access to markets and legislative/institutional factors are important in determining yield performance.

The low level of productivity in food crop production is a reflection of the low levels of productivity and efficiency in the agricultural sub-sector (Oladeebo and Masuku, 2013). The lack of access to basic agricultural knowledge and information by rural farmers could result from various constraints which have made the small-scale farmers stick to their traditional farming system and methods resulting in poor crop and livestock productivity. However, for any knowledge or information to be useful and meaningful to farmers (particularly small-scale farmers), such knowledge and information must be communicated effectively, with precision, through the right channel and at the appropriate time that will suit the right purpose (Opara, 2011).

2.1 .1 Concept of agricultural knowledge information system (AKIS)

The different actors in agricultural development who manage knowledge and information form the agricultural knowledge and information system (Salomon and Engel 1997). These actors include: researchers, extension agents, the media and the farmers themselves who make use of the bulk of agricultural knowledge and information. AKIS is a relatively new concept that addresses linkages of key actors in the agricultural sector (Rivera, Qamar and Mwandemere, 2005). By way of definition, AKIS is the set of organizations and persons and the links and interactions between the people that are engaged in or those who manage such processes as the anticipation, generation, transformation, transmission, storage, retrieval, integration, diffusion and utilization of agricultural knowledge and information, which potentially work synergistically to support decision-making, problem solving and innovation in agriculture or a domain thereof (Roling, 1992). Eicher (1999) describes AKIS as an agricultural knowledge triangle that depicts a two-way flow of information and knowledge between farmers and agricultural actors. This is a pointer to the fact that AKIS is a collaborative effort between all the key participants in agricultural development who all have a common goal, which is to ensure that quality agricultural information is disseminated among all, with the ultimate aim of achieving increase in agricultural productivity.

AKIS for rural development links people and institutions to promote mutual learning and generate, share and utilize agriculture-related technology knowledge and information. The system integrates farmers, agricultural educators, researchers and extensionists to harness knowledge and information from various sources for better farming and improved livelihoods (FAO, 2000, World Bank, 2000). It facilitates the interaction of the main agricultural actors (farmers, agricultural educators, researchers and extensionists), and has the potential to harness knowledge and information from various sources for better farming, improved agricultural growth and livelihoods (The World Bank 2004). In addition, an AKIS supports interrelated components in agricultural production, marketing and post-harvest handling (World Bank, 2004), AKIS also encompasses institutions, service providers and users involved in agricultural knowledge and information systems (Rivera, Qamar and Mwandemere, 2005).

Fisk, Hesterman and Thorburn (1998) aver that solutions to complex social problems emerge from community members, and AKIS helps to see wholes, recognize patterns, and interrelationships, and how to effectively structure them in order to enable learning.

AKIS helps researchers and extensionists to focus on actors within the AKIS who contribute more to agricultural innovation by looking beyond broad categories and focusing on other types of actors (Salomon and Engel, 1997). AKIS helps to address problems within the agricultural sector and integrates the efforts of the different segments by bringing together their intellectual capital in an holistic way (McDowell, 2004).

It takes into consideration the immediate environment, social, economic, technological and regulatory parameters of its users (Asopa and Beye, 1997 cited in Rees, Momanyi, Wekundah, Ndungu, Odondi, Oyure, Andima, Kamau, Ndubi, Musembi, Mwaura and Joidersma, 2000). Moussa (2006) asserts that priority should be given to the local value systems and economic perceptions of farmers. AKIS should be dynamic and responsive to farmers' information and knowledge needs, to attain success with the aim of promoting agriculture, food production and fighting hunger Karami (2006). There is the need to learn from and involve farmers, agriculturists, scientists and decision-makers generally (Diouf 1999).

2.1.2 The key actors in AKIS

A number of authors have emphasized the fact that different stakeholders including researchers, extensionists, educationist, non- governmental organizations and farmers, have varied/specified roles to play in an AKIS (Republic of Kenya, Ministry of Agriculture, 2006). Because these stakeholders have a unique knowledge base, it is important that they learn from each other. Each of these stakeholders have diverse educational, social and economic background. A sincere collaborative effort on their part makes the generation, dissemination and utilization of agricultural information a simplified task, which ensures a progressive growth in the agricultural sector. (Pretty and Voudouche, 1997).

Roling and Pretty (1997) have attached special attention to the role local people play in the scheme of things pointing out that they are continually learning, innovating and adapting their farming practices. Technology development processes should involve farmers. The actors also need to listen to one another. Educational institutions are not the only custodians of knowledge; knowledge results from the cooperation of the different actors learning from each other (Munyua, 2011). Knowledge cannot be measured by educational qualifications alone. The knowledge base of rural people is

essential, since it can be built upon to meet the current standards. This makes rural people have a feeling of being an active player in the scheme of things.

Bertolini (2004) and Rivera, Qamar and Mwandemere (2005) also include the non-governmental organizations, the media and the private sector as key actors in the AKIS. Similarly, Del Castello and Baraun (2006) identify informal leaders, community workers and businessmen and businesswomen as major actors in AKIS.

The government and the public sector have been identified as key actors in AKIS (Henne and Stoyke, 2007). Rees *et al.* (2000), in their study in Kenya, found that between 40% and 70% of their respondents considered government extension to be a key source of agricultural information. This is in line with the view of FAO (2000) and World Bank (2000) that the role of government has been refocused on policy, regulatory activities and services that only the government is in the best position to offer.

However, Rivera and Alex (2004) caution that, although a recent school of thought is looking down on the role of the public sector, there are certain agricultural extension and rural development (RD) functions that can only be handled efficiently and effectively by the public sector. An example cited is the collection and provision of information, which is an important aspect of policy formulation, good governance and market development. Only governments can create the conditions necessary for developing AKIS/RD (Rivera and Alex, 2004). While Spielman (2005) notes that government plays a major role in providing agricultural knowledge and information in the public sector, Rivera and Alex (2004) opine that the private sector actors can support the government by providing agricultural knowledge information to farmers in the private sector.

Extension is the bridge between virtually all the actors in agricultural development process. Extension according to Chepsaigutt (1997), is a two-way process involving adult learning, with the aim of changing attitudes and skills of farmers and extension workers. It is the tool for transferring improved technologies and agricultural information that enhance the productive capacity of farmers, and it has been the link for transferring best practices from one farmer to another (Nyakudya, Moyo and Chikuvire, 2007). It is a rural level of knowledge information system that informs and influences the decisions of rural households Alex, Zijp, and Byerlee (2002). Extension, therefore, has the role of facilitating learning, decision making and reflective action (Rivera and Sulaiman 2010).

Extension services in developing countries are considered to be weak, constrained, ineffective and under pressure (Chapman, Blench, Gordana and Zakariah, 2003; Madukwe, 2006; Swanson 2008). Links between extension and knowledge generation institutions and extension and research are weak public extension is not necessary the most efficient source of information (Anderson and Feder (2004). World Bank (2010) observes that extension services are faced with constraints, which include inadequate resources and manpower (engineers and agronomists), who lack the basic training for effective communication. These inefficiencies led to the emergence of public extension services as a suitable alternative. (Alex, Zijp and Byerlee, 2002); Rivera and Sulaiman (2010).

Agricultural researchers (research institutes, universities, NGOs, private companies and farmers) are saddled with the responsibility of developing technologies, finding new ways of improving agricultural production and the value of agricultural products. Research helps to solve specific scientific problems, and provides policy makers with methods and tools that help to formulate policies (Munyua, 2011). Similar to extension, research is more participatory now and new joint research efforts involving more actors and including farmers are becoming popular (Van Kerkhoff and Lebel, 2006). Hoffmann, Probst and Christinck (2007) however claim that it is important that researchers learn from the strategies that farmers use in dealing with complex situations, and broaden their epistemological base by understanding the importance of phenomena and the tacit knowledge of farmers.

Research alone cannot ensure agricultural development. Therefore, research and development efforts should be inclusive of farmers in order to 'release locked-up innovation,' thereby producing enough food which leads to eradication of hunger and ensuring food security (Lele, Nadeem, and Schmuland, 2010). While some degree of success has been recorded in research and development there is still a high demand for appropriate and timely agricultural technologies for small –scale farmers (World Bank 2007). To this end, Rees *et al* (2000) note that information flow to farmers from research and extension is inadequate. A major challenge is insufficient funding for research. Therefore, the Global Conference on Agricultural Research for Development (GCARD) 2010, Global Authors Team report, Lele *et al.* (2010), in their recommendations stated that governments of all developing countries should set apart 1.0% of 1.5% of their agricultural GDP for supporting national agricultural research.

The private sector firms, NGOs, foundations and agro-industries have been acknowledged by Berdegué and Escobar (2001) as important actors in the AKIS. Other players in the agricultural sector that are gradually gaining more level of importance, according to Spielman (2005), are multinationals, national agribusiness firms, small and medium enterprises, as well as agro-industrial processing, marketing and distribution industries. Some of these actors have been directly involved in the delivery of agricultural knowledge and information, while others have played different roles in advocacy and policy formulation. Similarly, the private sector has linked farmers to agricultural production, agro processing and marketing (Rivera, Qamar and Mwandemere, 2005).

Information and knowledge, which were formerly seen as public goods in the past are now considered private goods enjoying legal backing. (patents, copyright) and most of these information service providers are in the private sector (Rivera, Qamar and Mwandemere, 2005). The private sector is playing an increasingly important role in different sectors, such as food and agricultural processing, and could influence the success of an AKIS and the livelihoods of small- scale farmers. (Munyua, 2011). There is increased growth of private sector participation in the AKIS of developing countries (Berdegué and Escobar (2002). Therefore, the private sector is indispensable for poverty reduction (Garforth, Phillips and Bhatia- Kanthaki, 2007).

However, Laurent, Cerf and Labarthe (2006) observe that private extension services have not been able to fully meet the knowledge and information needs of farmers. In addition to information on production, farmers need information and knowledge on the environment and social aspects, which private extension service providers have ignored.

Non-governmental organisations have been playing a major role in inputs provision and provision of advisory services to farmers (Petersen, 1997). Also, inclusive is farmers empowerment and this has led to joint efforts aimed at problem analysis, information sharing and joint decision-making (Alex Zijp and Byerlee, 2002) Similarly, NGOs Community Based Organisations (CBOs), and faith-based organizations have complemented efforts of the government. Juma (2005). This they have done by studying the culture of the farmers, gaining their trust and uptake of new technologies (Duke and Long, 2007).

2.1.3 Local and external information and knowledge in an AKIS

The indigenous knowledge system of farmers stands for an intelligent, enduring and sustainable form of agriculture practice and has supported communities over time. Local knowledge is usually unwritten; hence, it is orally transmitted through the human senses of touch, sight and smell. It is considered a common heritage which draws together the social, political, spiritual, metaphysical and cultural elements (Saway, 2004). Tella (2007) defines indigenous knowledge as a systematic body of knowledge acquired by local people through accumulation of experience, informal experiment and understanding of the environment of a given culture. Horsthiuke (2008) opines that indigenous knowledge is the total knowledge and skills that are acquired by people in a given area which enables them to get the best of their environment. It refers to the unique, traditional local knowledge existing within and developed around the specific conditions indigenous to a particular geographic area. It includes a system of self-management that governs resource use (Appiah-Opoku, 1999). Duffer (2003) refers to indigenous knowledge as the basic component of communities knowledge and it represents the successful ways in which people have coped with their environment in the past.

In Nigeria about 70 % of the population lives in the rural areas and their knowledge and culture constitute their social and livelihood systems are closely attuned to the natural ecosystem. The development of indigenous knowledge systems, covering all aspects of the natural environment has been a matter of survival to the people who generated these systems (Tella, 2007). It is the basis for agriculture, food preparation, healthcare, education and training, environmental conservation and a host of other activities (Odoemelam and Ajuka, 2015). Local knowledge or indigenous knowledge is the knowledge belonging to a specific community or group that the people have developed over time and still continue to develop (Grohuk, 2005). It is based on experience, often tested over time, and adapted to local culture. The bases for natural resources management are seen in communities developed without direct inputs from the modern formal or scientific establishment. Local knowledge provides ideas and guidance on necessary agricultural changes (Garforth, Khatiwada and Campbell, 2003), while it is also being used by local communities who are gradually being involved in their own development and in decision-making (Emery2000).

External/global knowledge, in the opinion of Warren, Sikkerveer and Brokensha (1995), is knowledge generated through research and education institution network. It could be described as that knowledge which originated from industrialised or developed countries. Saway (2004) argues that the link between local and external knowledge is ‘common sense.’ That what is termed external knowledge cannot possibly disassociate itself from the structure and framework of local knowledge.

Over the years, there has been varied interests globally aimed at ensuring the integration of traditional and scientific knowledge systems. Technical solutions of past years have not given the expected results of improved livelihoods for the majority of small-scale farmers and peasants, and gradually, there is a shift towards local knowledge (Agrawal, 2004). Farmer’s knowledge is really useful in identifying research issues especially areas of research priority setting and the generation of technology (Mundy and Compton 1995). Communities have learnt how to grow food, maintain their environment and survive under conditions of hardship over the years, and their local knowledge has helped researchers to learn and understand what is termed the ‘farmer science’ (Ismail and Fakir, 2004). Farmers have developed unique local agricultural innovations and discoveries on breeding, grafting, pest management, water harvesting and processing (Nwokeabia, 2006). The International Institute of Rural Reconstruction (IIRR 1996) places more emphasis on the need for integration of farmers ‘local’ knowledge and external information systems in order to improve agricultural production and livelihoods

The inclusion of local knowledge improves linkages among actors that is researchers, government, farmers and extension agents, and improves sustainability. The integration of local and external knowledge has been observed as that which takes cognizance of the farmers expert knowledge and external knowledge (Onduru, Muchena, Gachimbi and Maina 2002; Rangi, Asaba, Munyua and Kimani 2002).

Other studies have also shown that cross-cultural approaches aimed at showcasing the two perspectives that is the Western /science world view and the local/community world view, prove that there are changes in the social power relationships so that knowledge flow from two cultures that are of equal importance (Mairura, Mugendi, Mwanje, Ramisch, Mbugua and Chianu. 2008; Mihale, Deng, Selemani, Mugisha-Kimatenesi, Kidukuli and Ogendo, 2009). Adedipe, Okuneye and Ayinde (2004) observe that, in

Nigeria, the use of local knowledge reduces the effects of the negative impact on the environment.

Other authors have shown that combining local and external knowledge led to increased yields (Adedipe, Okuneye and Ayinde, 2004). It has added value to local knowledge (Lwoga and Ngulube, 2008). It has helped to promote acceptability and sustainability of both knowledge systems (Breidlid 2009). It has also reduced production costs (Mihale et al, 2009). In the view of Tengo and Belfrage (2004), farmers and other rural communities rely on a hybrid or dual knowledge to ensure their daily existence by continually developing and innovating to ensure their survival under any circumstances.

2.1.4 Agricultural information

Information is generally acknowledged as a vital resource (Rosenberg 2001). It opens up opportunities and helps shape rural people's lives. (Ballantyne, 2005). If people have access to information relevant to their needs, they would be able to tackle problems well, adopt new ideas and introduce social change. Information brings people out of intellectual darkness. It exposes them to ideas, thoughts and reasoning that they were previously unaware of (Mchombu and Cadbury, 2006). Low (2000) defines information as a means of transferring events for better awareness to add new meaning that could change events, lives or experiences. Information is a term that has gained popularity with the widespread use of computer networks. This has accounted for the appellation 'Information Society,' where it is believed that performance of human activities depends on information availability, access and utilisation. Stanley, as cited in Odunewu and Omagbemi (2008), posits that information is one of the basic human needs after air, water, food and shelter.

This makes information very crucial for everyday living of people around the world enabling people to relate with one another (Soyemi, 2014). The concept of information in general, and of agricultural information, in particular, as a resource for development is very important in the contemporary world. The ability to easily access and share information and stimulate the creation of new ideas is viewed as essential to maintaining a nation's economy and enhancing the quality of life of every citizen in all nations of the world (Ogbonna and Agwu, 2013). Information is important for human existence. Hence, from time immemorial, man has required information for day-to-day activities, which include learning, business, communication and satisfaction of curiosity.

Information is a means of transferring events for better awareness to add new meaning that could change events, lives or experiences; this could have considerable implications for farmers, farm produce, implementation of farm tools and the extension services. (Sokoya, Alabi and Fagbola, 2014). Information needs can be diverse in nature but are many times linked with individual's work activities. Therefore, agricultural information needs of farm women is closely connected with their farming activities. This cuts across information on production, post-planting, marketing and sales as well as policy-oriented information. Information needs assessments give programme designers the ability to develop interventions that target users with specific information needs. Nonetheless, it is insufficient to limit development effort to just understanding farmers' information needs; researchers need to explore women-farmers' searching behaviour as this will further enhance the development of better intervention programmes (Soyemi, 2014).

In agriculture, productivity is greatly determined by the amount of information available to its stakeholders. In the opinion of Tadesse (2008), agricultural information includes agricultural messages through extension services embodied in agricultural technologies and shared among all the actors in the agricultural extension system. Also, knowledge is a range of information gained from interaction and information combined with experience, and it is organized and interpreted by the human mind for the purpose of taking decisions and actions. Drawing on this definition, the researcher conceptualized agricultural information as information passed on to farmers through extension services primarily to help improve economic yield from farm produce and by extension the farmers' living condition (Soyemi, 2014).

Good information flow and information sharing are essential among all agricultural stakeholders in order to achieve better professional update and improved produce. This is achievable with the combined effort of researchers, policymakers, and farmers themselves who should be well informed at all cost in order to enhance better agricultural produce, marketing and food storage with the ultimate aim of ensuring food security. In the agricultural sector, however, farmers need various forms of information about their agricultural activities, including land clearing, fertilizer application, harvesting, storage, marketing, and pest management. In short, they need information for pre-planting operations, actual planting, and post-planting operations. The totality of all information relating to the field of agriculture is referred to as agricultural information.

Aina (1990) defines agricultural information as ‘all published or unpublished knowledge on all aspects of agriculture.’ This definition points out a basic fact, that agricultural information appears in two broad categories that is published and unpublished formats. Journals, newspapers, pamphlets/leaflets are some of the published format of agricultural information, while unpublished sources would comprise oral, theses/dissertations, conference papers, and so on. Oral agricultural information is non- written or documented information which is usually transmitted via the radio, television and face-to-face contact with either extension agents or other farmers and all other actors in agricultural development. Meyer (2000) notes that, where there exists lack of knowledge on modern agricultural practices among some small-scale farmers, it becomes necessary to train and ‘push’ information to farmers because they may not be aware of such new practices. Agricultural information, therefore, is an indispensable instrument needed for the improvement of agricultural production. Agricultural production itself requires the use of technology whose understanding requires some basic information. Information is, thus the vehicle through which agricultural technology is transferred (Opara, 2010).

Farmers whether literate or non-literate, from time to time, are confronted with the challenge of taking one decision or another in relation to their farming activities. Some of these challenges, according to Matovelo, Msuya and De Smet (2006), is the desire by farmers to have information on different agricultural innovations in order to improve their farming practices.

Aina (1986), cited by Banmeke (2003), and Iriwieri (2007) classify agricultural information into four, namely: technical/scientific information; commercial information; social/cultural information, and legal information.

Technical/Scientific Information: This type of information emanates from the various research and developmental works carried out in the various research institutions, universities of agriculture and other universities offering agriculture as a course of study. This type of information is useful for researchers, extension officers, agro-based industries staff and the farmers themselves. The aim of this type of information is increased agricultural production. Information on soil management, pest control, food processing, and so on are classified under technical/scientific information.

Commercial information: Although rural farmers produce at subsistence level, there are still some left overtaken to the market, though small in quantity. These serve as a little source of income. Farmers need this type of information in order to maximize

profit. Commercial information includes information on current market prices, future market prices, market locations, credit and co-operatives, and so on.

Social/Cultural Information: This entails traditional information on agricultural practices, local cultures of the various farming communities, background information on farming communities and availability of labour.

Legal information: Under this category, legislations that affect agriculture are given. This include information on land tenure, farmer's rights, landlord/tenant agreement, environment protection, import/export regulations and so on.

User awareness, adaptation and adoption of improved technology affect yield. (Koskei, and Oyugi, 2013) Access to information is a potential avenue for improving yield among the small-holder tea farmers (Kinyili, 2003). Production and productivity of farm produce is largely dependent on the awareness and the use of appropriate technologies (Tea Research Foundation of Kenya, 2011). Farmer's access to information makes them aware of improved technologies and enhances the adoption of innovations. Access to information influences the adoption of technologies (Daberkow and McBride, 2003). Agricultural innovation diffusion is largely affected by information available on the innovation. (Sudath, 2008) Utilization of relevant, accurate and up-to-date information would, therefore, guarantee increased productivity (Banmeke and Ajayi, 2008).

2.1.5 Agricultural information generation

The success in any farming enterprise is largely determined by the amount of information provided and used by the farmers. In Nigeria, agricultural information comes from agriculture research institutes, Universities of agriculture, government legislation, service institutions, agro-based industries and agriculture departments in conventional universities. Agricultural information is generally generated through research. There are many agricultural research institutes and universities of agriculture, faculties of agriculture in conventional universities. Where a research is conducted on a regular basis (Aina, 1995). All the user groups of agricultural information are capable of generating agricultural information in varying degrees and capacities. However, researchers, policy-makers, extension officers and agro-based industries and services staff are primarily responsible for generating agricultural information. The findings of these various studies are reported in journals, annual reports, books, monographs, technical reports and so on. Hard research-based sources, such as reports from research institutes, learned journals,

students' theses and dissertations, as well as books, monographs and conference proceedings constitute sources from which policymakers and others could extract science and technological information (Djenchuraev, 2004). These findings are sometimes presented at conferences, seminars and workshops. These findings form the bulk of the technical/scientific information.

The government through its legislations generates agricultural information especially social, commercial and legal information. Sometimes, the government in its desire for improved agricultural development, commissions feasibility studies into certain areas of agriculture and rural development. The reports of these studies are usually published in government gazettes. Other generators of agricultural information such as agro-based industries and service institution, and banks provide the literature on agro-chemicals, such as fertilizers, pesticides, loans and bank credits on agriculture.

All this information generated gets to the end-users through the extension agents, in the agricultural development programmes, librarians, or salesmen of the agro-based industries who often repackage this information in forms understandable and useable for the end-users. However, Ozowa (1997) and Conroy (2003), while agreeing with the fact that the amount of agricultural information generated by research institutes and faculties of agriculture are enormous, note that the problem lies with ineffective dissemination of information. Research institutes must ensure that the target user groups (farmers) get the information while it should be sensitive to receiving feedback as an indication that communication was successful or otherwise. The feedback exposes areas requiring modification or further enquiries. Farmers consult a wide range of information sources in order to thrive in their business. Generally, these information sources are classified into two: traditional and modern information sources. Examples of the traditional information sources used by farmers are farmer's personal experience, family members and neighbour farmers. On the other hand, the modern information sources include the public extension services, agricultural faculties, farmers' union and associations, input dealers, the mass media and the Internet (Demiryurok, 2000).

2.1.6 Agricultural information users

Agricultural information user group or community as defined by Kaniki (1995) is said to consist of all persons whose nature of work involves some part or the whole of the field of agriculture or its product, and, as a result of this, require agricultural information to

accomplish their work. By this definition, any individual or group of people whose work is related in any form with agricultural activities directly or indirectly is categorized as an agricultural information user. It is imperative to note, however, that for farmers to utilize information, such farmers must be information-literate, considering the fact that a good number of small-scale farmers are poorly educated. Farmers' information literacy is seen as the farmers ability to critically think and determine the extent of his information need and also be able to access available information effectively and efficiently while also evaluating such information in order to accomplish specific purposes in their farming activities (Sokoya, et al, 2014). To be information literate, the person must be able to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information (American Library Association 1995 cited in Sokoya, *et al*, 2014).

An information literate individual is expected to perform certain activities, which include the following, as established by Ali (2012) :

- determine the extent of information needed,
- access the information needed effectively and efficiently,
- evaluate information and its sources critically,
- incorporate selected information into one's knowledge base , and
- understand the economic, legal and social issues surrounding the use of information, access and use information ethically and legally (Association of College and Research Library 2000)

As a result of the fact that agriculture is interdisciplinary in nature and that a large percentage of small-scale farmers reside in rural areas, a lot of people tend to utilize agricultural information Kaniki (1995) and Aina (1995) categorize some of the agricultural information users as – policymakers and planners, researchers, extension workers, educators and students, agricultural librarians and information specialists, farmers and agro-based industries and service staff. In his work on the state of agricultural information services in South Africa, Van-Niekerk (1995) highlights the groups of agricultural information users as propounded by Rusell (1983) and Craig (1979). This categorization shows that a lot of people make use of agricultural information: therefore, it should be properly generated, effectively disseminated, adequately repackaged and appropriately utilized in order to enhance increase in agricultural productivity.

Table 1: Groups of agricultural Information users

Groups identified by Rusell (1983)	Groups identified by Craig (1979)
Policy makers and Administrators	Administrators
Research Scientists	Research workers
Diagnostic and analytical workers	Industrial scientists and technologists
Specialist advisers	Specialist advisers
General advisers	General advisers
Educationists and students	Teachers at universities and college students
Agricultural Service Organisations	Merchants/Salesmen
Farmers and Rural People	Not included in Craig's study)
(Not included in Rusell's study)	Journalists

Source: Aina, L. (1995) Information and agriculture in Africa in Aina Kaniki and Ojiambo (eds) Agricultural Information in Africa. Third world information services Ltd .Ibadan

Information users differ and so their information needs also differ. This variation in information need could be linked to some other variables, which include: age, economic status, geographical location, educational status, awareness and availability of information providers and access to information providers. These variables, to a large extent, determine the type of agricultural information that the prospective information user would seek and how well he makes use of such agricultural information (Kaniki, 1995).

2.2 Farmers' attitude to agricultural information

Attitude is the degree of positive or negative effect associated with psychological objects. (Ayoade, 2012). Attitude reflects a person's tendency to feel, think or behave in a positive or negative manner towards the object of the attitude. Attitude is generally defined as 'a predisposition to classify sets of objects or events to react to them with some degree of evaluative consistency' (Ayansina, 2011). Attitude has also been defined as 'the more or less permanent feelings, thoughts and predispositions a person has about certain aspects of his environment' (Van den Ban and Hawkins, 1996). It is an evaluative disposition towards some object or subject which has consequences for how a person will act vis-à-vis the attitude object. Attitudes can be held about the physical world, hypothetical constructs and about other people. (BOMEL, 2004). They are also

defined as a disposition to respond favourably or unfavourably to an object, person, institution or event. An attitude is directed towards an object, or person, institution, or event; has evaluative, positive or negative, element; is based on cognitive beliefs towards the attitude-object (that is balancing between positive and negative attributes of an object leads to an attitude and has consequence for behaviour when confronted with the attitude object (Bergevoet, Ondersteijn, Saatkamp, Woerkum and Huirne, 2004).

Simply put, attitude refers to a person's evaluation of any psychological object. These evaluation judgements are represented as items of knowledge, which are based on three general classes of information: cognitive information, emotional information and information about past behaviours (Allen, Machleit, Kleine and Notani, 2003). Attitude reflects personal factors and it is a predisposition to act in a certain way. It is the state of readiness that influences a person to act in a given manner (Rahaman, Mikuni, and Rahaman, 1999). Therefore, attitude surveys in agriculture could lead to a more adequate explanation and prediction of farmers' economic behaviour and have been used on conservation and environmentally related issues focusing on the influence of attitude variables as predictors of conservation behaviour (Dimara and Skuras, 1999). Dimara and Skuras (1999) found a significant relationship was found between behaviour and the goals and intentions of farmers. This relationship is even stronger when statements on attitudes, social norms and perceived behavioural control are included (Bergevoet et al., 2004).

Investigators have taken four different positions concerning causal relationships between attitudes and behaviours: attitudes cause behaviours; behaviours cause attitudes; attitudes and behaviour have mutual causal impact; and attitudes and behaviours are slightly, if at all, related (Bentler and Speckart, 1981). Attitude has instrumental functions in which it is regarded as a means to an end. It functions to facilitate the achievement of goals, retrospectively on the basis of past pleasant experiences or in prospective anticipation of future reward. It also has the Noetic function whereby it functions as a way of thinking and understanding. The expressive function is a means for emotional release, while ego defensive functions as symptoms of psychiatric disturbance. Certain factors serve as determinants of attitude. These are hereditary factors, bodily states, such as when one is under the influence of drugs; direct experiences. Farmers attitudes are more likely to correspond with their behaviour if they have experimented with an innovation

themselves or have collected information about it from sources considered reliable rather than mere learning about it on radio; and communication, the major determinant of most of the individuals' attitude is communication from other people.

In the context of small-scale farmers, it has become imperative to understand the way they perceive and respond to information at their disposal, especially that which is geared towards a change in behaviour. Gorton, Dovarin, Davidova and Latruffe (2008) observed that policy makers have recognized that the way in which farmers adjust to agricultural policy depends partially on the farmers group attitude and mindsets. Similarly, Meena, Kumar, Singh and Meena (2008) posit that the attitude of farmers can be more favourable if they are equipped with the knowledge on diversification, proper selection of appropriate technologies and financial assistance to gain more returns with minimum risks. Studies have also shown that rural dwellers are very knowledgeable about their immediate environment (Asiabaka 2010; Aja, Chikaire and Ejiogu-Okereke, 2012), and that education enhances people's ability to think logically and make informed decisions (Ekong, 2003; Asiabaka 2010).

2.3 Farmers' utilization of agricultural information

Provision of agricultural information is not an assurance that it would be used by rural farmers. In order to achieve effective utilization of information in the agricultural sector, such information must be of relevance, time appropriate and accurate, up to date and presented effectively in order to meet the yearnings of the beneficiaries (Olaniyi and Adewale, 2013). A major task in agricultural development is the transfer of improved technologies to farmers. Although extension institutions and various sources of information exist in almost every developing country, the coverage of farm families is still very limited (Fawole, 2006). A link between farm families and research information is very important.

Trends in Nigeria's agricultural development show that the mass media have tremendous potential for agricultural information dissemination (Yahaya, 2002). Akande (1999) is of the opinion that a host of socio-economic and psychological factors influence the rate at which agricultural information is utilized. Series of studies have been conducted to determine some of the variables that influence agricultural information utilization by farmers (for example: Onu, 1991; Auta, Ariyo and Akpoko, 1992; Akande, 1999). The findings of most of these studies show that personal and socio-economic characteristics

of rural farmers have a positive influence on utilization of agricultural information at their disposal. An individual's perception of information sources and the inherent attributes of an innovation, in conjunction with available resources, determines the utilization or otherwise of such information (Uche, Kurt, and Wolfrang 2009).

Farmers consult a wide range of information sources in order to thrive in their business. Generally, these information sources are classified into two: traditional and modern information sources. Examples of the traditional information sources used by farmers are farmer's personal experience, family members and neighbour farmers. The modern information sources include the public extension services, agricultural faculties, farmers' unions and associations, input dealers, the mass media and the Internet (Demiryurok, 2000). The utilization of available information by farmers has also received attention in the literature because it justifies, among other factors, efforts by research and related organizations to improve farmers' activities and output.

Several studies have shown the potency of information dissemination approaches such as face-to-face, the mass media, and posters, to reach farmers of varying personalities because they are easily accessible to them. However, it is doubtful if these farmers effectively utilize any information received, as performance in the agricultural sector is still low (Fawole, 2006). Only about 5% of Nigerian dailies' news is agricultural, and this may not sufficiently complement the dissemination of information from other sources (Olowu, 1990).

In his study on adoption of improved soil conservation technology by small-scale farmers in Imo State, Nigeria Onu (1991) discovered that the farmers' utilization of agricultural information was influenced by their personal and socio-economic characteristics, such as education level, attitudes and social participation; while interest in information sources, availability of information sources and their frequency of use were predictors of information source used and factors that influenced their use of information on improved soil conservation. Osuji (1983), Atala (1984), Chikwendu, Ubi and Onyibe (1996) discovered that age and years of farmers' schooling had an influence on their level of agricultural information utilization.

These findings could have prompted Atala (1984) to state that optimum economic and political conditions for development may not lead to development if the socio-economic factors of the individual farmers do not permit acceptance of new ideas, practices and

products. Similarly, Wilson (1997) observes that characteristics of information sources and personal variables of the target users may constitute barriers to information utilization. In the same vein, Opara (2010) found that personal and socio-economic variables (age, gender, income, educational qualification, marital status, years of farming experience, farm size, part-time or full-time farming, tenancy status, preferred media, social participation, and reliance on indigenous agricultural knowledge) of farmers together to be effective in determining farmers' utilization of agricultural information.

2.4 Improved farming technologies/innovations

Improved farming technologies/innovations is a departure from the old or traditional way of farming which has not yielded the much expected result. An innovation is an idea, practice or product that is perceived as new by a potential user or adopter of improved seed varieties agrochemicals and fertilizers (Adekoya and Tologbonse, 2011). Du Plessis (2007) states that innovation is the creation of new knowledge and ideas to facilitate new business outcomes aimed at improving internal processes and structures and to create market-driven products and services. In agriculture, they could be said to be a set of products or practices which are new and are targeted at ensuring an increase in farm production with the utmost aim of reducing hunger, poverty and ultimately achieving food security.

Technology, as observed by Swanson (1997), is the application of knowledge for practical purposes, which is generally used to improve the conditions of both human and natural environments as well as to carry out some other socio-economic activities. In short it is a complex blend of material, processes and knowledge for the benefit of the end users, in this case, rural farmers. Onduru, Muchena, Gachimbi and Maina (2002) state that the technology development transfer and learning is necessary and depends on the intelligence, creativity, and competence of researchers, extensionists, farmers and other actors. The development of agricultural technologies requires, among other inputs, a timely and systematic transmission of useful and relevant agricultural information through relatively well-educated technology- dissemination from formal technology generation system via various communication media to the intended audience – farmers (Oladele, 1999).

There are two types of technology/innovation these are material technology and knowledge-based technology. Material technology is said to be the type of knowledge that is made into a technological product, such as tools, equipment, agrochemicals, improved plant varieties, animal vaccines and improved animal breed. It is simply called the 'hardware' component. By implication, they are technologies that can be seen and felt by the potential users. Knowledge-based technology is also known as 'software' component it is the technical knowledge and management skills, such as planting dates, and all other information that would help a farmer to increase his production. This type of information cannot be seen, felt or touched by the potential users but it requires mental understanding for their application in order to achieve the required result. (Adekoya and Tologbonse, 2011).

Although material and knowledge-based technologies are independent of each other in application they complement each other. If a farmer makes use of a sprayer, which is a material technology, he adjusts, cleans and calibrates the sprayer, by so doing, he has made use of knowledge-based technology. Material technology has been described as simpler and straightforward unlike transfer of knowledge based technology which requires some level of training of technical knowledge to rural farmers who are mostly poorly educated. In all, to get the best result from a particular technology, farmers, for whom the innovation is being made, should play an important role in the development of the right kind of software (Van den Ban and Hawkins 1997, Swanson, 1997). It is believed that, if farmers are involved in the pre-development stage of any innovation, it becomes 'their' innovation and adoption becomes easy.

With exposure to and acquisition of information, reactions are generated in line with the specific information one has been exposed to. It is a complex process that involves a sequence of thoughts and actions leading to a reaction either for or against the newly received information. This is termed the innovation decision process. Adoption therefore, is regarded as a decision to make full use of an innovation or a technology as the best course of action available (Rogers, 1995).

2.4.1 Adoption of new technology

Low agricultural productivity in developing countries has been attributed to lack of appropriate machineries that meet the technological requirements of small-scale farms. This has led to poor crop output experienced by small-scale farmers. For farmers of

different agricultural zones to adopt a new agricultural technology, there must be awareness of such technology, valid and up-to-date information on the technology, the applicability of the technology to their farming system, and the technical assistance necessary to adopt the technology (Asiabaka, Morse and Kenyon, 2001).

The complex process involved in adoption is referred to as adoption process. Rogers (1983) and Williams, Fenley and Williams (1984) define this as a mental process which an individual passes through from the first time he hears of the new idea and the time he finally decides to accept it. An innovation or idea may be rejected at any point in the adoption process or even after adoption. Such discontinuance with a previously adopted technology is referred to as rejected or abandoned adoption (Rogers 1983).

2.4.2 Stages in the adoption process

A farmer's decision to adopt a recommended agricultural technology/practice is said to occur over a period of time rather than being instantaneous. Small-scale farmers who are mostly poorly educated, but intelligent in their own right, usually weigh the options before them. This action includes an inquiry into the profitability, compatibility and accessibility to technical innovation that is brought to them. Small-scale farmers might not adopt an innovation if they are not convinced that it would be of greater benefit if compared to their traditional practice. The adoption process is basically a decision-making process which involves five stages which an individual goes through in adopting a technology. The stages are as, explained by FAO (1992); Van den Ban and Hawkins (1997).

- i. **Awareness stage** is that stage at which the farmer learns of the existence of the innovation for the first time. At this stage, the details are not clear to the farmer but, depending on his needs, he might want to find out more about the innovation.
- ii. **Interest stage** is the point when the farmer develops a liking for the innovation and he seeks further useful information about the innovation, and from here, he begins to ask questions about the workings, benefits and costs of such an innovation.
- iii. **Evaluation stage** is where the farmer weighs the advantages and disadvantages of making use of the innovation. He begins to make a mental evaluation of the innovation with regard to his tradition, family goals, labour, interest and other

resources. The evaluation stage terminates at the point when the farmer makes a decision either to reject or accept the innovation.

- iv. **Trial stage** is the outcome of the mental evaluation where the farmer decides to make use of the innovation on a small-scale to determine the relevance and usefulness of the innovation. Here is where he answers the questions on his mind at the evaluation stage.
- v. **Adoption stage** is the final stage when the farmer applies the innovation on a large scale in preference to the old methods. This innovation then becomes a part of his customary way of farming till a better innovation comes along or a problem arises due to some other reasons which may make him to discontinue its use.

2.4.3 Factors affecting the adoption process

There are certain characteristics of an innovation that the prospective adopter considers which strengthen his decision to adopt. These have been categorized by Rogers (1983), William, Fenley and Williams (1984), Oakeley and Garforth (1992) and Ekpere and Durant (1994) into two – innovation specific and adopter specific.

- (a) **Innovation specific:** These are peculiar characteristics of the innovation itself. They are:
 - i. *Relative Advantage:* This is the extent to which a farmer perceives a new idea as being better than that which he currently uses. This is measured in terms of its profitability, immediacy of reward, time saving and low cost. What matters here is the perceived advantage that the adopter feels over his old method. Relative advantage can be influenced by giving incentives to the farmers.
 - ii. *Compatibility:* This is the degree of consistency of an innovation over existing values, beliefs, and needs of potential adopter and past experience. Change sometimes becomes complicated instead of compatible because the farmer and his environment have to undergo changes.

- iii. *Cost*: The cost of an innovation determines its rate of adoption. An innovation that is costly will be slowly adopted, especially if the adopter weighs what he is likely to invest and gain in using the innovation.
 - iv. *Complexity*: This is the degree to which an innovation is assumed to be relatively difficult to utilize and understand. Simple ideas/innovations are likely to be adopted more readily than complex ones.
 - v. *Visibility/Observability*: This is the extent to which the results of an innovation are visible and could be discussed with other farmers. It is the practical evidence of the efficacy of an innovation.
 - vi. *Divisibility*: This is the degree to which an innovation can be experimented with in small units. If an innovation is divisible, it usually involves less risk and encourages adoption.
- (b) **Adopter Specific**: These are the characteristics of the users that influence the adoption process, namely ;
- i. *Farm size*: The larger a farm is, the earlier and easier the possibility of adoption of an innovation is. This is because larger farms already have corresponding management capacities to understand and utilize innovations.
 - ii. *Personal characteristics*: The features of interest here are age, gender, literacy level, cosmopolitaness and so on.
 - iii. *Sociological characteristics*: The higher an individual's social status and prestige in the community, the greater his participation in social activities, the more also is his interaction with other adopters.
 - iv. *Cultural features*: Practices which are compatible with existing ideas and beliefs are more likely to be easily adopted.

2.4.4 Non adoption of technologies

Lack of improved technologies (where there is none to use) or non-adoption (there are innovations but they are not adopted) of the technologies by farmers has been given as the major reason for low productivity of small-scale farmers (Adekoya and Tolongbonse,

2011). However, Rolings and Pretty (1997) have opined that a major reason for non-adoption of technologies is because they have been finalized before farmers get to see them. This is because technologies that do not fit into the needs and wants of farmers are usually rejected. Often, technologies are not tailor-made to the immediate needs of small-scale farmers because they are usually made by researchers who do not consult with small-scale farmers in order to determine their specific needs. Ashby (1990) notes that the inappropriateness of the available technology is responsible for non-adoption. A deep understanding of the farmers goal and decision making process and criteria for adoption helps solve the right problems and value innovations correctly. Institutional inefficiencies in the development and delivery of relevant information and assistance from national extension systems are often the major reasons why farmers do not adopt farming innovations. (Asiabaka and Owens, 2002). Integration of local information and assistance from extension can facilitate the adoption process, but unless there is information and assistance from external sources, little change can be expected in farmers' adoption behaviour (Njoku, 1990).

2.5 Small-scale farmers and productivity

Small-scale farmers have been described as sedentary producers, agro-pastoralists or pastoralists whose livelihood depends on a combination of commercial and subsistence production with the family providing the majority of labour and the farm providing a major source of income (Davis, 2006). Small-scale farmers constitute an important and invaluable component of Nigeria's economy, as over 80% of total food production comes from farms which individually look insignificant but collectively form an important component on which the economy rests. (Adejare and Arimi, 2013). Kristen and van Zyl (1998), while defining small-scale farming in south Africa believed that the concept is usually value-laden and creates wrong impressions, hence, is often viewed in a negative light. Small scale was equated with a backward, non-productive, non-commercial, subsistence agricultural sector that is found in parts of the former homeland areas. It is generally associated with blacks who do not have what it takes to become large-scale or commercial farmers.

Some agricultural economists have accepted this definition but with scepticism. They postulated however that small-scale farmer should also be defined in terms of agricultural activity in whatever form. Thus, the sector is made up of those farmers

whose main goal is to produce food for their families on a daily basis and surplus, when available, is only considered for sale in order to supplement their income and diversify their diet. The World Bank (2003) describes them as farmers with a low asset base, who operate less than two hectares of cropland. This is in agreement with the findings of Adesoji, Olanrewaju and Kolawole (2014) who found that a majority of their respondents operated farms below 2 hectares of land and could not effectively utilize their farms as a result of lack of funds.

Small-scale farmers make up the majority of the rural poor in developing countries (Narayan and Gulati 2002). A great percentage of food production in Nigeria is carried out by small -farmers who rely more on manual labour than other forms of labour-saving equipment resulting in low productivity (Olaleye, 2008). Kristen and Van Zyl (1998) asserts that the department of agriculture should view a small-scale farmer as one whose scale of operation is too small to attract the provision of the services he/she needs to be able to significantly increase his/her productivity. It is these farmers that need government assistance and who should be empowered to form part of a new and vibrant agricultural sector.

In Nigeria, the problem with small-scale agriculture dwells on the use of traditional techniques which are associated with low productivity, the extension services which are not properly funded and lack of farmers' access to agricultural inputs owing to lack of credit (Onubuogu, 2014). Another factor affecting small-scale farmers is the massive rural-urban migration which has drastically reduced family labour, which is the backbone of small-scale farmers. This has left the aged in the rural areas to farm and the consequences are low productivity, high cost of production and severe drop in standard of living (Akande, Adesiji and Akinpelu, 2006). One of the main causes of the low agricultural productivity in most developing countries in the Africa (Nigeria inclusive), is the lack of appropriate machineries that cater for the requirements of small-scale farm. Owing to this, many small farms are deemed unproductive and inefficient (Faleye, Adebija and Farounbi, 2012). The importance of small-scale farmers in feeding the world cannot be overlooked. In the opinion of the ETC Group (2009), peasant /small-scale farmers feed at least 70% of the world's population. In Africa, the market value of staple food is estimated to be around 50 billion US Dollars yearly (COMESA, 2007) with an additional 12.5 billion US Dollars produced and consumed outside the commercial markets. This comes almost entirely from farms that are less than two

hectares in size (Wiggins, 2009). Small-scale farmers are knowledgeable about their preferences; therefore, their ideas and views should to be incorporated into research. Farmers play an important role in agricultural innovation dissemination because ‘they see knowledge in practice’ and they have new knowledge that they can share orally through unique farmers social network (Hoffmann, Probst and Christinck,, 2007). Farmers’ social networks facilitate learning, information sharing and knowledge (Morris, 2007).

Pike (2008), claims that the manner in which individuals influence each other is complex and diverse and culture tied. Munyua (2007) avers that the respondents of a study on ICTs and small-scale agriculture in Africa mentioned poor access to external information and knowledge, inadequate application of local knowledge and information, poor access to markets, market intelligence and inadequate opportunities, and lack of appropriately packaged local content as the main barriers to accessing agricultural information.

As important as these small scale farmers are, a number of challenges still stand in their way. UNDP (2005) identifies low productivity, while Franzel, Denning, Iilleso and Mercado (2004) identifies low adoption of modern farming and sustainable agricultural practices, and inappropriate technologies for local farming systems.

Small-scale farmers are scattered and inadequately represented and most times are prone to being uninformed and misinformed (Baker, Bentley, Charveriat, Duque, Lefroy and Munyua, 2001) observed that Adoption is usually low when farmers are not familiar with the improved technologies or practices, and when the costs of these technologies are too expensive for small-scale farmers to afford. (Franzel *et al* 2004). However, Matovelo, Msuya and De Smet (2006) note that although some farmers have access to agricultural information, implementing the ideas got from the information accessed in terms of training poses a great challenge.

There are a number of socio-economic features that define a small-scale farmer. In terms of demography Feynes and Meyer (2003) described small-scale farmers as the aged (both male and female), able-bodied women and children. Members of the farming households that get formal education are rarely found in their homelands participating in full-time farming. Rather, they prefer to seek jobs in other sectors of the economy.

Landholding amongst small-scale farmers is usually very small. A majority of small scale farmers operate less than two hectares of farmland and could not effectively utilize their farmland as a result of lack of funds (Adesoji, Olanrewaju and Kolawole, 2004). There are an estimated 450 million small-scale farmers throughout the world and these are farms of two hectares of land or less. (IFAD, 2008). Frazer *et al.* (2003), while analysing the landholding situation in Eastern Cape Province observed that some small-scale farmers have access to arable land but, as a result of lack of adequate resources with which to work on the land, tend to cultivate only a small portion in an attempt to provide some amount of food supplementation. In short, the reality is that those small-scale farmers in possession of land only have access to small portion which they also rarely cultivate owing to unavailability of the means with which to work. (Tshuma, 2014).

Another feature that distinguishes small scale farmers is their skills and training. The small scale farmers currently have limited access to training owing to various factors, which include their location, lack of education and training opportunities. Training is offered in some of the areas where small-scale farmers are found but, unfortunately, it is usually focused on scaled-down versions of high-cost, high-risk commercial production practices. The implication of these is that the training is not appropriate for the food insecure households that need the training the most (Fanadzo, 2012). It should be noted that the little training available is done in agricultural institutions which are located in urban areas far away from the rural dwellers. The result of these is that small-scale farmers do not have access to training.

Much has been said about the role that small-scale farmers can play in the economies of developing nations. Some of the proponents of this sector have advocated the training on necessary farming skills in order to ensure sustainability as the starting point in supporting these small-scale farmers. Some of the roles small-scale farmers can play in the development of an economy are; poverty alleviation, employment and distribution of social capital.

In support of the notion that small scale farmers can help drive poverty away from rural communities, Feder (1985) posits that the sector helps to reduce food prices because they can be found in the remotest areas in the nation where poverty is most evident. The ability of the sector to exist anywhere and produce more for less makes food crops

available and at a low and affordable prices. Another notable point about the role played by the small-scale farmers is the pattern of food movement from rural to urban areas. According to De Haan (2000) and Mishra and Agrawal (2012), most people tend to migrate to the urban areas in search of greener pastures and they leave most of their family members in the rural areas to continue farming. As a result of the high cost of living in the urban areas, most migrants depend on the cheap agricultural produce sent by relatives in the rural areas. This situation is popular in most African countries. This pattern is reported by Kurwijila and Henriksen (2010) in Tanzania, who note that the rapid expansion in urban centres stimulated by the rural-urban drift of young people has posed a great strain on socio-economic services and food supply that must be provided to meet the demand of the urban populations. Thus, this urban sector depends on food supplies produced in rural areas.

It has been established that small-scale farmers have what it takes to create employment in the deepest corners of any developing nation when compared to commercial farms. Van Zyl *et al.* (1996) claim that, while commercial farmers make use of machineries in production, small-scale farmers make use of manual labour which is labour-intensive. The small-scale farms have less wealth and access to capital, which makes them to rely more on an input mix that relies more on labour than capital, thereby generating more employment than their commercial counterparts.

As a result of the fact that small-scale farmers produce the bulk of what they consume, they do not have to spend much of their income on food, unlike their urban counterparts who purchase virtually everything that they eat. When surplus food is sold out by small-scale farmers, it helps them to earn some income which makes them better off compared to when not farming at all. Having small-scale farmers in large numbers also encourages healthy competition among producers. Although it might not favour the small-scale farmers as the existence of competitors selling the same product permits a decrease in prices of agricultural produce in response to production increase. Dorosh and Haggblade (2003) opine that not only the rural dwellers benefit from agricultural growth, the urban poor too benefit from it, as falling food prices raise their real income as well. Therefore, Tshuma (2014) submits that agriculture does not only enhance real income through lowering food prices, but also improves nominal income too.

Through forward and backward linkages, the growth of small-scale farms allows the growth of business activities. In other words, such growth generates economic growth through production and consumption of linkages. Haggblade, Peter and Brown (1989). Similarly, Van Zyl *et al.* (1996) acknowledge the possibility of reasonable increase in demand for production input from other sectors resulting from gains in output caused by investments in any given sector of the economy. The result of such changes has been termed backward linkage. Backward linkages also exist if farming households use the income they obtain from selling their produce to purchase more farming inputs (investments) or even spend it on other non-agricultural products, such as cars (Estudillo and Otsuka, 1999). By so doing, they are supporting the manufacturing sector through agricultural income.

2.5.1 Challenges of small-scale farmers

There is a growing body of evidence that small-scale farmers in developing countries, Nigeria inclusive, could be as effective as their large-scale counterparts provided they are given a level playing ground. However, small-scale farmers are faced with a variety of challenges which is posing a great threat to their business. Some of these challenges are discussed in this section.

Lack of basic education; Owing to the fact that most small-scale farmers are not literate, changing their attitudes especially in terms of adoption of new technologies, becomes a great challenge. Onuoha (2006) argues that only small-scale farmers with at least some basic education tend to be more active in adopting new ideas. As the world changes, together with the advancement of new technologies, climate and farming approaches, most non-educated farmers prefer to opt for their tried and tested though outdated methods instead of newly advanced technologies or methods of farming (Taher, 2006; Karanja and Nubi, 2008).

Poor access to quality agricultural information; Agricultural information dissemination to small-scale farmers is not at optimal level and the dissemination of such information to small-scale farmers is an essential part of agricultural development. Unfortunately, Nigerian farmers are usually in the dark and seldom feel the impact of agricultural innovation (Yussuf, 2014). The reason adduced for this is neither because they are lazy nor that they lack ideas, but rather, it is either because such useful information is not easily accessible or it is poorly disseminated. Also, Sibale (2010), Key

and Runsten (1999) attribute the lack of vital information to the scattered and unorganised nature of small-scale agriculture and lack of communication tools in most developing countries. These factors are known to leave most farmers ignorant of potential markets and having to rely on extension workers where they exist; where not, it is by words of mouth which, in most cases, the information is either distorted or inaccurate.

Lack of credit/loan facilities: In his bid to achieve increase in his level of farm productivity, the small-scale farmer is faced with the challenge of raising capital to purchase modern agricultural input which will boost his productivity. They, at times, go into debt by borrowing at extremely high interest rates if the crop fails, they have no means of paying back the debt. Failure to have access to financial capital often leads to less production, as farmers cannot afford to purchase inputs for production purposes. Without enough capital, it is almost impossible for small-scale farmers to take advantage of favourable market conditions, such as increased demand. Banks and other financial institutions, including some private individuals who dominate the sector charge exorbitant interest rates, further throwing the poor farmers into greater poverty. If farmers' cooperatives are adequately supported and farmers get the needed capital for agricultural investments, they would be saved from the current financial exploitations.

Inadequate access to markets: This is another major problem small-scale farmers encounter. As a result of the general lack of storage and processing facilities, small-scale farmers usually are compelled to distribute and market their produce in the local markets with little or no opportunity to make good profit for their labour. At these local markets, farmers are exploited as a result of their helpless state. The high transaction cost experienced by farmers is as a result of the fact that they transport their produce individually, thereby losing their bargaining power. Consequently, they rely on the farm gate sales strategy, whereby crops are harvested only when an interested buyer comes to the farm to buy and collect them. Small-scale farmers rarely have access to better urban markets, as they lack adequate knowledge about their existence.

Rural-urban migration: The prolonged and continued urban-biased development process has further encouraged the rural-urban drift in which the younger generation is abandoning the rural areas in search of non existing white collar jobs. Development indicators show that rural areas lag behind urban areas in many ways. Visible are low

income, high infant mortality, short life expectancy, widespread illiteracy, poor sanitation services, lack of potable water, and high prevalence of malnutrition.

Poor agricultural extension service delivery: No meaningful information delivery can be achieved without an effective agricultural extension service. When improved technologies are available, they often fail to reach the small-scale farmers who are in need of this information. The ideal extension agent to farm family ratio is 1:250 (Benor and Baxter, 1984, Ozowa, 1995) However, recent statistics from agricultural development programmes in 27 states in Nigeria revealed that Gombe State has the highest extension agent to farm family ratio of 1:826 and Niger, Lagos and Ebonyi states have a ratio of 1:500 or less (Oladipupo, Egbenayabuwa and Sede, 2014).

Infrastructural constraints are another major challenge farmers' face. Physical infrastructure, in the view of Machethe (2004), consists of communication links, electricity, storage facilities, transportation and good road network. All the different forms of physical infrastructure are vital for the success of small-scale farming, just as they are to all the other sectors of the economy. If these infrastructures are not available or are in a bad state, they force the transaction cost faced by farmers to rise (Jari,2009).

2.5.2 Information needs of small-scale farmers

Information need is mostly linked to individual's work activities. Therefore, the farmers' information needs revolve around their farming activities. Information needs of farmers can be classified according to, agricultural cycle' (Mittal, Gandhi, and Tripathi, 2010) or the 'agricultural value chain.' (Ali and Kumar, 2011). But irrespective of the categories, they are seen as phases of decision-making that farmers are required to face during cropping season. Although studies on farmers' information needs have taken various patterns, such as gender, farmer group (for example youth) and development area, like men's, women farmers' information needs revolve around the resolution of problems, such as income generation, best farming practices, methods of fertilizer application, agricultural inputs, market prices, transportation, food processing and preservation and new agricultural technologies (Okwu and Umoru, 2009; Zaid and Popoola, 2010; Saleh and Lasisi, 2011).

The need for information arises when the current knowledge of an individual is not sufficient to solve the problematic situation he/she finds himself. Such individual will

require information that is specific to the problem at hand. In the opinion of Case (2002), information-seeking does not always indicate the need to solve a problem or make a decision because, at times, it could be as a result of one's desire to have more information at one's disposal or an assurance or wish to reduce uncertainty.

Farmers need information because, like land, labour and capital, information is one of the factors of production (Leckie, 1996). One of the key ingredients that help farmers to yield good output is information. (Tologbonse, Fasola and Obadiah, 2008). Alex, Zijp, Byelee, and the AKISteam (2002) argue that the field of agriculture which is gradually becoming commercialized and modernized, would affect the nature of farmer's information need. Stefano (2004) states that any information and knowledge provided to small-scale farmers should be based on their current needs. Likewise, Nutin (2012) posit that small-scale farmers constitute a particular group of users whose information needs are very specific. It becomes imperative that specific information targeted at specific groups are made available to ensure that the needs and aspirations of the target group are met. Unfortunately there is a dearth of such information.

Nutin (2012), in his study on the information needs of rural farmers in India, found that farmers require information on market and government schemes, such as subsidies, import and export, credit facilities and transport. Tologbonse, Fasola and Obadiah (2008), in their study on information needs of rice farmers in Niger State Nigeria found that a majority of the farmers need information on crop production. The farmers asserted that as crop farmers, their interest lay in information for increased productivity.

Ozowa (1995) groups information needs of farmers into five:

- Agricultural inputs
- Extension education
- Agricultural technologies
- Agricultural credit
- Marketing

2.6 Agricultural production policies in Nigeria

In Nigeria, agriculture employs about two-thirds of the total labour force of the nation and provides a livelihood for the bulk of the rural population, as nearly three-quarters of the poor live in the rural areas. (Adepoju and Sulaiman, 2013). Nigeria is

the world's largest producer of yam, cassava and cowpea, yet it is a food-deficit nation, which depends on imports of grains, livestock products and fish (IFAD, 2012).

There is an estimated 71 million hectares of cultivable land of which about half is currently in use. The pressure from the increasing population is having an impact on the limited resources, thereby threatening food production in the country (IFAD, 2012). Agriculture in Nigeria faces a lot of challenges as a good number of the farmers still depend on subsistence agriculture for their livelihood as a result of which they are unable to meet their basic food needs (Babatunde, Olorunsanya and Adejola, 2008). This is in line with the UNESCO (2003) rating of Nigeria as one of the dependent nations and a food deficit country. Similarly, the FAO corporate document repository of (2004) indicated a slow growth rate in crop production in Nigeria. Since the past few decades, Nigeria's agricultural sector has experienced steady decline in productivity.

However, in recent times, some indices have shown that the sector has started witnessing a gradual but slow growth (Oladipo, 2013). This growth was necessitated by population growth, changing climate and technology needs (Henri-Ukoha, Chikezie, Osuji and Ukoha, 2012). These technologies are innovations, such as ICT facilities, mechanized farming equipment, improved and high-yielding varieties, and integrated pest management control, post-harvest technologies, and efficiency in land use, among others. The efficiency of technology generated and disseminated depends on effective communication, which is the key process in information dissemination (Oladele, 1999). Hence, the communication of technology and economic information in the face of global food crisis is a veritable tool for agriculture and rural development. (Ezeh, 2013).

Various governments and administrations have adopted series of agricultural development interventions aimed at increasing agricultural productivity and ensuring food security.

National Accelerated Food Production Programme (NAFPP)

The national accelerated food production programme was initiated in 1974 under the General Yakubu Gowon administration. It focused on bringing about significant

increase in the production of maize, cassava, rice and wheat in the country within a short period. Under this programme, research institutes were mandated to develop improved crop varieties and they were made popular through extension agents and the media. The major lapses observed in the programme were: (i.) Farmers financed the last phase of the project and this discouraged them from further participation: (ii.) There was abrupt and sudden withdrawal of government support from the programme due to the take off of operation feed the nation.

The programme, which had the focus of assisting the supply of agricultural inputs and education of farmers could not achieve its objectives owing to poor planning and un-timeliness in the provision of extension services to farmers. (Okunneye, 1992, cited in Andohol, 2012).

Operation Feed the Nation (OFN)

This was introduced by the Obasanjo military regime in 1976, with the focus of increasing food production on the premise that availability of cheap food would ensure a higher nutrition level which would lead to national growth and development (Central Bank of Nigeria). The programme encouraged Nigerians to farm through subsidized production input, bank credit and low prices. The setbacks faced by the programme included; the fact that people began to farm on any available land irrespective of its suitability for farming. Also, there was abundance of food in the market and less demand for food because many people produced part or whole of what they consumed.

Green Revolution

This programme was initiated during the Sheu Shagari administration in 1980. The major thrust of the programme was increase in food production and raw materials so as to ensure food security and self sufficiency. To facilitate this, the government provided agrochemicals, improved seeds/seedlings, irrigation system, machineries, credit, market and pricing policy. The lapses observed in the programme were: delay in the execution of the projects, and poor monitoring and evaluation of projects for which huge sums of money were voted. The failure of this project was due to the Ad- hoc nature of planning and principally bad governance. (Shimanda, 1999).

Directorate of Food Roads, and Rural Infrastructure (DFRRI)

In 1986, the Gen. Ibrahim Badamosi Babangida regime introduced the DFRRI, with the aim of improving quality of life and standard of living of the rural dwellers through the

use of resources that exist in the rural areas; and ensuring mass participation of the rural people. Embezzlement and mismanagement of fund were some problems associated with the programme. The implementation of this rural development plan was more of rural roads rehabilitation than food production especially when the marketing boards, which used to exclusively trade export agricultural goods was abolished preparatory to the Structural Adjustment Programme regime This saw the substantial cut down of subsidies and the abolishment of price control (Andohol, 2012).

Fadama Project

The national FADAMA project established in the 1990s was aimed at providing simple low-cost irrigation technology under World Bank finance. The objectives of the study were to increase the income of FADAMA users sustainably through expansion of farm and non-farm activities with high value of added input. Twelve states were covered in the first and second phases of the scheme and the success recorded encouraged the introduction of the third phase. The problem associated with the project is unskilled handling of water application through irrigation which can degrade and deplete the soil (Afolayan, 1997).

National Special Programme on Food Security (NSPFS)

The broad objective of the project, launched in 2002, was to increase food production and eliminate rural poverty. Specifically, its aim is to assist farmers in increasing their output, productivity and income, strengthening the effectiveness of research and extension and utilization of resources. The setbacks observed include; inability of beneficiaries to repay some of the loans obtained, insufficient knowledge of credit use, poor extension agent farmer contact, lack of modern farming facilities and high cost of farming input.

Root and Tuber Expansion Programme (RTEP)

This programme, launched in 2003 during the Obasanjo regime, covers 26 states and it is designed to address the problem of food production and rural poverty. Its aim is to achieve food security and stimulate demand for cheaper staple food, such as cassava, *garri*, yam, potatoes against more expensive carbohydrate foods such as rice. The RTEP also targets introduction of improved root and tuber varieties to about 350,000 farmers in order to increase productivity and income.

Furthermore, the Federal Government, in 2012, introduced the Growth Enhancement Support Scheme (GES), which was designed to deliver government subsidised farm inputs directly to farmers via GSM phones. According to report by *The Punch* (2012), the GES scheme will be powered by eWallet, an electronic distribution channel which provides an efficient and transparent system for the purchase and distribution of agricultural inputs based on a voucher system. The scheme guarantees registered farmers eWallet vouchers with which they can redeem fertilizers, seeds and other agricultural inputs from agro-dealers at half the cost, the other half being borne by the federal government and state government in equal proportions.

As part of the GES Scheme, the Federal Ministry of Agriculture led, by the then Minister, Akinwumi Adesina, announced that the ministry would equip 10 million farmers in the rural areas with mobile phones. According to him, the project would link farmers directly to government and vice versa so that government would be able to monitor the progress of farmers as well as disseminate valuable information to them (*The Punch*, 2012). Apart from facilitating the acquisition and absorption of information/knowledge networking, codification, teleworking and science system, ICT could be used to access global knowledge and communication with other people (Ezeh, 2013).

2.6.1 Constraint to agricultural production in Nigeria

The principal constraint to the growth of the agricultural sector is the fact that the structure and method of production have remained the same since independence, more than four decades ago. Similarly, the Food and Agriculture Organization, cited by Muhammad-Lawal and Atte (2006), has rated the production of Nigerian farmland as low to medium but it can move from medium to high productivity if properly managed. The following are some of the constraints to agricultural productivity in Nigeria, as stated by the IFPRI (2011):

The fertilizer utilization of small scale agriculture is estimated to average 8 kg/ha per annum, compared to 100–200 kg/ha used in developed agricultural economies (IFDC, 2006). Improved crop varieties exist, but realization of yield potential requires a boost in the level of fertilizer use. Similar to other developing countries operating small scale agriculture, low fertilizer use is a serious constraint to agricultural productivity growth in Nigeria, where fertilizer use currently averages 10–15 kg/ha (IFDC, 2006). To ensure

improvement in fertilizer use and crop productivity in Nigeria, there must be effective demand for fertilizers and local production of fertilizers must be created (IFRRI, 2009).

Women have lower access to purchased inputs and natural resources in Nigeria and, to that extent, the aggregate input usage and, indeed, agricultural productivity is affected (IFPRI 2009). Poverty is as a result of low access to agricultural technologies, worsened by poor rural infrastructure that prevents easy flow of input and outflow of farm produce (Africa Development Bank-AFDB, 2002). Poverty, in the opinion of Ogunlela and Ogungile (2006), can lead to food insecurity, low productivity and farmers inability to afford yield enhancing inputs.

Women have relatively limited rights to farmland in spite of having a significant role in agricultural production in many parts of Nigeria. Women have less access to extension services and credit. These constraints, together with lower access to farmlands limit their agricultural productivity (IFPRI, 2009).

Access to agricultural credit has been positively linked to agricultural productivity in several studies. Yet this vital input has eluded smallholder farmers in Nigeria (IFPRI, 2009). The problem small-scale farmers face with regard to agricultural credit in Nigeria is source, availability and use (Olagunju, 2013). However, Oboh (2008) observes that the usefulness of any agricultural credit does not depend only on its availability, accessibility and affordability, but also on proper and efficient allocation as well as its utilization for the purpose it is intended for. Philip and Adetimirin (2001), in their study on the sources of farm credit among rural farmers in the south west, found that cooperatives, friends and family members top the list. However, the total amount of farm credit available from these sources is very limited in relation to the amounts that formal sources, like banks, would have offered (IFPRI, 2009).

The commercial banks were said to be generally difficult to access, issues of collateral and high interest rates seem to discourage most of the rural smallholder beneficiaries. When a smallholder farmer is required to show capital-intensive collateral to qualify for loan, he or she is automatically screened out in favour of well-off farmers.(Freeman et al.,1998) Another problem observed by (IFPRI 2009) is that agricultural loans are often short-term with fixed repayment period, which may not suit annual cropping, especially when the money is not released in line with the growing cycles of crops.

The Federal Government of Nigeria has been the major financier of agricultural research in Nigeria. Funding, however, has become somewhat unstable since the early 1980s (IFPRI, 2009). When research is poorly funded, agricultural technologies cannot be improved, and there will be no downstream farm income increase, rural employment generation, reduction in food prices, establishment of agro-based industries, and economic growth. In short, absence of new technologies in agriculture will slow the growth of agricultural productivity and the reduction of rural poverty (IFPRI, 2009).

Total public Research & Development spending has been unstable since independence. Total public agricultural Research & Development spending declined from about \$130 million in the mid-1970s to less than half this amount by the mid-1990s. However, the situation is believed to have improved since 2000 because of an increase in the salary structure and some improvement in the nominal contribution of government to agricultural research (Beintema and Ayoola, 2004).

In Nigeria, agriculture has been bedevilled by low level of agricultural information exchange (Chadwick, 2003). The implication of this is that current research findings do not get to the end users (farmers) as and when due (Orikpe and Orikpe, 2013). Agricultural transformation and increased productivity are determined, to a large extent, by the effectiveness of agricultural services (Aphunu and Ajayi, 2013). During much of the implementation period of the World Bank-assisted Agricultural Development Programmes (ADPs) in Nigeria, Training & Visit was the prevalent agricultural extension system. This is as a result of good funding of the ADP system, including staff incentives (such as timely salaries, and provision and maintenance of project vehicles). Contact between farmers and extension agents was satisfactory. The main concern during the ADP implementation period was that there were insufficient technologies to take to farmers (IFPRI, 2009).

The agricultural extension staff are inadequate in number and quality. Ekong (2005) posits that the ratio of a full-time extension agent to farming households ideally should not be more than 1:750. However, as at year 2000, the ratio stood at 1: 2,500. Adebowale, Ogunbodede and Salawu (2006) observe that In Edo State, the ratio stood at 1:2,100, in Ogun State, 1: 2131, in Oyo State, 1:16917 and in Lagos State, 1:1496. The agricultural extension services in Nigeria also suffer from inadequate facilities and input supply. The fieldworkers lack transport facilities. They are not equipped with audiovisual

aids, neither are they supplied with needed technologies that they are supposed to promote among the farmers (NARP, 1995).

The agricultural extension staff is poorly paid. Unattractive and untimely paid wages are bound to affect performance. The frequency of visits to the fields by the zonal extension agents (ZEAs) and the block extension agents (BEAs) have been known to be seriously affected by poor wage incentives and poor mobility (IFPRI, 2009).

Land degradation, particularly due to soil fertility depletion and soil erosion, is a serious constraint to agricultural productivity in much of Nigeria. According to the Global Assessment of Soil Degradation (GLASOD), more than one-fourth of the agricultural land in Nigeria is degraded, and most of that portion is very severely degraded, meaning it has suffered major and irreversible losses in productivity (IFPRI 2009).

Several options for improved management of soil fertility have emerged from on-station research and on individual farms. These include application of organic and inorganic fertilizers, land management practices, such as erosion control, and alley farming. Careful application of combinations of these options are key to the maintenance of soil fertility and reversal of land degradation.

In situations where technology is affordable, poor knowledge may lead to overuse of agrochemicals, such as fertilizers, which may precipitate environmental problems. But of immediate concern today in Nigeria is under-usage of fertilizers as a result of high costs. Fertilizer application rates have decreased in Africa at 1.1 percent per annum since the 1990s (Africa Fertilizer Summit, 2006).

Land is relatively abundant in Nigeria, but there are limitations to gaining access to land for productive use (IFPRI, 2009). The key factor is the land tenure system prevailing in different parts of the country. The land tenure system is the body of laws, contracts, and arrangements by which people gain access to land for agriculture and other use (Onyebinama, 2004). A few significant factors have promoted individual land ownership, especially in southern Nigeria. Increase in population pressure has raised land values and has created incentives to sell portions of lands. Demand for land for non-agricultural uses (especially industrial and residential developments) has also been a factor, and some landowners have disposed of urban and peri-urban lands for fear that

government might take over these parcels under the Land Use Act provisions (Onyebinama, 2004).

Limited or poor-quality roads and rail transportation prevents farmers timely access to inputs, increase costs of inputs, and decrease access to output markets. Investment in infrastructure contributes to agricultural productivity growth (Shane, Roe and Gopinath 1998). Agricultural marketing efficiency in Nigeria is dismally low (IFPRI, 2009). This can be attributed to the poor state of rural infrastructure. First, transportation costs are high. In addition, road conditions are poor, which limits access to purchased inputs, credit, and output markets as well as reducing the transmission of key market signals. Increased access to output markets would likely generate demand for conventional inputs. Manyong, Ikpi, Olayemi, Yusuf, Omomona, Okoruwa and Idachaba (2005) summarize the factors constraining agricultural performance in Nigeria as follows:

Technical Constraints: These includes high incidence of pests and diseases, inadequate infrastructure, dependence on unimproved inputs, crude implements and technologies, inadequate extension services, inefficient inputs supply and distribution system and high environmental hazards.

Resource Constraints: These are basically as a result of the rural-urban drift by the able-bodied youths in search of white-collar jobs to the detriment of agriculture. Also, there is the problem of low agricultural labour productivity and an increasing population pressure on land as well as a sharp decline in land quality.

Socio-economic Constraints: These are evident in scarcity and high cost of inputs, lack of grades and standards, faulty land tenure system, inadequate extension services and credit facilities, high dependence on food imports and largely traditional agricultural production system.

Organizational Constraints: Lack of organization, in addition to the dispersed nature of farm settlements, prevents farmers from participating in agricultural and rural development as a result of the fact that agricultural production in Nigeria is in the hands of a multitude of small-scale, unorganized farms scattered across the country.

2.7 The extension agent as an agent of change

Agricultural extension service was established in order to impart knowledge, teaching skills and change attitudes of people towards acceptance of innovations. Hence, farmers have to be assisted to develop a frame of mind and attitude conducive to acceptance of

new technology (Ewuola, Ogunsumi and Augustu, 2010). Agricultural extension is an educational endeavour, which seeks to help a particular set of people (farmers) to identify and solve their problems by themselves. It is created to fill the cultural gap between farmers and extension workers. Extension education can be defined as the out-of-school process of bringing desirable changes in the knowledge, skill and attitudes of adult and youth in order to help themselves in their day-to-day problems (Adeagbo, 1998 and Ewuola, 2002).

The main purpose of agricultural extension activities is to communicate relevant and useful information to the end users in order to persuade them to adopt that which will eventually lead to increase in agricultural production. To achieve this, extension workers and their trainers should be knowledgeable and skilful in communication (Okunade and Oladosu, 2006). Agricultural extension department is the most important public service with the widest range of responsibilities for agricultural and rural development.

Adedoyin (1990) and Agbamu (2000) assert that agricultural research and, particularly, extension organizations are established to promote agricultural development as effective linkage between extension and research and help them to achieve their goal.

The goal of agricultural extension in Nigeria is to facilitate farmers acceptance, while the ultimate goal of agricultural extension is to improve standard of living through the transfer of improved farming practices to the rural people (Bzugu and Guary, 2004). Agricultural extension services carry out these goals by using various strategies to encourage farmers to adopt agricultural innovations (Adeyanju and Akinwumi 2015). Over the years, agricultural extension has been at the forefront in the delivery of adequate information to farmers for increased productivity. According to Agbamu (2007), agricultural extension service delivery all over the world has been concerned with communicating research findings and improved agricultural practices to farmers. The efficiency with which these information and practices are conveyed to farmers, to a large extent, would determine the level of agricultural productivity (Ezeh, 2013).

The conduct of agricultural extension work in Nigeria shows that one of the primary responsibilities is to help farmers make efficient use of available resources to meet the nation's food needs. Agricultural extension services in Nigeria promote the determination of technical choice for specific agricultural population and area by making use of farm diagnosis, articulated needs of the rural farmers and identified target domains and

arousing their interest in their problems. In this regard, agricultural extension provides a vehicle of technology transfer by initiating the development, transfer and diffusion process of innovation (Abalu, 1998).

Extension service can be described as a service of information, knowledge and skill development to enhance adoption of improved agricultural technologies and facilitation of linkages with other institutional support services (input supply, output marketing and credit). Therefore, the role of extension service has been changed from technology transferring service to information and knowledge brokering and facilitator role. This implies that farmers have a wide range of information sources available to them and, if properly utilised, it is possible to have an improved farming or agricultural practice such that farmers' business or enterprise increases and, in turn, development or improved socio-economic status of such farmers (Soyemi, 2014).

The whole agricultural extension process is hinged on the extension agent who is the driving force in all extension activities. Agricultural extension, in the opinion of Wahab, Issa, Arab Ladan and Baidu (2011), by its nature, has an important role in promoting the adoption of new technologies and innovations. Therefore, the inability of an extension agent to exhibit positive response to a particular situation and function effectively will nullify the whole essence of the extension process. This is probably the reason Suleiman and Davis (2012) argue that agricultural extension has expanded beyond just agriculture, as it has exhibited a set of principles and approaches that transcend mere enhancement of farmer's productivity alone. It will not be out of place, therefore, to say that the effectiveness of the extension agent can, to a large extent, influence the success or failure of an extension programme.

Basic expectations from the extension agent include; to assist farmers in identifying their production problems, and creating awareness for the opportunities in farm yield so as to enhance increased income and improve their standard of living (Agbamu, 2011). As a change agent, the extension workers intervene in the life of the rural farmers in order to bring about change that would help improve their lives and those of their families. It is only through education and communication that extension agents are able to bring about the desired/required changes in farmers' knowledge, attitude and skills which help to put the farmers in the right frame of mind that is conducive to adoption of agricultural innovations. (Agbamu, 2011).

An extension agent must do all within his ability to build mutual trust between the rural farmers and himself. The extension agent can achieve this by doing the following: (i) demonstrating competence in the needed practices or skills, (ii) conducting successful result demonstrations, (iii) showing genuine interest in the farmer and his family, (iv) doing what he promises and promising only what he can do, and (v) having a social philosophy of extension which establishes a healthy relationship between the extension worker and the people (Adereti and Ajayi, 2011).

However, a good number of agricultural technologies developed for the use of the small-scale farmers are gathering dust on the shelves, yet to be adopted by small-scale/rural farmers. The reasons adduced for this by Sinkaiye (2011) is that specific needs of farmers are not addressed by the generated technologies. Another reasons for the poor adoption rate is that extension personnel and research scientists are not able to identify the specific technology needs of farmers as a result of inappropriate methods in the technology development process. Similarly, farmers are not deeply involved at all levels of extension planning programme consequently research results are often 'pushed' by extensionists to farmers instead of 'promoting' the technologies. Sinkaiye (2011) avers that there is need for new orientation that would expose those responsible for extension services to participatory methodologies which will ensure farmers involvement in decision-making during situation analysis, planning and implementation of extension programmes.

The Nigerian extension service is bedevilled by several problems. These include inadequacy and instability of funding, poor logistic support for field staff, use of poorly trained personnel at local level, ineffective agricultural research extension linkages, insufficient and inappropriate agricultural technologies for farmers, disproportionate extension agent: Farm family ratio, and lack of clientele participation in programme development. Others are poor input supply, irregular evaluation of extension programmes and policy, institutional and programme instability of national agricultural extension systems (Agbamu, 2005). Some of the recommendations to improve the service are to make its content more relevant to farmers, alternative sustainable financing option, well-trained, and adequate staffing, and the use of participatory extension approach under stable policy and sustainable institutional arrangement, (Koyenikan, 2008).

2.8 Theoretical framework

This study is based essentially on the attitude change theory. Attitudes are basically our predisposition towards things, whether we like or do not like a particular thing. Attitudes are often thought of as having three components, an affective component -liking or feeling about an object; a cognitive component-beliefs about an object; and a behavioural component-actions towards an object. Essentially, an attitude is a summary of the evaluation of the object towards which the attitude is held. Anaeto, Onabajo and Osifeso (2008).

2.8.1 The Attitude Change Theory

The attitude change theory was propounded by Daniel Katz, Irving Sarnoff and Charles McClintock (1960). The basic principle of the theory is that human beings are both rational and irrational depending on the situation, the motivations operating at the time and so on. The tendency for people to operate with different ways of thinking at different times has important implications for understanding attitude change.

They identify four major functions that attitudes can serve for a person:

1. The Instrumental, Adjustive or Utilitarian Function: Some attitudes are held because people are striving to maximize the rewards in their external environments and minimize the penalties.
2. The Ego-Defensive Function: Some attitudes are held because people are protecting their egos from their own unacceptable impulses or from knowledge of threatening forces without.
3. The Value-Expressive Function: Some attitudes are held because they allow a person to give positive expression to central values and to the kind of person one feels he or she is.
4. The Knowledge Function: Some attitudes are held because they satisfy a desire for knowledge or provide structure and meaning in what would otherwise be a chaotic world.

Relevance to the Study

In relating the attitude change theory to rural farmers and their response to change in terms of accepting new technologies that will increase their productivity, Williams (1970) opines that evidence is available that Nigerian farmers, very sensibly, do respond to change, provided firstly, that it does not conflict with their time-honoured values

and that it pays. Given a favourable setting, they can be responsive to the idea of higher income; they will respond to the introduction of profitable new crops and the adoption of profitable new practices.

Williams' (1970) claim points out clearly the fact that farmers can respond to change in terms of adoption of modern practices of farming inasmuch as it does not rubbish their old ways of farming which are tested and trusted by them. This is exactly what the second function that Katzs *et al.*(1960) is talking about, that is the ego defensive function.

This theory is also applicable to this study because rural farmers have their own age-long methods of farming and, in trying to convince them to embrace a new technique of farming, their attitude towards new techniques must change. Because rural farmers are peasant, they show some sort of reservation in taking risky decisions. However, Asiabaka, Morse and Kenyon (2001) argue that, if farmers do not adopt a new technology, it is because they have not understood well the technology, it is not compatible with existing practices, or because they have perceived the technology to be too complicated or too risky, and not because they are ignorant. The attitude change theory reveals that human decisions could vary at times, depending on the situation at hand.

The major functions that attitudes can serve for a person reveals that farmers could either embrace new technologies or neglect them either because the reward is not encouraging in terms of total output at the end of the farming season and especially when the productivity is increased without adequate financial reward at the end which could occur as a result of poor storage, poor marketing or poor pricing. It could be out of ego, as a result of age-long values and traditions which they believe never failed their forefathers and, as such, they should not deviate from such practices but rather pass them on to their own children as a proud generational farming method. It could also be out of content with the way things are. This could be as a result of the fact that they are not willing to take unnecessary risks whose end result they are not sure of whether it would favour them or make them go bankrupt.

2.8.2 The Perception Theory

This theory was propounded in 1964 by Berelson B. and Steiner G. A. The perception theory argues that the process of interpreting messages is complex and that the goals may be difficult to achieve.

Perception is notably active; it involves learning, updating perspective, and interacting with the observed (Bennett, Hoffman and Prakash, 1989). To Berelson and Steiner (1964), perception is the complex process by which people select, organize and interpret sensory stimulation into a meaningful and coherent picture of the world.

Four processes come into play when we talk about perception, namely;

- **Selective Perception:** This term is applied to the tendency for people's perception to be influenced by wants, needs, attitudes and other psychological factors. Selective perception plays an important role in communication of any sort and it means that different people can react to the same message in very different ways.
- **Selective Exposure:** This is the tendency for individuals to expose themselves to those communication forms that are in agreement with their existing attitudes and to avoid those that are not.
- **Selective Attention:** This is the tendency for individuals to pay attention to those parts of a message that are in consonance with strongly held attitudes, beliefs or behaviours and to avoid those parts of a message that go against strongly held attitudes, beliefs or behaviours.
- **Selective Retention:** This is the tendency for the recall of information to be influenced by wants, needs, attitudes and other psychological factors.

The selective processes can be thought of as four rings of defences, with selective exposure as the outermost ring, followed by selective attention, selective perception and finally selective retention. Undesired information can sometimes be headed off at the outermost ring. If a person expects a mix of information in a message, he or she can pay selective attention to only the parts of the message that are agreeable. If this fails, the person can then exercise selective perception in decoding the message. If this fails, the person can then exercise selective retention by simply failing to retain the contrary information.

Relevance to the study

This theory is relevant to this study because it shows that farmers will not react the same way to the various pieces of agricultural information that they are exposed to. Also the perception theory reveals that farmers would be exposed to a variety of agricultural information and based on their different information needs, there is the tendency for them to select the information that is relevant to them and pay attention to or make use of such information or improved farming technique, which has to be in consonance with the attitude and beliefs that they hold on to; in contrast, they reject the information that does not go down well with them.

Rural farmers' priority with regard agricultural information needs differ. While some place priority on land preservation and preparation, some prioritize fertilizer application. For some, harvesting is of high importance, while some may prefer information on storage and marketing. These farmers are usually presented with a mix of these various forms of information. It is now left for them to make use of the four processes involved in perception to obtain their needed information.

The farmers expose themselves to the information that is applicable to their needs that is agricultural information. This is the first stage of perception which is selective exposure. The next, is the stage of selective attention; and it is here that each farmer further pays particular attention to that part of agricultural information that deals with his line of interest so he can obtain the necessary information. The following stage is selective perception where the rural farmer decides if the message received on the needed information on his farming activities is agreeable with his beliefs and goes ahead, but, if otherwise, he rejects it. This leads to the last stage, which is selective retention, whereby the rural farmer makes a conscious effort by refusing to retain any information contrary to that which he desires.

2.8.3 Information Processing Theory

The information processing theory was propounded by Williams .J. McGuire in 1968. The basic assumptions of the theory, according to Anaeto, Onabajo, and Osifeso (2008), is that attitude change involves six steps, with each of these being a necessary precedent for the next. The steps are:

- i) the persuasive message must be communicated;
- ii) the receiver will attend to the message;

- iii) the receiver will comprehend the message;
- iv) the receiver yields to and is convinced by the arguments presented;
- v) the newly adopted position is retained; and
- vi) the desired behaviour takes place.

Information processing, independent variables are capable of interfering in the communication process. A variable such as intelligence in information processing can lead to less-yielding results because an intelligent man is able to pick loopholes in an argument, which makes him to take a position different from that of others, thereby making him pay more attention to the message because the more intelligent person has great interest in the outside world. It is common for independent variables to affect the steps at varying degrees; it could be positive for one and negative for another.

McGuire (1976) presents another 8 steps in the information processing theory; exposure, perception, comprehension, agreement, retention, retrieval, decision-making, and action.

McGuire (1989) another twelve steps in the output or dependent variable size of the persuasion process. They are, (i) exposure to communication, (ii) attending to it, (iii) liking or becoming interested in it, (iv) comprehending it, (v) learning what, (vi) yielding to it (attitude change), (vii) memory stage of content and/or agreement, (viii) information search and retrieval, (ix) deciding on basis of retrieval, (x) behaving in accord with decision, (xi) reinforcement of desired acts, and (xii) post-behavioural consolidation.

In the opinion of Anaeto *et al.* (2008) McGuire's information processing theory gives a good overview of the attitude change process with a reminder that it involves a number of components. Previous theories addressed all of these components with few if any looking at the effects of the independent variables on all of the identified steps. (Severin and Tankard, 2001).

Relevance to the study

The relevance of this theory to this study can be observed in the six steps of the information processing theory by McGuire (1968). The first step has to do with exposure to the message that is agricultural information has to be accessible to farmers who need the information in the course of their farming operations. The next step, which states that the receiver pays attention to the message, is where farmers begin to form an opinion

about the information received and this leads to the third stage, which is comprehension of the message. Here, the small-scale farmer has an understanding of the message he has received on his farming operations and he yields because he is convinced by the arguments presented. This is where attitude comes in. Next, is the retention of the newly adopted position, whereby there is the desire on the part of the small-scale farmer to put into practice that which he has been exposed to and this is the desired behaviour expected of him by the originator of the agricultural message.

The observation by McGuire that any independent variable in the communication situation can have an effect on one or more of the six steps if related to this study is correct. For example, the source of the agricultural information will affect the comprehension of the message and the attitude that will be formed from it. This will go on to decide if the desired result in terms of practice on their farms will take place or not and for how long.

2.9 Review of related empirical studies

Several studies have been conducted on the role of agricultural information in farmer's adoption of modern farming techniques, increasing farm yield and hindrances to its access and utilization.

Opara (2011), in a study on rural farmers' problems in accessing agricultural information in Nsukka Local Government Area of Enugu State Nigeria, found that lack of access roads for regular visits by extension agents, poor radio and television signals, erratic electricity supply, illiteracy and inability of radio and television stations in Enugu to broadcast agricultural messages/information in the indigenous language were some of the challenges farmers face in accessing agricultural information that can help increase their farm yields, Bernard, Dulle and Ngalapa (2011) assessed the information needs of rice farmers in the Kilombero district of Tanzania. The result showed that, although rice farmers get assistance from extension agents, fellow farmers and personal experiences, their level of the use of modern technologies in accessing agricultural information cannot be said to be satisfactory. This is largely due to inaccessibility of information, inadequacy of extension staff and financial constraints.

Tadesse (2008) conducted a study on access and utilization of agricultural information by resettler farming households in North Gondar Ethiopia. The results of the different

descriptive statistics indicated that most of the hypothesized variables had significant relationship with farmers' access and utilization of scientific agricultural information. Some of these variables include: education level, settlement category, frequency of market visits and credit utilization. Asiabaka and Owens (2002), while examining the determinants of adoptive behaviour of rural farmers in Nigeria, concluded that farmers regularly make complex decisions, especially they have to do with adoption of new technologies. Therefore farmers would choose to adopt a new technology if the expected profit from such technology is likely to exceed the expected profit without making use of the technology.

According to Amujoyegbe and Elemo (2011), decline in the performance of the agricultural sector in both the gross domestic product (GDP) and export earnings is a reflection of the slow growth rate of the sector compared to other sectors of the economy. Land degradation, rapid climate change, food deficit, increased food prices, farmers inability to replenish lost soil nutrient and import bills are attributed to lack of adoption of modern farming techniques. Ibeawuchi et al. (2009) reviewed the constraints of resource poor farmers and causes of low crop productivity in a changing environment. Their findings revealed that soil infertility, erosion problem, poor planting materials, climate change and farmers' attitude through improper use of agro-chemicals and other external inputs have a far-reaching effect on crop productivity.

Abolhasan, Hosain, Ali and Abolghasem (2010) in their study of farmers' attitude to sustainable agriculture and its determinants, with focus on Behbahan Country of Iran, found that farmers had low and very low knowledge about sustainable agriculture (52.4%) and 53.8 of farmers had low and very low level use of methods of sustainable agriculture. According to the result of the assessment of farmers' job satisfaction, 50.5% of the farmers had low and very low level of this factor. To group the respondents on their attitude towards concepts of sustainable agriculture, the interval of standard deviation from mean was used. It showed that the attitudes 45.7% (n = 95) of the respondents on sustainable agriculture was at the low level. In addition, 21.2% (n = 44) of the respondents had high attitude, and 18.7% of them (n = 39) had moderate attitude and 14.4% of them (n = 30) had very low attitude on the concepts of sustainable agriculture.

Soyemi (2014), in a study on women farmers' agricultural information need and search behaviour in north central Nigeria, found that information on farm implements was rated first, with a mean of ($\bar{x}=2.57$), followed by information on improved seeds ($\bar{x}=2.43$) and land management ($\bar{x}=2.38$). However, they seemed to have less need for information on cropping system. This could account for the participation pattern of women in agriculture, which was more of planting, processing and marketing of farm sales. The findings imply that women still lack adequate supply of agricultural information that are essential to improving their level of productivity. As women experience insufficient agricultural information supply, there is the tendency for them to stick to their traditional or old agricultural practices tested and trusted over generations. This, can, in turn jeopardize the agricultural development efforts made in the nation.

It was also observed in the study that women farmers had access to agricultural information sources although the access can be relatively described as average, with just few sources being well accessed by the women. Specifically, women had greater access to extension agents/services ($\bar{x} =4.90$), family members ($\bar{x} =3.60$), radio ($\bar{x} =3.60$) and other farmers ($\bar{x} =3.38$). The least accessed sources by the women were the library ($\bar{x} =1.92$) Internet ($\bar{x} =2.02$), film/slide projection ($\bar{x} =2.14$) and Agricultural institutes/universities ($\bar{x} =2.29$). This is a pointer to the fact that women had higher access to interpersonal and old information and communication technology (ICT) based sources as compared to the little access to institutional and recent ICT-based sources.

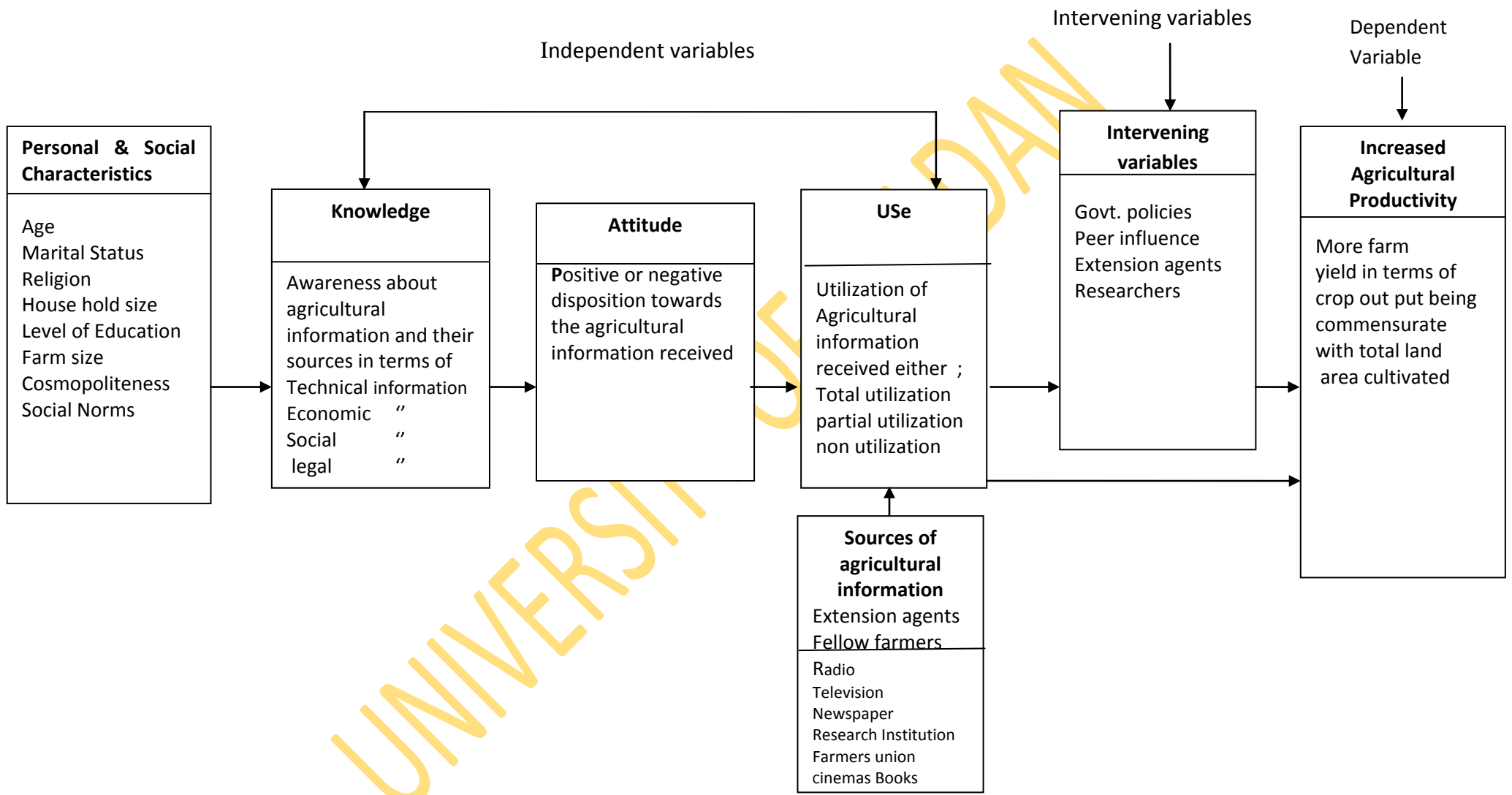


Figure 1: Conceptual Frame work for knowledge, attitude and use of agricultural information

In the same vein, the sources of agricultural research information consulted by rural women showed that extension agents/ services were the most consulted agricultural research information source, with 91.9%. Next to this were the radio (76.2%), farmers' union or cooperative (64.9%), other farmers (61.9%), family members (61.6%), mobile phone (60.6%), and so on. The least agricultural information source consulted by the rural women was the library (15.9%), closely followed by the internet (19.0%) and film or slide projection (19.0%). This implies that rural women still seek agricultural information through traditional means such as personal/oral means of communication. Unfortunately, the library, which should be the storehouse of research outputs, appeared the least consulted source, with 15.9%.

The independent variables in the study were 1) knowledge of agricultural information; attitude to agricultural information; and utilization of agricultural information. The dependent variable was increased productivity.

This framework presupposes that increase in agricultural productivity is achievable by small-scale farmers depending on the level of practice of agricultural information at their disposal. In order for this to happen, many variables come to play, including; farmer's personal variables, such as age, educational level and marital status. Similarly, non-demographic characteristics of farmers, such as their farm size, type of crops produced, social exposure, and their level of social participation, determine their agricultural information need, which affect where and how they source for those information.

Farmers become aware of agricultural information through numerous sources which include extension agents, fellow farmers, radio, television, newspapers, posters, commercial agents, family and friends. This influences the knowledge they have on agricultural information. The Socio-cultural background of the small-scale farmers in terms of social norms and cultural values, plays an important role in the awareness, acceptance or otherwise of the sources of agricultural information.

The numerous sources of agricultural information available to small-scale farmers determine their attitudinal disposition towards the practice of agricultural information. They also determine their knowledge of agricultural information, thereby affecting their practice or rejection of the agricultural information got. A farmers' willingness to utilize agricultural information can be linked to the totality of knowledge he/she has on agricultural information leading to a positive or negative disposition towards agricultural

information and ultimately the decision to give the thought a trial. Decision to utilize agricultural information is also hinged on some intervening variables, such as government policies, peer influence and other motivational factors.

Agricultural information, which is the totality of information needed by a small-scale farmer, from his pre-planting operations, to planting operations, and to his post-planting operations will enhance farm productivity if properly adopted by the small-scale farmers. This is the base to which this study is anchored.

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CHAPTER THREE

METHODOLOGY

In this chapter, the research design and methodology that was adopted for the study are examined. The following are considered. research design, population of the study, sample size and sampling technique, instrumentation and method of data analysis.

3.1 Research design

This study adopted the descriptive survey research design of the *ex post facto* type. This research design was relevant to the study because it enabled the researcher to collect and report data collected factually without the manipulation of any of the independent variable.

3.2 Population of the study

The population of this study comprised arable crop farmers in the south west of Nigeria, who plant food crops like yam, maize and cassava. The choice of south west is based on the annual production survey of the Federal Ministry of Agriculture (2012), which indicates that states in the South West produce all the three major crops (yam, maize and cassava) in good quantity and quality. The farmers were functional members of the All Farmers Association of Nigeria (ALFAN) in their various local governments in addition to being duly registered with the Agricultural Development Programmes (ADPs) in their states. There are a total of 990,000 registered farmers in the three states, (Federal Ministry of Agriculture and Rural Development, 2012).

3.3 Sampling Technique and Sample Size

A multi-stage sampling technique was adopted for this study, using a combination of random, proportionate and stratified techniques to select respondents for this study;

Stage 1: Three states were randomly selected in the South West: Oyo, Ogun and Ondo States.

Stage 2: Selection of two zones from Oyo, one zone from Ondo and two zones from ogun, representing 50% of the zones in each state Saki and Ibadan/Ibarapa from Oyo State: Owo zone from Ondo State; and Abeokuta and Ikenne zones, from Ogun State.

Stage 3: Selection of 25% of blocks in each of the selected zones, that is Olorunsogo and Saki East from Saki Zone, Akinyele and Ibarapa Central from Ibadan/Ibarapa Zone; Isua and Ifon from Owo Zone; Wasimi from Abeokuta Zone and Isara and Simawa from Ikenne Zone.

Stage 4: This involved the selection of 25% of cells from each of the blocks; Igbeti, Kunbi, Iwere-ile and Iganna from Olorunsogo and Saki East blocks; Ijaye-orile, Ikereku, Idofin and Iberekodo, from Akinyele and Ibarapa Central blocks; Isua, Sosanle, Idoani and Okeluse, from Isua and Ifon blocks; Ososun and Arigbajo, from Wasimi block, Iperu, Ilara, Orile-oko, Ogijo, Odolemo, from Isara and Simawa blocks.

Stage 5: 5% of farmers were selected from each of the selected cells. In all, a total of 1,172 farmers were selected for the study.

3.1 Sampling procedure for the selection of respondents

STATE	NO OF ZONES	ZONES SELECTED	NO OF BLOCKS		CELLS		NO OF FARM FAMILIES	
		50%	Available	25% Selected	Total	25% Selected	Total	5% selected
OYO	(4) Saki Oyo Ogbomoso Ibadan/Ibarapa	(2) SAKI	8	(2) OLORNSOGO SAKI EAST	16	IGBETI	1,200	60
		IBADAN/IBARAPA		(2) AKINYELE IBARAPA CENTRAL		16	KUNBI	1,150
							IWERE-ILE	1,774
						IGANNA	1,331	67
						IJAYE -		
						ORILE	2,499	125
						IKEREKU	1,189	60
						IDOFIN	1,351	68
						IBEREKODO	1,267	64
ONDO	(2) OWO ONDO	(1) OWO	8	(2) ISUA IFON	16	ISUA	358	18
							SOSANLE	558
						IDOANI	412	21
						OOKELUSE	698	35
OGUN	(4) ABEOKUTA IKENNE IJEBU-ODE ILARO	(2) ABEOKUTA	6	(1) WASIMI	8	OSOSUN	1,211	61
		IKENNE		(2) ISARA SIMAWA		5	ARIGBAJO	1,910
					4		IPERU	872
						ILARA	1,124	57
						ORILE-OKO	995	50
						OGIJO	1,841	93
						ODOLEMO	1,540	78
						TOTAL =	23,280	1,172

SOURCE; Information obtained from the agricultural development programme of Oyo Ondo and Ogun States

3.4 Research instrument

A self constructed questionnaire tagged “Knowledge Attitude and Use of Agricultural Information Questionnaire for Small Scale Farmers (KAUAIQSSF)” was used for quantitative data from the respondents for the study. The questionnaire consisted of two sections, A and B. Section A addressed questions on demographics, while section B consisted of 3 scales measuring the trait of the 3 independent variables and one independent variable. The instrument is described below.

3.4.1 Knowledge of Agricultural Information Scale (KAIS)

This is a self-constructed questionnaire that measures the knowledge level of agricultural information at the disposal of small-scale farmers in relation to achieving increased farm output. The response format consists of a 4 point Likert scale format of strongly agree (4), agree (3) strongly disagree (2) agree (1) and contains 12 items, in a two point response format -yes(2) No (1)- on sources of agricultural information, consisting of 17 items, another two point scale format yes (2) No(1) on how information supplied has meet their needs. It also consists of 17 items, with a 3 point scale response format – Weekly (3) fortnightly (2) and monthly (1).

The variables covered in the include sources of agricultural information, frequency of sourcing for information, agricultural information needs of small scale farmers, accessibility to agricultural information and actual knowledge statements. The instrument was subjected to face and construct criticism of experts in the areas of agricultural extension, psychology and psychometric evaluation. The criticisms and suggestions of the experts were used to ensure the validity of the instruments. Thereafter, the instrument was pilot-tested using the test-retest reliability method among similar respondents in Osun State which was outside the selected states for this study. The results obtained from the test-retests was subjected to Cronbach alpha, which yielded a co efficient of 0.72.

3.4.2 Attitude to Agricultural Information Scale (AAIS)

This is a self-constructed questionnaire that measures the attitudinal disposition of farmers towards agricultural information at their disposal with the intent of achieving increase in productivity on their farms. The response format was designed on a 4 point Likert scale of strongly agree (4), agree (3) strongly disagree (2) agree (1) It contains 17 items, relating to small scale farmers disposition towards agricultural information received.

The instrument was subjected to face and construct criticism of experts in the areas of agricultural extension, psychology and psychometric evaluation. The criticisms and suggestions of the experts were used to ensure the validity of the instruments. Thereafter, the instrument was pilot-tested using the test-retest reliability method among similar respondents in Osun State which is outside the selected states for this study. The results

obtained from the test-retest was subjected to Cronbach alpha, which yielded a coefficient of 0.78.

3.4.3 Use of Agricultural Information Scale (UAIS)

This is a self-constructed questionnaire that measures the level of use of agricultural information that the small-scale farmers have access to in relation to achieving increased farm output. The response format consists of a 3 point scale of often (3) rarely (2) never (1) for extent of utilization containing 36 items, There is another 3point response format of very often (3) often (2) not needed (1) for degree of need for agricultural information and it contain 36 items; and a two-point response format yes(2) No (1) for capacity support initiatives that farmers had received containing 8 items.

The instrument was subjected to face and construct criticism of experts in the areas of agricultural extension, psychology and psychometric evaluation. The criticisms and suggestions of the experts were used to ensure the validity of the instruments. Thereafter, the instrument was pilot-tested using the test-retest reliability method among similar respondents in Osun State which was outside the selected states for this study. The results obtained from the test re-tests was subjected to Cronbach alpha, which yielded a coefficient of 0.70.

3.4.4 Farmers' Productivity Scale (FPS)

This is a self-constructed questionnaire that measures the level of farmers output and productivity challenges they face. The response format consists of a 4-point likert scale format of strongly agree (4), agree (3) strongly disagree (2) agree (1) and contains 16 items, and a two point response format yes (2) No (1) on sources of agricultural information, consisting of 17 items.

The instrument was subjected to face and construct criticism of experts in the areas of agricultural extension, psychology and psychometrics evaluation. The criticisms and suggestions of the experts were used to ensure the validity of the instruments. Thereafter, the instrument was pilot-tested using the test-retests reliability method among similar respondents in Osun State, which was outside the selected states for this study. The results obtained from the test-retest was subjected to Cronbach alpha, which yielded a coefficient of 0.74.

3.4.5 Focus group discussion (FGD) schedule and guide:

The questionnaire was complemented with six (06) sessions of focus group discussion (FGD) (two sessions each per state) with some of the farmers who were not be able to respond appropriately to the questionnaire owing to some physical or psychological limitations. The FGD session was conducted with the aid of a discussion guide and a tape-recorder besides note taking Also, key informant interview (KII) was conducted with the extension agents and executives of the farmers union.

FGD Guide

- Knowledge of agricultural information
- Attitude to agricultural information
- Use of agricultural information.
- Farmers' Productivity

Table 3.2: Schedule of the FGD sessions conducted for the study

STATE	Location of FGD	No of sessions	DATE	No of respondents per session
OYO	Olanla	2	5/5/15	4
OGUN	Ifo	2	19/5/15	4
ONDO	Sosanle	2	2/6/15	4

3.5 Procedure for administration of instrument

The instrument was self-administered with the help of nine trained research assistants, three from each of the chosen states. They were assisted by the extension agents and representatives of the farmers' unions. Data were collected within four months. The researcher obtained an authorization letter from the Head Department of Adult Education. Thereafter, the researcher met with the head of extension service in each of the chosen states, in turn, directed the researcher to the extension agents who assisted in locating the farmers. The training for the research assistants lasted two weeks. The objectives of the research were explained to the research assistants. The researcher and the trained research assistants fixed travel time and scheduled an arrangement of transport to convey the research assistants to the various destinations

Summary of the procedure:

- First two weeks –training of research assistants
- One week for contact with head of extension service and extension agents
- 12 weeks for administration of instrument that is four weeks for each state.
- Twelve days for post-administration of instruments
- Total of 16 weeks 5days

Out of the 1,238 copies of the questionnaire administered, 1,172 were retrieved and certified valid for analysis, which represents 96 percent of the total copies distributed.

3.6 Method of data analysis

The quantitative information collected through the questionnaire were analyzed using the following tools: descriptive statistics of simple percentages, multiple regression analysis and T-test

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CHAPTER FOUR

RESULT AND DISCUSSION OF FINDINGS

This chapter contains data analysis and discussion of findings. The chapter is divided into parts A and B. Part A deals with the demographic information of the respondents, which is presented in tabular form, charts and simple percentages. Part B deals with the analysis of data collected on the research questions raised and the hypotheses postulated for the study, using multiple regression analysis and T-Test statistical techniques.

4.1 Demographic Information

The information on the personal characteristics of the respondents who participated in the study is presented in line with their sex, age, marital status, educational background, religion farm size and farming experience

4.1: Distribution of the respondents by age

Age	Frequency	Percentage %
25 – 30 yrs	124	10.6%
31 – 35 yrs	124	10.6%
36 – 40 yrs	144	12.3%
41 – 45 yrs	283	24.1%
46 – 50 yrs	292	24.9%
51 yrs & above	205	17.5%
Total	1172	100%

Table 4.1 shows the age distribution of the respondents. Ages 46-50 ranked highest (24.9%), while ages 31-35 (10.6%) and 25-30 (10.6%) ranked equal. This reveals that the majority of small-scale farmers are the elderly ones whose age range is 46 years and above. This has been pointed out by scholars who posited that young ones are no more interested in farming, as they have moved into cities in search of white-collar jobs or greener pastures. This is corroborated by Aphunu and Atoma (2010), who observe that the Nigerian farmer is ageing with an average of 50; years and the implication of this is that the younger generation is not interested in farming. This is not surprising because agriculture is no longer a lucrative business as a result of oil discovery in Nigeria Adebisi-Adelani and Oyesola (2014) aver that farmers who are active will be sensitive to their environment in the aspect of information seeking on climate change and weather. Young farmers have been observed to have more knowledge about new practices and they usually exhibit the willingness to bear risks associated with adoption of new technologies. (Olaniyi and Rafiu, 2004).

Table 4.2: Distribution of the respondents by sex

Sex	Frequency	Percentage %
Male	845	72.1 %
Female	327	27.9 %
Total	1172	100%

Table 4.2 presents the sex of the respondents. It shows that a majority of the farmers were males (72.1%) while 27.9% were females. The implication of this is that both sexes are involved in agriculture, contributing towards its development and sustenance.

Table 4.3: Distribution of the respondents by educational qualification

Educational qualification	Frequency	Percentage
No formal education	429	36.6%
Primary school	346	29.5%
Secondary school	252	21.5%
Ond/Nce	116	9.9%
Hnd/Bsc	23	2.0%
Post graduate	6	6.5%
Total	1172	100%

Table 4.3 captures the educational qualification of the respondents. It was observed that most of the farmers had little or no formal education. Those with no formal education were 36.6%, while those who had only primary education were 29.5%. This result is in agreement with the position of Aphunu and Atoma (2010), that age and low level of education of Nigerian farmers correlate with their apathy towards risks associated with adoption of new innovations, resulting in the low level of productivity. Adebayo, Awotunde, Okuneye and Okonkwo (2006) opine that, in spite of the farming background, rich rural life and experience of the youth, there is still a lag in their participation in the development of the Nigerian agricultural sector.

Table 4.4: Distribution of the respondents by Religion

Religion	Frequency	Percentage
Christianity	842	71.8%
Islam	482	41.2%
Traditional worship	85	7.2%
Total	1172	100%

Table 4.4 presents the religious affiliation of the respondents. Christianity ranked highest (71.8%), followed by Islam (41.2%), and traditional worship (7.2%). The simple implication of this is that all the respondents practise one form of religion or another,

with Christianity taking the lead. This does not have any implication in terms of small-scale farmers' increase on productivity.

Table 4.5: Distribution of the respondents by Marital Status

Marital Status	Frequency	Percentage
Married	842	71.8%
Single	158	13.3%
Widowed	77	6.5%
Separated/Divorced	95	8.4%
Total	1172	100%

Table 4.5 captures the marital status of the respondents. It shows that 71.8% were married, 13.3% were single, 8.4% were either separated or divorced, 6.5% were widowed. The implication of this is that majority of small scale farmers are married and the reason for this could be the need for the use of manual labour, which is a common practice of small-scale farmers who produce mainly on subsistence level and do not have the means for large-scale production.

Table 4.6: Distribution of the respondents by farm size

Farm size	Frequency	Percentage
Less than 1 Hectare	144	12.3%
1-2 Hectares	108	9.2%
2-3 Hectares	161	13.9%
3-4 Hectares	99	8.4%
4-5 Hectares	345	29.4%
More than 5 Hectares	315	26.9%
Total	1172	100%

Table 4.6 shows the size of farms owned by the respondents. A good number of the respondents had 4-5 hectares of farm 29.4%, 26.9% had 5 hectares and above, 13.7% had 2-3 hectares, 12.3% had less than one hectare, 9.2% had 1-2 hectares, while 8.4% had 3-4 hectares. This is in agreement Adesoji, Olanrewaju and Kolawole (2014) who found that most of their respondents operated below 2 hectares and some could not utilize effectively their farmland because of lack of funds.

Table 4.7: Distribution of the respondents by portion of farmland cultivated

Farm size	Frequency	Percentages
Less than 1 Hectare	250	21.3%
1-2 Hectares	418	35.7%
2-3 Hectares	274	23.4%
3-4 Hectares	140	11.9%
4-5 Hectares	80	6.8%
More than 5 Hectares	10	0.9%
Total	1172	100%

Table 4.7 reveals the portion of respondents' farm currently under cultivation: 1-2 hectares (35.7%) ranked highest while more than 5 hectares (0.9%) ranked lowest. This result showed that the farmers were yet to explore their farmland to the fullest potential possible as a good number had lots of farmland but were not empowered in terms of credit facilities and farm machineries, that could make farmers less dependent on human labour which is slow and costlier. This has further reduced the capacity of small-scale farmers to increase their farm production.

Table 4.8: Distribution of the respondents by farmland acquisition

Mode of acquisition	Frequency	Percentage
Purchase	180	15.4%
Hired	159	13.6%
Inherited	675	57.6%
Gift	86	7.3%
Lease	72	6.1%
Total	1172	100%

Table 4.8 shows that a majority of the respondents inherited their farmland (57.6%) while, 13.6% hired their land, and only 6.1% leased their land. This negates the findings of Adebisi-Adelani and Oyesola (2014); that most of their respondents made use of leased land for their agricultural production, followed by inherited lands, purchased land and lastly gifts. However, this finding is in line with Yusuf and Adisa (2011), who found that most of the female household heads in their study area cultivated inherited land.

Table 4.9: Distribution of the respondents by farming experience

Farming years	Frequency	Percentage
1-5 years	120	10.2%
6-10 years	141	12.0%
11 -15 years	117	10.0%
16 -20 years	113	9.6%
21 -25 years	188	16.0%
26 -30 years	233	19.9%
More than 31 years	260	22.2%
Total	1172	100%

Table 4.9 shows that a majority of the farmers had been into farming for over 31 years (22.2%), followed by 26-30 years (19.9%), 21-25 years (16.0%), 6-10 years (12.0%), 1-5 years (10.2%), 11-15 years (10.0%) and 16-20 years (9.6%). This is a pointer to the fact that most of these small-scale farmers were full-time farmers who had been into farming for long. This presupposes that they are experienced farmers.

Part B

This part deals with the presentation of results testing the prediction and extent of influence of the independent variables on the dependent variable as well as their strength of relationship. Presentation is based on research questions and hypotheses raised. The data collected were subjected to analysis of variance (ANOVA) and multiple regression analysis (MRA). The results are presented in tables, followed by their discussions.

Research Question One

Table 4.10: Sources of agricultural information available to small scale farmers

	Sources of Agricultural Information	No	Yes	Mean	Std. Deviation
1	Extension agent	198 16.9%	974 83.1%	1.83	.37
2	Farmers union	516 44.0%	656 56.0%	1.56	.50
3	Radio	338 28.8%	834 71.2%	1.71	.46
4	Television	637 54.4%	535 45.6%	1.46	.50
5	Newspaper	966 82.4%	206 17.6%	1.18	.38
6	Handbill	819 69.9%	353 30.1%	1.30	.46
7	Poster	763 65.1%	409 34.9%	1.35	.48
8	Town criers	902 77.0%	270 23.0%	1.23	.42
9	Cinema	1030 87.9%	142 12.1%	1.12	.33
10	Traditional ruler	786 67.1%	386 32.9%	1.33	.47
11	Workshops	720 61.4%	452 38.6%	1.39	.49
12	Fellow farmers	321 27.4%	851 72.6%	1.73	.45
13	Agricultural shows	675 57.6%	497 42.4%	1.43	.50
14	Text Messages	834 71.2%	338 28.8%	1.29	.45
15	Exhibition	856 73.0%	316 27.0%	1.27	.44
16	Books	961 82.0%	211 18.0%	1.18	.38
17	Pamphlets	760 64.8%	412 35.2%	1.35	.48

Table 4.10, indicates that the small-scale farmers rated extension agent ($\bar{x}= 1.83$), radio ($\bar{x}=1.71$) and fellow farmers ($\bar{x}= 1.73$) high. These sources of agricultural information ranked highest; while cinema ($\bar{x}=1.12$) and newspaper ($\bar{x}=1.18$) ranked lowest. This result is a pointer to the fact that small-scale farmers are exposed to a lot of sources of agricultural information. Therefore, it is expected that adequate agricultural information should be at their disposal. However, owing to the diverse nature of man, it is expected that each farmer will have his or her preferred medium/source of agricultural information

and no single source can adequately serve the agricultural information need of small-scale farmers. Therefore, it becomes imperative to have a mix of the various sources of agricultural information for effective and efficient information delivery. This position is supported by Meitei (2011), who opines that a combination of different methods to disseminate information to small-scale farmers as a result of limited manpower on the part of extension agents will have a positive effect on the level of small-scale farmers' information literacy.

Table 4.11: Frequency of sourcing for agricultural information

S/N	Sources of Agricultural Information	Frequency of sourcing information			Mean	Std. Dev
		Weekly	Fortnightly	Monthly		
1	Radio	756 64.5%	180 15.4%	87 7.4%	2.32	1.06
2	Extension agent	103 8.8%	656 56.0%	306 26.1%	1.64	.77
3	Fellow farmers	405 34.6%	172 14.7%	243 20.7%	1.54	1.24
4	Television	351 29.9%	238 20.3%	184 15.7%	1.46	1.24
5	Farmers' union	264 22.5%	174 14.8%	358 30.5%	1.28	1.14
6	Agricultural shows	143 12.2%	114 9.7%	287 24.5%	.81	1.04
7	Traditional ruler	178 15.2%	50 4.3%	180 15.4%	.70	1.10
8	Posters	107 9.1%	146 12.5%	170 14.5%	.67	1.01
9	Handbill	100 8.5%	118 10.1%	212 18.1%	.64	.97
10	Newspaper	111 9.5%	102 8.7%	187 16.0%	.62	.99
11	Pamphlets	91 7.8%	127 10.8%	187 16.0%	.61	.96
12	Town criers	128 10.9%	52 4.4%	191 16.3%	.58	.99
13	Text messages	80 6.8%	112 9.6%	205 17.5%	.57	.92
14	Workshops	63 5.4%	105 9.0%	261 22.3%	.56	.87
15	Exhibition	53 4.5%	58 4.9%	255 21.8%	.45	.79
16	Cinema	37 3.2%	77 6.6%	239 20.4%	.43	.75
17	Books	38 3.2%	55 4.7%	201 17.2%	.36	.72

The responses on how frequently the respondents source agricultural information are as shown below:

Radio (\bar{x} =2.32) ranked highest by the mean score. It was followed by extension agent (\bar{x} =1.64), fellow farmers (\bar{x} =1.54), television (\bar{x} =1.46), farmers union (\bar{x} =1.28), agricultural shows (\bar{x} =.81), traditional ruler (\bar{x} =.70), posters (\bar{x} =.67), handbill (\bar{x} =.64), newspaper (\bar{x} =.62), pamphlets (\bar{x} =.61), town criers (\bar{x} =.58), text messages (\bar{x} =.57), workshops (\bar{x} =.56), exhibition (\bar{x} =.45), cinema (\bar{x} =.43) and lastly books (\bar{x} =.36).

Table 4.12 Sources that have met farmers' agricultural information needs

S/N	Sources of Agricultural Information	Agricultural information need have been met		Mean	Std. Dev.
		No	Yes		
1	Extension Agent	181 15.4%	991 84.6%	1.85	.36
2	Radio	245 20.9%	927 79.1%	1.79	.41
3	Fellow farmers	406 34.6%	766 65.4%	1.66	.49
4	Farmers Union	509 43.4%	663 56.6%	1.57	.50
5	Television	564 48.1%	608 51.9%	1.52	.50
6	Agricultural Shows	600 51.2%	572 48.8%	1.49	.51
7	Text Messages	808 68.9%	364 31.1%	1.31	.46
8	Posters	827 70.6%	345 29.4%	1.30	.46
9	Pamphlets	826 70.5%	346 29.5%	1.30	.46
10	Workshops	863 73.6%	309 26.4%	1.27	.45
11	Traditional Ruler	865 73.8%	307 26.2%	1.26	.45
12	Handbill	886 75.6%	286 24.4%	1.25	.44
13	Exhibition	885 75.5%	287 24.5%	1.25	.43
14	Town Criers	929 79.3%	243 20.7%	1.21	.41
15	Books	959 81.8%	213 18.2%	1.18	.39
16	Newspaper	995 84.9%	177 15.1%	1.15	.36
17	Cinema	1073 91.6%	99 8.4%	1.08	.28

The responses on the sources of agricultural information that had met the respondents' agricultural information needs are as shown below:

Extension agent (\bar{x} =1.85), fellow farmers (\bar{x} =1.66) ranked highest while cinema (\bar{x} =1.08), newspaper (\bar{x} =1.15) and books ranked lowest. This is in conformity with the findings of Ladele, Ladigbolu and Badiru (2014), who found that all their respondents considered information got from enlightenment programmes of the campus radio useful. The implication of this is that listenership of programmes is dependent on the usefulness derived from it. This is also in line with the findings of Ango, Illo, Abdullahi, Maikasuwa and Amina (2013), who founds that adoption of innovation disseminated through radio agricultural programmes were high.

Table 4.13: Access of the respondents to technical information

S/N	Technical Information	Once every two weeks	Once in a month	Once in Six months	Once in a Year	Mean	Std. Dev
1	Crop Combination	533 45.5%	190 16.2%	100 8.5%	349 29.8%	2.77	1.30
2	Improved seeds/Seedling	437 37.3%	267 22.8%	140 11.9%	328 28.0%	2.69	1.23
3	Fertilizer Application	456 38.9%	167 14.2%	150 12.8%	399 34.0%	2.58	1.31
4	Land preparation	407 34.7%	240 20.5%	126 10.8%	399 34.0%	2.56	1.27
5	Correct plant population and spacing	452 38.6%	157 13.4%	114 9.7%	449 38.3%	2.52	1.34
6	Disease/Pest Control	317 27.0%	265 22.6%	164 14.0%	426 36.3%	2.40	1.23
7	Weather Forecast	249 21.2%	332 28.3%	131 11.2%	460 39.2%	2.32	1.19
8	Harvest Techniques	226 19.3%	226 19.3%	273 23.3%	447 38.1%	2.20	1.14
9	Soil Management	327 27.9%	165 14.1%	85 7.3%	595 50.8%	2.19	1.32
10	Home level Agro-processing	232 19.8%	189 16.1%	182 15.5%	569 48.5%	2.07	1.20
11	Agricultural Produce Processing	235 20.1%	149 12.7%	242 20.6%	546 46.6%	2.06	1.18
12	Storage Methods	179 15.3%	193 16.5%	276 23.5%	524 44.7%	2.02	1.11
13	Farm Machinery Operations	223 19.0%	121 10.3%	204 17.4%	624 53.2%	1.95	1.18

The responses to the issue of which technical information the respondents had regular access to are as follows:

Crop Combination ($\bar{x} = 2.77$) ranked highest by the mean score rating. It was followed by Improved seeds/seedling ($\bar{x} = 2.69$), fertilizer application ($\bar{x} = 2.58$), land preparation ($\bar{x} = 2.56$), correct plant population and spacing ($\bar{x} = 2.52$), disease/Pest control ($\bar{x} = 2.40$), weather forecast ($\bar{x} = 2.32$), harvest techniques ($\bar{x} = 2.20$), soil management ($\bar{x} = 2.19$), home level agro-processing ($\bar{x} = 2.07$), agricultural produce processing ($\bar{x} = 2.06$), storage methods ($\bar{x} = 2.02$) and farm machinery operations ($\bar{x} = 1.95$).

Table 4.14 : Access of the respondents to economic information

S/N	Technical Information	Once every two weeks	Once in a month	Once in Six Months	Once in a Year	Mean	Std. Dev
1	Current Market Price	427 36.4%	165 14.1%	80 6.8%	500 42.7%	2.44	1.35
2	Cooperative Societies	346 29.5%	229 19.5%	80 6.8%	517 44.1%	2.34	1.30
3	Benefit of selling beyond farm gate	300 25.6%	177 15.1%	127 10.8%	568 48.5%	2.18	1.28
4	Profit Maximization	310 26.5%	128 10.9%	138 11.8%	596 50.9%	2.13	1.29
5	Stock/Record Keeping	280 23.9%	192 16.4%	79 6.7%	621 53.0%	2.11	1.28
6	Risk management in Agriculture	236 20.1%	184 15.7%	175 14.9%	577 49.2%	2.07	1.20
7	Market Locations	267 22.8%	181 15.4%	56 4.8%	668 57.0%	2.04	1.28
8	Credit Procurement Procedure	297 25.3%	84 7.2%	110 9.4%	681 58.1%	2.00	1.29
9	Future Market Price	230 19.6%	157 13.4%	126 10.8%	659 56.2%	1.96	1.22
10	Adult Education	231 19.7%	137 11.7%	114 9.7%	690 58.9%	1.92	1.22
11	Credit Sources	194 16.6%	126 10.8%	180 15.4%	672 57.3%	1.87	1.15
12	Credit Management	151 12.9%	140 11.9%	121 10.3%	760 64.8%	1.73	1.10
13	Pricing/Export Produce	139 11.9%	93 7.9%	86 7.3%	854 72.9%	1.59	1.06
14	Agricultural Insurance	129 11.0%	80 6.8%	78 6.7%	885 75.5%	1.53	1.02
15	Exporting Procedure	104 8.9%	110 9.4%	88 7.5%	870 74.2%	1.53	.98

The responses to the economic information the respondents have regular access to are presented below:

It is evident from the result that current market price ($\bar{x}=2.44$) ranked highest by the mean score rating. It was followed by cooperative societies ($\bar{x}=2.34$), benefit of selling beyond farm gate ($\bar{x}=2.18$), profit maximization ($\bar{x}=2.13$), stock/record keeping ($\bar{x}=2.11$), risk management in agriculture ($\bar{x}=2.07$), market locations ($\bar{x}=2.04$), credit procurement procedure ($\bar{x}=2.00$), future market price ($\bar{x}=1.96$), adult education ($\bar{x}=1.92$), credit sources ($\bar{x}=1.87$), credit management ($\bar{x}=1.73$), pricing/export produce ($\bar{x}=1.59$), agricultural insurance ($\bar{x}=1.53$), and exporting procedure ($\bar{x}=1.53$).

Marketing is a major point of concern for small-scale farmers who would want to sell the little leftover of their produce after keeping that which they require to feed their families. However, this is a bit of a challenge as observed by Ja'afaru, Ali Usman, Isiaku and Jamiu (2014) who describe the small-scale agricultural production as a risky business and a majority of farmers have basic principles of agricultural marketing and they need marketing advice by the extension system as part of general extension activities on use of improved farm technology.

Table 4.15: Access of the respondents to legal information

	Legal Information	Once every two weeks	Once in a month	Once in Six Months	Once in a Year	Mean	Std. Dev.
1	Government Regulation	190 16.2%	66 5.6%	127 10.8%	789 67.3%	1.71	1.14
2	Landlord/Tenant Agreement Procedure	144 12.3%	74 6.3%	137 11.7%	817 69.7%	1.61	1.05
3	Land Dispute Settlement	133 11.3%	109 9.3%	81 6.9%	849 72.4%	1.60	1.05
4	Procedure for Land Compensation	144 12.3%	84 7.2%	74 6.3%	870 74.2%	1.58	1.06
5	Land Tenure System	135 11.5%	69 5.9%	114 9.7%	854 72.9%	1.56	1.03

The responses on which of the legal information they have regular access to are as shown below:

Government regulation ($\bar{x}=1.71$) ranked highest by the mean score rating and was followed by landlord/tenant agreement procedure ($\bar{x}=1.61$), land dispute settlement ($\bar{x}=1.60$), procedure for land compensation ($\bar{x}=1.58$), and land tenure system ($\bar{x}=1.56$).

Table 4.16: Access of the respondents to social information

S/N	Social Information	Once every two weeks	Once in a month	Once in Six Months	Once in a Year	Mean	Std. Dev.
1	Availability of farm Labour	403 34.4%	251 21.4%	- %	518 44.2%	1.90	.88
2	Farming Communities available	325 27.7%	280 23.9%	- %	567 48.4%	1.79	.85
3	Culture of other farming communities	308 26.3%	217 18.5%	-	647 55.2%	1.71	.86

The responses to the issues of the social information the respondents had regular access to are as revealed below:

Availability of farm labour ($\bar{x}=1.90$), farming communities available ($\bar{x}=1.79$) and culture of other farming communities ($\bar{x}=1.71$). The implication of these results is that access is not at optimal level as most of the of small scale farming systems are not as productive and profitable as they ought to be. The reasons adduced for these are lack of access to inputs and credit, and the inability to bear risks on the part of the small-scale farmers (Khondokar 2015). Among others World Bank (2002), cited in Khondokar (2015) notes that information and skills gap constrains the adoption of available technologies as management practices and reduces their technical efficiency when eventually adopted.

Table 4.17: Respondents' knowledge level of agricultural information

	Knowledge	SD	D	A	SA	Mean	Std. Dev
1	With agricultural information, I can identify the various types of fertilizers.	72 6.1%	16 1.4%	472 40.3%	612 52.2%	3.39	.80
2	Because of agricultural information I know where and how to source for quality seeds/seedlings .	60 5.1%	26 2.2%	623 53.2%	463 39.5%	3.27	.74
3	Agricultural information can assist farmers to get high yield from the farm.	53 4.5%	20 1.7%	726 61.9%	373 31.8%	3.21	.69
4	Agricultural information helps me apply fertilizers correctly.	81 6.9%	37 3.2%	649 55.4%	405 34.6%	3.18	.79
5	Agricultural information helps me to identify quality seeds.	108 9.2%	34 2.9%	633 54.0%	397 33.9%	3.13	.85
6	Agricultural information has helped me to learn about modern farming methods.	64 5.5%	83 7.1%	714 60.9%	311 26.5%	3.09	.74
7	With agricultural information, I can control pest and weed on my farm.	99 8.4%	66 5.6%	748 63.8%	259 22.1%	3.00	.79
8	Agricultural information teaches us how to store farm produce well.	162 13.8%	78 6.7%	660 56.3%	272 23.2%	2.89	.92
9	Awareness of agricultural Information helps me to access modern farming implements.	165 14.1%	173 14.8 %	512 43.7%	322 27.5%	2.85	.98
10	Agricultural information helps me to know about government policies and how they affect me.	168 14.3%	178 15.2 %	594 50.7%	232 19.8%	2.76	.93
11	Agricultural information supplies information on current and future market price.	264 22.5%	89 7.6%	551 47.0%	268 22.9%	2.70	1.06
12	I know how to access low interest loan because of agricultural information.	241 20.6%	321 27.4 %	439 37.5%	171 14.6%	2.46	.98

The responses on farmers knowledge on agricultural information are presented below:

‘With agricultural information, I can identify the various types of fertilizers’ (\bar{x} =3.39) ranked highest by the mean score rating It was followed by ‘Because of Agricultural Information I know where and how to source for quality seeds/seedlings’ (\bar{x} =3.27), ‘Agricultural Information can assist farmers to get high yield from the farm’ (\bar{x} =3.21),

Agricultural Information helps me apply fertilizers correctly ($\bar{x}=3.18$), 'Agricultural Information helps me to identify quality seeds' ($\bar{x}=3.13$), 'Agricultural Information has helped me to learn about modern farming methods' ($\bar{x}=3.09$), 'With agricultural information, I can control pest and weed on my farm' ($\bar{x}=3.00$), 'Agricultural Information teaches us how to store farm produce well' ($\bar{x}=2.89$), 'Awareness of Agricultural Information helps me to access modern farming implements' ($\bar{x}=2.85$), 'Agricultural Information helps me to know about government policies and how they affect me' ($\bar{x}=2.76$), 'Agricultural Information supplies information on current and future market price' ($\bar{x}=2.70$), and 'I know how to access low interest loan because of agricultural information' ($\bar{x}=2.4$). Azman, D'Silva, Samah, Man and Shaffril (2013) assert that knowledge can be referred to as organized or processed information or data and it is crucial in any innovation process.

Research Question Two: What is the attitudinal disposition of small-scale farmers in adopting agricultural information?

Table 4.18: Farmers Attitude to agricultural information

S/N	Statements	SD	D	A	SA	Mean	Std. Dev.
1	Farmers' attitudes to agricultural received is very essential for increased productivity .	89 7.6%	22 1.9%	541 46.2%	520 44.4%	3.27	.83
2	I am willing to embrace the modern agricultural information provided such information can be practicalised.	58 4.9%	32 2.7%	660 56.3%	422 36.0%	3.23	.73
3	My attitude to agricultural information will be enhanced if such pieces of information are readily available.	62 5.3%	41 3.5%	643 54.9%	426 36.3%	3.22	.75
4	I always wish to receive modern agricultural information.	86 7.3%	23 2.0%	640 54.6%	423 36.1%	3.19	.80
5	If I have positive attitude to agricultural information, my productivity level will increase.	60 5.1%	34 2.9%	723 61.7%	355 30.3%	3.17	.71
6	My attitude to agricultural information will be enhanced if such piece of information is practically demonstrated.	79 6.7%	72 6.1%	592 50.5%	429 36.6%	3.17	.82
7	My attitude to agricultural information will be enhanced if such pieces of information are very cheap to implement.	70 6.0%	97 8.3%	629 53.7%	376 32.1%	3.12	.79
8	My attitude to agricultural information has had impact on my productivity level.	65 5.5%	80 6.8%	683 58.3%	344 29.4%	3.11	.76
9	My attitude to technical information is always very high whenever I receive it.	59 5.0%	126 10.8%	708 60.4%	279 3.8%	3.03	.74
10	My attitude to economic information is always very high whenever I receive it.	66 5.6%	193 16.5%	553 47.2%	360 30.7%	3.03	.83
11	My attitude to legal information is always very high whenever I receive it.	103 8.8%	355 30.3%	482 41.1%	232 19.8%	2.72	.88
12	My attitude to social information is always very high whenever I receive it.	128 10.9%	285 24.3%	550 46.9%	209 17.8%	2.72	.88
13	My attitude to agricultural information will be enhanced if such pieces of information come from extension agents alone.	167 14.2%	309 26.4%	400 34.1%	296 25.3%	2.70	1.00
14	My attitude to agricultural information will be enhanced if such pieces of information are culturally known to me.	173 14.8%	213 18.2%	291 50.4%	195 16.6%	2.69	.92
15	Traditional farming practices should not be combined with modern practices if increased productivity is desired.	177 15.1%	332 28.3%	399 34.0%	264 22.5%	2.64	.99
16	I will not forgo the Traditional farming practices no matter the amount of modern information provided.	348 29.7%	363 31.0%	288 24.6%	173 14.8%	2.24	1.04
17	I don't believe modern agricultural farming practices is better than the traditional practices if increased .productivity is desired	515 43.9%	291 24.8%	194 16.6%	172 14.7%	2.02	1.09

The responses on what the attitudinal disposition of small sale farmers in adopting agricultural information is are as shown below:

'Farmers' attitudes to agricultural information received is very essential for increased productivity' (\bar{x} =3.27) ranked highest by the mean score rating It was followed by 'I am willing to embrace the modern agricultural information provided such information can be practicalised' (\bar{x} =3.23), 'My attitude to agricultural information will be enhanced if such pieces of information are readily available' (\bar{x} =3.22), 'I always wish to receive modern agricultural information' (\bar{x} =3.19), 'If I have positive attitude to agricultural information, my productivity level will increase' (\bar{x} =3.17), 'My attitude to agricultural information will be enhanced if such piece of information is practically demonstrated' (\bar{x} =3.17), 'My attitude to agricultural information will be enhanced if such pieces of information are very cheap to implement' (\bar{x} =3.12), 'My attitude to agricultural information has had impact on my productivity level' (\bar{x} =3.11), 'My attitude to technical information is always very high whenever I receive it' (\bar{x} =3.03), 'My attitude to economic information is always very high whenever I receive it' (\bar{x} =3.03), 'My attitude to legal information is always very high whenever I receive it' (\bar{x} =2.72), 'My attitude to social information is always very high whenever I receive it' (\bar{x} =2.72), 'My attitude to agricultural information will be enhanced if such pieces of information come from extension agents alone' (\bar{x} =2.70). My attitude to agricultural information will be enhanced if such pieces of information are culturally known to me.' (\bar{x} =2.69), 'Traditional farming practices should not be combined with modern practices if increased productivity is desired' (\bar{x} =2.64), 'I will not forgo the Traditional farming practices no matter the amount of modern information provided' (\bar{x} =2.24), and 'I don't believe modern agricultural farming practices is better than the traditional practices if increased productivity is desired' (\bar{x} =2.02). Policymakers have recognized that the way in which farmers adjust to changes in agricultural policy depends partially on their attitudes and mindsets (Gorton *et al*, 2008). In the same vein, Meena, Kumar, Singh and Meena (2008) aver that the attitudes of farmers can be more favourable if they are equipped with the knowledge on diversification, proper selection of appropriate technologies and financial assistance to gain more returns with minimum risk.

Research Question Three: To what extent are these pieces of agricultural information utilized by small scale farmers?

Table 4.19: Respondents' extent of utilization of technical agricultural information

	Technical Information	UTILIZATION			Mean	Std. Dev.
		Never	Rarely	Often		
1	Crop Combination	122 10.4%	149 12.7%	901 76.9%	2.67	.66
2	Disease/Pest Control	100 8.5%	232 19.8%	840 71.7%	2.63	.64
3	Improved Seeds/Seedlings	146 12.5%	143 12.2%	883 75.3%	2.63	.70
4	Land Preparation	154 13.1%	129 11.0%	889 75.9%	2.63	.71
5	Correct plant population/spacing	184 15.7%	260 22.2%	728 62.1%	2.47	.76
6	Fertilizer Application	147 12.5%	340 29.0%	685 58.4%	2.46	.71
7	Harvesting Techniques	283 24.1%	352 30.0%	537 45.8%	2.22	.81
8	Soil Management	210 17.9%	507 43.3%	455 38.8%	2.21	.73
9	Storage Methods	276 23.5%	453 38.7%	443 37.8%	2.14	.77
10	Weather Forecast	284 24.2%	450 38.4%	438 37.4%	2.13	.78
11	Home level Agro – Processing	274 23.4%	532 45.4%	366 31.2%	2.08	.74
12	Farm Machinery Operation	424 36.2%	451 38.5%	297 25.3%	1.89	.78
13	Agricultural Produce Processing	427 36.4%	464 39.6%	281 24.0%	1.88	.77

The responses on the extent to which the respondents utilize or apply technical agricultural information in their farming practices are captured below:

Crop combination (\bar{x} =2.67) ranked highest by the mean score rating. It was followed by disease/pest control (\bar{x} =2.63), improved seeds/seedlings (\bar{x} =2.63), land preparation (\bar{x} =2.63), correct plant population/spacing (\bar{x} =2.47), fertilizer application (\bar{x} =2.46), harvesting techniques (\bar{x} =2.22), soil management (\bar{x} =2.21), methods (\bar{x} =2.14), weather forecast (\bar{x} =2.13), home level agro – processing (\bar{x} =2.08), farm machinery operation (\bar{x} =1.89), and agricultural produce processing (\bar{x} =1.88). Olaniyi and Adewale (2013) assert that, in order to achieve effective utilization of information in the agricultural sector, such information must be of relevance, time-appropriate and accurate, up to date and presented effectively in order to meet the yearnings of the beneficiary. Osuji (1983) Atala (1984), Chikwendu, Ubi and Onyibe (1996), in their

studies discovered that age and years of farmers' schooling had an influence on their level of agricultural information utilization.

Table 4.20: Respondents' extent of utilization of economic agricultural information

	Economic Information	UTILIZATION			Mean	Std. Dev.
		Never	Rarely	Often		
1	Current Market Price	258 22.0%	361 30.8%	553 47.2%	2.26	.80
2	Cooperative Societies	360 30.7%	208 17.7%	604 51.5%	2.21	.88
3	Benefit of selling beyond farm gate	351 29.9%	305 26.0%	516 44.0%	2.14	.85
4	Profit Maximization	333 28.4%	370 31.6%	469 40.0%	2.12	.82
5	Market Locations	353 30.1%	379 32.3%	440 37.5%	2.08	.82
6	Stock/Record Keeping	381 32.5%	351 29.9%	440 37.5%	2.05	.84
7	Future Market Price	327 27.9%	473 40.4%	372 31.7%	2.04	.77
8	Risk Management in Agriculture	344 29.4%	434 37.0%	394 33.6%	2.04	.79
9	Credit Procurement Procedure	439 37.5%	357 30.5%	376 32.1%	1.95	.83
10	Credit Sources	435 37.1%	399 34.0%	338 28.8%	1.92	.81
11	Credit Management	562 48.0%	294 25.1%	316 27.0%	1.79	.84
14	Adult Education	575 49.1%	291 24.8%	306 26.1%	1.77	.84
12	Pricing Export Produce	778 66.4%	289 24.7%	105 9.0%	1.43	.65
13	Agricultural Insurance	850 72.5%	213 18.2%	109 9.3%	1.37	.65
14	Exporting Procedure	818 69.8%	270 23.0%	84 7.2%	1.37	.61

The responses on farmers extent of utilization of economic agricultural information are summarised below:

Current market price (\bar{x} =2.26) ranked highest by the mean score rating. It was follow by cooperative societies (\bar{x} =2.21), benefit of selling beyond farm gate (\bar{x} =2.14), profit maximization (\bar{x} =2.12), market locations (\bar{x} =2.08), stock/record keeping (\bar{x} =2.05), future market price (\bar{x} =2.04), risk management in agriculture (\bar{x} =2.04), credit procurement

procedure (\bar{x} =1.95), credit sources(\bar{x} =1.92), credit management (\bar{x} =1.79), adult education (\bar{x} =1.77), pricing export produce(\bar{x} =1.43), agricultural insurance (\bar{x} =1.37), exporting procedure (\bar{x} =1.37). An individual's perception of information sources and inherent attributes of an innovation in conjunction with available resources determines the utilization or otherwise of such information.(Uche, Kurt, and Wolfrang, 2009).

Table 4.21: Extent of utilization of Legal information

S/N	Legal Information	UTILIZATION			Mean	Std. Dev.
		Never	Rarely	Often		
1	Government Regulations	648 55.3%	315 26.9%	209 17.8%	1.63	.77
2	Land Tenure System	612 52.2%	379 32.3%	181 15.4%	1.63	.74
3	Land Dispute Settlement	632 53.9%	389 33.2%	151 12.9%	1.59	.71
4	Landlord/Tenant Agreement Procedure	731 62.4%	309 26.4%	132 11.3%	1.49	.69
5	Procedure for Land Compensation	757 64.6%	310 26.5%	105 9.0%	1.44	.65

The responses on the extent to which the respondents utilize or apply these Legal Agricultural Information in their farming practices are captured below:

Government regulations (\bar{x} =1.63) ranked highest by the mean score rating It was followed by land tenure System (mean \bar{x} =1.63), land dispute settlement (\bar{x} =1.59), landlord/tenant agreement procedure (\bar{x} =1.49) and procedure for land compensation (\bar{x} =1.44).

Table 4.22: Extent of utilization of social agricultural information

S/N	Social Information	UTILIZATION			Mean	Std. Dev.
		Never	Rarely	Often		
1	Availability of farm labour	209 17.8%	296 25.3 %	667 56.9 %	2.39	.78
2	Information on the culture of other farming communities	365 31.1%	443 37.8 %	364 31.1 %	2.00	.79
3	Information on farming communities available	395 33.7%	401 34.2 %	376 32.1 %	1.98	.81

The response to the extent to which the respondents utilize or apply social Agricultural Information in their farming practices is shown below:

Availability of farm labour (\bar{x} =2.39) ranked highest by the mean score rating It was followed by Information on the culture of other farming communities (\bar{x} =2.00), and Information on farming communities available (\bar{x} =1.98).

Table 4.23: Farmers' extent of need on technical agricultural information

	Technical Information	Extent of Need			Mean	Std. Dev.
		Not Needed	Often	Very Often		
1	Crop Combination	74 6.3%	237 20.2%	861 73.5%	2.67	.59
2	Improved Seeds/Seedlings	146 12.5%	224 19.1%	802 68.4%	2.56	.71
3	Land Preparation	87 7.4%	408 34.8%	677 57.8%	2.51	.63
4	Disease/Pest Control	104 8.9%	376 32.1%	692 59.0%	2.50	.65
5	Correct plant population/spacing	224 19.1%	233 19.9%	715 61.0%	2.42	.79
6	Fertilizer Application	206 17.6%	382 32.6%	584 49.8%	2.32	.76
7	Storage Methods	209 17.8%	419 35.8%	544 46.4%	2.29	.75
8	Harvesting Techniques	276 23.5%	393 33.5%	503 42.9%	2.19	.79
9	Soil Management	209 17.8%	568 48.5%	395 33.7%	2.16	.70
10	Weather Forecast	289 24.7%	579 49.4%	304 25.9%	2.01	.71
11	Home level Agro – Processing	406 34.6%	471 40.2%	295 25.2%	1.91	.77
12	Agricultural Produce Processing	444 37.9%	418 35.7%	310 26.5%	1.89	.80
13	Farm Machinery Operation	479 40.9%	384 32.8%	309 26.4%	1.85	.81

As the responses to the extent to which respondents are in need of technical information, the summary is captured thus:

Crop combination (\bar{x} =2.67) ranked highest by the mean score rating. It was followed by improved seeds/seedlings (\bar{x} =2.56), land preparation (\bar{x} =2.51), disease/pest control (\bar{x} =2.50), correct plant population/spacing (\bar{x} =2.42), fertilizer application (\bar{x} =2.32), storage methods (\bar{x} =2.29), harvesting techniques (\bar{x} =2.19), soil management (\bar{x} =2.16), weather forecast (\bar{x} =2.01), home level agro – processing (\bar{x} =1.91), agricultural produce processing (\bar{x} =1.89) and lastly by farm machinery operation (\bar{x} =1.85).

Table 4.24: Farmers' extent of need on Economic agricultural Information

S/N	Economic Information	Extent of Need			Mean	Std. Dev.
		Not Needed	Often	Very Often		
1	Benefit of selling beyond farm gate	223 19.0%	509 43.4%	440 37.5%	2.19	.73
2	Current Market Price	244 20.8%	526 44.9%	402 34.3%	2.14	.73
3	Cooperative Societies	307 26.2%	431 36.8%	434 37.0%	2.11	.79
4	Credit Procurement Procedure	247 21.1%	588 47.6%	367 31.3%	2.10	.72
5	Profit Maximization	299 25.5%	476 40.6%	397 33.9%	2.09	.77
6	Future Market Price	263 22.4%	568 48.5%	341 29.1%	2.07	.72
7	Availability of Labour	347 29.6%	402 34.3%	423 36.1%	2.07	.81
8	Stock/Record Keeping	266 22.7%	591 50.4%	315 26.9%	2.04	.70
9	Credit Sources	342 29.2%	461 39.3%	369 31.5%	2.03	.78
10	Market Locations	360 30.7%	434 37.0%	378 32.3%	2.02	.80
11	Risk management in Agriculture	316 27.0%	520 44.4%	336 28.7%	2.02	.75
12	Credit Management	356 30.4%	484 41.3%	332 28.3%	1.98	.77
13	Adult Education	495 42.2%	492 42.0%	185 15.8%	1.74	.71
14	Agricultural Insurance	624 53.2%	384 32.8%	164 14.0%	1.61	.72
15	Pricing/Export Produce	698 59.6%	356 30.4%	118 10.1%	1.51	.67
16	Exporting Procedure	697 59.5%	379 32.3%	96 8.2%	1.49	.64

Shown below are the responses to the extent to which respondents are in need of economic information;

Benefit of selling beyond farm gate (\bar{x} =2.19) ranked highest. Following it was, current market price (\bar{x} =2.14), cooperative societies (\bar{x} =2.11), credit procurement procedure (\bar{x} =2.10) profit maximization (\bar{x} =2.09), future market price (\bar{x} =2.07), availability of labour (\bar{x} =2.07), stock/record keeping (\bar{x} =2.04), credit sources (\bar{x} =2.03), market locations (\bar{x} =2.02), risk management in agriculture (\bar{x} =2.02), credit management (\bar{x} =1.98), adult

education (\bar{x} =1.74), agricultural insurance (mean=1.61), pricing/export produce (\bar{x} =1.51), and exporting procedure (\bar{x} =1.49).

Table 4.25: Farmers' extent of need on legal agricultural information

	Legal Information	Extent of Need			Mean	Std. Dev.
		Not Needed	Often	Very Often		
17	Land Tenure System	425 36.3%	449 38.3%	298 25.4%	1.89	.78
18	Procedure for Land Compensation	524 44.7%	436 37.2%	212 18.1%	1.73	.75
19	Government Regulations	609 52.0%	319 27.2%	244 20.8%	1.69	.79
20	Land Dispute Settlement	577 49.2%	417 35.6%	178 15.2%	1.66	.73
21	Landlord/Tenant Agreement Procedure	590 50.3%	445 38.0%	137 11.7%	1.61	.69

The responses to the extent to which respondents are in need of economic information are in the following order: land tenure system (\bar{x} =1.89) procedure for land compensation (\bar{x} =1.73), government regulations (\bar{x} =1.69), land dispute settlement (\bar{x} =1.66), landlord/tenant agreement procedure (\bar{x} =1.61).

Table 4.26: Farmers' extent of need on social agricultural Information

S/N	Social Information	Extent of Need			Mean	Std. Dev.
		Not Needed	Often	Very Often		
1	Availability of farm labour	177 15.1%	596 50.9%	399 34.0%	2.19	.68
2	Information on farming communities available	332 28.3%	530 45.2%	310 26.5%	1.98	.74
3	Information on the culture of other farming communities	376 32.1%	542 46.2%	254 21.7%	1.90	.73

The responses to the extent to which respondents are in need of economic information are shown below;

Availability of farm labour (\bar{x} =2.19) ranked highest by the mean score rating It was followed by Information on farming communities available (\bar{x} =1.98) and Information on the culture of other farming communities (\bar{x} =1.90).

Research Question Four. What are the other capacity support initiatives available for small scale farmers?

Table 4. 27: Capacity support initiatives that the farmers have benefitted from.

S/N	CAPACITY SUPPORT INITIATIVE	No	Yes	Mean	Std. Dev.
1	Fertilizer subsidy	254 21.7%	918 78.3%	1.79	.43
2	Improved seedlings	309 26.4%	863 73.6%	1.74	.45
3	Training on improved techniques of agricultural production	512 43.7%	660 56.3%	1.57	.50
4	Training on pest and disease control	613 52.3%	559 47.7%	1.48	.51
5	Other workshops and trainings	677 57.8%	495 42.2%	1.43	.50
6	Tractors and other farm machineries	714 60.9%	458 39.1%	1.40	.50
7	Pesticides and herbicides	704 60.1%	468 39.9%	1.40	.50
8	Low interest of agricultural loan	842 71.8%	330 28.2%	1.29	.47
9	Storage facilities	954 81.4%	218 18.6%	1.19	.41
10	Irrigation	1012 86.3%	160 13.7%	1.14	.36

The responses on capacity support initiatives that farmers have benefitted from are in the following sequence:

Fertilizer subsidy ($\bar{x}=1.179$), improved seedlings ($\bar{x} =1.74$), training on improved techniques of agricultural production ($\bar{x}=1.57$), training on pest and disease control ($\bar{x}=1.48$), other workshops and trainings ($\bar{x}=1.40$), tractors and other farm machineries ($\bar{x}=1.40$), pesticides and herbicides ($\bar{x}=1.40$), low interest of agricultural loan ($\bar{x}=1.29$), storage facilities ($\bar{x}=1.19$), and irrigation ($\bar{x}=1.14$).

Research Question Five: What are the problems militating against small scale farmers productivity?.

Table 4.28: Farmers’ response on problems militating against productivity on their farm

S/N	Productivity Problems	SD	D	A	SA	Mean	Std. Dev.
1	I don't have good storage facility	220 18.8%	227 19.4%	376 32.1%	349 29.8%	2.73	1.08
2	I don't have access to loan	267 22.8%	207 17.7%	344 29.4%	354 30.2%	2.67	1.13
3	Climate change	290 24.7%	96 8.2%	492 42.0%	294 25.1%	2.67	1.10
4	Sources of Agricultural information are few	257 21.9%	259 22.1%	518 44.2%	138 11.8%	2.46	.96
5	My farm implements are crude	355 30.3%	255 21.8%	448 38.2%	114 9.7%	2.27	1.00
6	I don't apply fertilizer appropriately on my farm	316 27.0%	377 32.2%	388 33.1%	91 7.8%	2.22	.93
7	Pest and weeds disturbed on my farm	339 28.9%	346 29.5%	385 32.8%	102 8.7%	2.21	.96
8	Irregular visit by the Extension agents	319 27.2%	404 34.5%	382 32.6%	67 5.7%	2.17	.89
9	Message does not get top us as at when needed	424 36.2%	322 27.5%	356 30.4%	70 6.0%	2.06	.95
10	Extension of agents visit us at odd times	453 38.7%	372 31.7%	204 17.4%	143 12.2%	2.03	1.02
11	The Agricultural information given to us is not relevant to our needs	534 45.6%	331 28.2%	132 11.3%	175 14.9%	1.96	1.08
12	I don't have access to quality seeds/seedlings	474 40.4%	498 42.5%	166 14.2%	34 2.9%	1.80	.79
13	Agricultural Information not compatible with our traditional farming methods	551 47.0%	418 35.7%	156 13.3%	47 4.0%	1.74	.84
14	I don't have access to quality fertilizer	594 50.7%	345 29.4%	187 16.0%	46 3.9%	1.73	.87
15	I don't have access to Agricultural information	541 46.2%	485 41.4%	113 9.6%	33 2.8%	1.69	.76
16	Agricultural information not practicable on my farm	594 50.7%	430 36.7%	115 9.8%	33 2.8%	1.65	.77

The responses on how the respondents rate the problems militating against productivity on your farm are presented below:

‘I don't have good storage facility’ (\bar{x} =2.73) ranked highest by the mean score rating It was followed by ‘I don't have access to loan’ (\bar{x} =2.67), ‘climate change’ (\bar{x} =2.67), ‘Sources of Agricultural information are few’ (\bar{x} =2.46), ‘My farm implements are crude’ (\bar{x} =2.27), I don't apply fertilizer appropriately on my farm’ (\bar{x} =2.22), ‘Pest and weeds disturbed on my farm’ (\bar{x} =2.21), ‘Irregular visit by the Extension agents’ (\bar{x} =2.17),

‘Message does not get top us as at when needed’ (\bar{x} =2.06), ‘Extension of agents visit us at odd times’ (\bar{x} =2.03), ‘The Agricultural information given to us is not relevant to our needs’ (\bar{x} =1.96), ‘I don’t have access to quality seeds/seedlings’ (\bar{x} =1.80), ‘Agricultural Information not compatible with our traditional farming methods’ (\bar{x} =1.74), ‘I don’t have access to quality fertilizer’ (\bar{x} =1.73), ‘I don’t access to Agricultural information’ (\bar{x} =1.69), and ‘Agricultural information not practicable on my farm’ (\bar{x} =1.65).

Hypothesis One

Table 4.29: The joint contribution of the independent variables (Knowledge of Agric Information, Attitude to Adopting Agric Information and Use of Agric Information) to Productivity

R	R Square	Adjusted R Square	Std. Error of the Estimate			
.869	.755	.755	1.4937			
A N O V A						
Model	Sum of Squares	DF	Mean Square	F	Sig.	Remark
Regression	8036.387	3	2678.796	1200.713	.000	Sig.
Residual	2605.814	1168	2.231			
Total	10642.201	1171				

Table 4.29 shows the joint contribution of the three independent variables to the prediction of the dependent variable, (Productivity) was positively predicted by the three independent variables. The table also shows a coefficient of multiple correlation (R = .869 and a multiple R^2 of .7557. This means that 75.5% of the variance was accounted for by three predictor variables when taken together. The significance of the composite contribution was tested at $P < .05$. The table also shows that the analysis of variance for the regression yielded a F-ratio of 1200.713 (significant at 0.05 level). This implies that the joint contribution of the independent variables to the dependent variable was significant and that other variables not included in this model might have accounted for the remaining variance. This supports Murphy’s (2012)’s position that small-scale farmers can and often achieve high level of productivity, especially when all the indicators start to take into account more environmentally sensitive indicators.

Hypothesis Two

Table 4.30: Relative effect of each of the independent variables (Knowledge, Attitude and Use of Agricultural Information) on Productivity

Model	Unstandardized Coefficient		Stand. Coefficient	T	Sig.
	B	Std. Error	Beta Contribution		
(Constant) Knowledge of Agricultural Information	7.161E-02	.335		.214	.831
Attitude to Adopting Agricultural Information	2.404E-02	.009	.049	2.659	.008
Practice of Agricultural Information	.188	.007	.461	27.253	.000
	.295	.009	.574	34.546	.000

Table 4.30 reveals the relative contribution of the three independent variables to the dependent variable, expressed as beta weights, viz: Knowledge of Agricultural Information ($\beta=.049$, $P <.05$), Attitude to Adopting Agricultural Information ($\beta = .461$, $P <.05$), Use of Agricultural Information ($\beta = .574$, $P <.05$). Hence, knowledge, attitude and use of agricultural information can independently and significantly predict an increase in the productivity of small-scale farmers in south west Nigeria. The table shows that use ranked first, followed by attitude and lastly knowledge. It is shown in the above result that all the three independent variables are significant.

This result was further corroborated with the qualitative information gathered by the researcher through the FGD session. A discussant in one of the FGD session had this to say:

“All my life, I have been a farmer and I am of the opinion that if we are knowledgeable about the agricultural information at our disposal and put them to use, it will boost our level of production. However, a major challenge that we face, is the fact that, when we have challenges or questions, the extension agents are not accessible, we don’t see them regularly. Their visit fluctuates between 2 to 3 or 4 months at times. (Male F.G.D, Sosanle, April 2015).

Another discussant asserted that;

“I was born into a family of farmers my dad and his father were farmers. Now I have joined but I am not pleased with my level right now. We have lots of hectares of farmland but I can not cultivate all because I don’t have the means to do so. The little I produce is barely enough to feed my family till another planting season. If I have the means I would love to cultivate more farm land but as at today I don’t see any sincerity on the part of the

actors in agricultural development that are willing to help us. (Male FGD, Olanla, May 2015).

Another discussant asserted;

“For all this years that I have been into farming I have not benefited a thing from the government. They promised us fertilizers and pesticides some years back I got none. Those that got were given quantities that could hardly be sufficient for ½ of their farm lands. My major challenge is that I find it difficult to sell my crops because the road are bad and I don’t even know which of the market I should go to so that I don’t get cheated. My customers buy from the farm and they decide how much I will sell my produce and these does not favour me because I have little choice, I use to give him. (male FGD IFO May 2015).

The above was corroborated by another discussant;

I am of the opinion that if all the information we need on our farms reach us as at when we need them and we understand them, there is no doubt that we will be happy to make use of all the information we are exposed to and that the end of the day we will have bountiful harvest at the end of each farming season. But in situations where we don’t get what we need or as at we need the information one will not be interested in putting it to use and this can affect our productivity (female FGD June 2015).

In the same vein, a discussant said:

It is not as if we do not have the land. In fact, we have acres of uncultivated land but we lack the resources to cultivate the land. For instance, we cannot afford to buy tractors and other heavy farm machineries that can make our work easier. To borrow these equipments from government agencies is a problem. Often times, they either tell us the machines are faulty or that we should pay for servicing the vehicles, fuel and so many others. All these bottlenecks prevent us from utilizing the land that we have to the full capacity. If the government can be sincere with the equipment lease, it will go a long way in helping our farming business. (Male FGD Olanla, May 2015)

Table 4.31: Relationship between productivity and knowledge of agricultural Information

Variable	Mean	Std. Dev.	N	R	P	Remark
Productivity	19.0640	3.0147	1172	.565*	.000	Sig.
Knowledge of Agricultural Information	35.9770	6.1502				

** Sig. at .01 level, *Sig. at .01 level

It is shown in table 4.31 that there was significant relationship between Productivity and Knowledge of Agricultural Information ($r = .565^*$, $N = 1172$, $P < .05$). Therefore the null hypothesis was rejected.

This is corroborated by Stefano, Hendricks, Stillwell and Morris (2005), who observe that a major problem farmers experience is their low access to knowledge and information.

Mtkojo and Kalusopa (2010) also support the assertion by stating that farmers need to have access to agricultural information if their efforts are to yield good results. Achieving increase in production, as noted by Ajayi, Alabi, and Akinsola (2013), has been a major task facing modern-day agriculture. Therefore, small-scale farmers who dominate the agricultural scenario of developing world need to improve their farming activities by acquiring adequate knowledge and information (United Nations 2005).

4.32: Relationship between productivity and attitude to adopting agricultural information

Variable	Mean	Std. Dev.	N	R	P	Remark
Productivity	19.0640	3.0147	1172	.660*	.000	Sig.
Attitude to Adopting Agricultural Information	49.2910	7.3943				

** Sig. at .01 level, *Sig. at .01 level.

Table 4.32 indicates that there was significant relationship between productivity and knowledge of agricultural Information ($r = .660^*$, $N = 1172$, $P < .05$). Therefore, null hypothesis is rejected.

This is in line with the submission of Ajah (2010) who observe that when farmers are required to change their production pattern or existing behaviour by way of either embracing new ideas and jettisoning traditional practices, there is the likelihood of facing resistance where decision-making is expected, especially if the change is one which involves some level of risks. Besides, Aphunu and Atoma (2010) aver that a greater percentage of their respondents (69.3%), expressed unfavourable attitude towards agriculture and attitudes correlated positively and significantly with participation in agricultural production activities.

4.33: Relationship between productivity and use of agricultural information

Variable	Mean	Std. Dev.	N	R	P	Remark
Productivity	19.0640	3.0147	1172	.737*	.000	Sig.
Practice of Agricultural Information	30.0563	5.8666				

** Sig. at .01 level, *Sig. at .01 level

It is shown in Table 4.33 that there was significant relationship between Productivity and Use of Agricultural Information ($r = .737^*$, $N = 1172$, $P < .05$). Therefore null hypothesis was rejected.

This is corroborated by Adekoya and Tologbonse (2011), who observe that lack of improved technologies (where there are none to use), or non-adoption (there are innovations but not adopted) of the technologies by farmers, has been given as the major reason for low productivity. Olaniyi and Adewale (2013) also claim that, in order to achieve effective utilization of information in the agricultural sector, such information must be of relevance, time-appropriate and accurate, up-to-date and presented effectively in order to meet the yearnings of the beneficiaries.

4.34: Relationship between knowledge of agricultural information and Attitude to adopting agricultural information

Variable	Mean	Std. Dev.	N	R	P	Remark
Knowledge of Agricultural Information	35.9770	6.1502	1172	.514*	.000	Sig.
Attitude to Adopting Agricultural Information	49.2910	7.39473				

** Sig. at .01 level, * Sig. at .01 level

It is revealed in Table 4.34 that there was significant relationship between knowledge of agricultural information and attitude to adopting agricultural information ($r = .514^*$, $N = 1172$, $P < .05$). The null hypothesis was therefore rejected.

4.35: Relationship between knowledge of agricultural information and use of agricultural information

Variable	Mean	Std. Dev.	N	R	P	Remark
Knowledge of agricultural information	35.9770	6.1502	1172	.486*	.000	Sig.
Attitude to Adopting Agricultural Information	30.0563	5.8666				

** Sig. at .01 level, *Sig. at .01 level

It is shown in Table 4.35 that there was significant relationship between knowledge of agricultural information and use of agricultural information ($r = .486^*$, $N = 1172$, $P < .05$). Therefore, null hypothesis was rejected.

This finding is corroborated by Abubakar, Ango and Buhari (2014), who argued that, if farmers would adopt new technologies available, such idea must reach their farms and homes through effective extension communication tools. Okafor (2008) equally states that the extent to which a farmer is able to perform various agricultural tasks depends on the level of knowledge and skill possessed by the individual. Studies have also shown that rural dwellers are very knowledgeable about their immediate environment (Asiabaka 2010; Aja, Chikaire and Ejiogu-Okeke, 2010) and that education enhances people (small-scale farmers) ability to think logically and make informed decisions (Ekong 2003; Asiabaka 2010).

4.36: Relationship between attitude to agricultural information and use of agricultural information

Variable	Mean	Std. Dev.	N	R	P	Remark
Knowledge of Agricultural Information	49.2910	7.3943	1172	.303*	.000	Sig.
Attitude to Adopting Agricultural Information	30.0563	5.8666				

** Sig. at .01 level, *Sig. at .01 level

It is revealed in Table 4.36 that there was significant relationship between attitude adopting agricultural information and use of agricultural information ($r = .303^*$, $N = 1172$, $P < .05$). Therefore, the null hypothesis was rejected.

This is corroborated by Okafor (2008), citing Iloka (2002), who avers that agricultural extension has been able to prove that many innovations are not adopted by farmers because they are based on wrong assumptions about women farmers, whose actual needs are not really met or served. In the same vein, Onu (1991), in his study on improved soil conservation techniques by small scale farmers in Imo State, Nigeria, found that personal and socio-economic characteristics of farmers, such as level of education, attitudes and social participation influenced farmers' utilization of agricultural information.

4.2 Discussion of findings

Findings from the demographic data in this study revealed that a majority of the small-scale farmers were elderly people whose age range was above 36 years. The implication of this is that younger ones are not involved in farming. This is in line with the findings of Aphunu and Atoma (2010), who note that the Nigerian farmer is ageing with an average of 50 years. However, farmers in this study were mainly without formal education. This probably affected the proper utilization of agricultural information, according to Aphunu and Atoma (2010), who aver that age and low level of education of the Nigerian farmers correlates with their apathy towards risk associated with adoption of innovation, resulting in the low level of productivity. In the same vein, Ofuoku, Emah, and Itedjere (2008) opine that educational level increased with the farmers' willingness to use information on fish production.

Research Question One: Sources of agricultural information available to small-scale farmers: The results showed that extension agents (83.1%) topped the chart, followed by fellow farmers (72.6%) and radio (71.2%). This is in tandem with the findings of Soyemi (2014), who claims that extension agents, radio and farmers unions ranked high on sources of agricultural information consulted by rural women. This further supports the observation of Okunade and Oladosu (2006), who state that the main purpose of agricultural extension activity is to communicate relevant and useful information to the end-users in order to persuade them to adopt that which will eventually lead to increase in agricultural production. To achieve this, extension workers and their trainers should be knowledgeable and skillful in communication.

The frequency of sourcing for agricultural information by small-scale farmers indicated that radio took the lead (weekly), followed by fellow farmers (weekly) and extension

agents (monthly). This is not a surprise because the present ratio of extension agent to farm families is put at 1:2000-3000, as against the ideal of 1:750. This figure varies from state to state. This makes regular and effective visit by extension agents a daunting challenge. Sources preferred by small-scale farmers followed the same pattern of sourcing agricultural information, in which extension agents were the most preferred (84.6%), followed by radio (79.1%) and farmers (65.4%). The implication of this is that small-scale farmers still employ traditional means of sourcing agricultural information, such as personal/oral means of communication. This is not without its own demerits, which include distortion of the original intended information, in which case vital information is either omitted or watered down.

The farmers' responses on accessibility to technical information revealed that of the 13 items raised, they had access to more of crop combination (45.5%), improved seedlings (37.3%) and fertilizer application (38.9%). This implies that most of the farmers, as a result of their limited resources, combine two to three crops on a piece of land. Accessibility to technical information could be said to be moderate. The economic information they had more access to are current market price (36.4%), cooperative societies (29.5%) and profit maximization (26.5%). The responses for legal and social information followed the same pattern. Most of the responses fell below average, implying that, although they have access to agricultural information, it is still insufficient, which could be the reason for the low productivity currently being experienced. Similarly, accessibility is not a guarantee for utilization because, for the desired results to be achieved, information should be available and easily accessible and, at the same time, it should be well understood and utilized. Their access to information makes them aware of improved technologies and enhances the adoption of new innovations. It has been established that access to information influences the adoption of technologies (Daberkow and McBride, 2003).

Research Question Two: Farmers attitude to agricultural information

A table with 17 items was generated to answer the question on attitude to agricultural information. A total of 44.4% strongly agreed that farmers' attitude to agricultural information received is essential to increase in productivity. This was followed by the opinion that attitude to agricultural information could be enhanced if such information is practically demonstrated (36.6%) and the opinion that farmers' attitude to

agricultural information will be enhanced if such information is readily available. No doubt, attitude surveys in agriculture could lead to a more adequate explanation and prediction of farmer's economic behaviour and have been used on conservation and environmentally related issues focusing on the influence of attitude variables as predictors of conservation behaviour. (Dimara and Skuras, 1999). The farmers' responses to attitude is an indication that they hold a positive disposition to agricultural information as a predictor for increase in farm productivity. However, such information should be that which is readily available, easily accessible and targeted at the immediate need of the small scale farmer.

Research Question Three: Extent of utilization of agricultural information

In order to address this question, 13 items were raised for technical information, 14 items for economic information, 5 for legal information and 3 for social information. From the responses, it is evident that information on crop combination (76.9%), land preparation (75.9%), and improved seedlings (75.9%) took the lead. A follow-up question was asked on the extent of farmers need on agricultural information. The responses indicated that more of technical information was needed, followed by economic, legal and social information. The trend in response followed that of access to agricultural information. It can be deduced, therefore, that small-scale farmers in the study area need and make use of this information at their disposal. However, the thought that comes to mind is if the respondents utilize the information at their disposal what accounts for the low productivity being experienced This is a clear indication of the fact that accessibility and use of available information is not the only determinant of increase in productivity of small-scale farmers in south west Nigeria.

Research Question Four: Capacity support initiatives that farmers have benefitted from.

Table 4.27 answered this question with a set of ten items on the types of support received in the course of their farming practice. The results indicated that fertilizer subsidy (78.3%) was highest, followed by improved seedling (73.6%) and improved techniques of agricultural production (56.3%). Notable is the fact that credit facilities, in terms of low interest rate on agricultural loans, and storage facilities ranked in the bottom. This implies that farmers still borrow at high interest rates and the little profit made goes into repaying the obtained loan and its interest while farm produce still

waste. This arises from inadequate storage facilities to preserve the produce till the buyer comes or till the next planting season. This results in a great loss while farmers do not get the required seedlings in the right quantity and at the right time.

Research Question Five: Problems militating against small-scale farmers productivity.

Table 4.28 provides answers to this question, with access to credit facilities at low interest rate taking the lead (30.2%), followed by lack of storage facilities (29.8%) and climate change (25.1%). Every segment of agricultural production requires the availability of adequate capital since capital, determines access to all other resources on which farmers depend for their operations. The problem of agricultural credit to small scale farmers, in the opinion of Olagunju (2013), arises from the source availability and use, as there is inadequate or complete absence of financial projections planning and also high level of illiteracy among the processors and lack of relevant information on how, when and where to obtain credit.

Another current challenge facing small-scale farmers is climate change in which farmers cannot predict the weather as they used to, resulting from the change in the eco system. They, therefore, need help from the government through its agencies in charge of weather forecast for prompt and timely warnings on rainfall patterns for the year. Farmers incur a lot of loss if they plant at inappropriate times.

Hypothesis One: Joint contributions of knowledge, attitude and practice of agricultural information to productivity.

The result of the analysis of variance on the three independent variables indicated that all the independent variables jointly predicted productivity in the study, showing a coefficient of multiple correlation ($R=.869$ an a multiple of $R^2=.755$). This means that, 75.5% of the variance was accounted for by the three predictor variables. This is in support of Murphy (2012) who argues that small-scale farmers can and often achieve high levels of productivity, especially when all the indicators start to take into account more environmentally sensitive indicators.

Hypothesis Two: Relative effect of the independent variables; (knowledge, attitude and practice of agricultural information) on productivity.

The result of the test of hypothesis two revealed that the three independent variables positively contributed to the prediction of the dependent variable. It was evident that

practice of agricultural information ranked first ($\beta=.574$, $P <.05$), followed by attitude ($\beta=.461$, $P <.05$) and knowledge ($\beta=.049$, $P <.05$). Hence, each independent variable independently and significantly influenced the dependent variable of the study. By implication, knowledge can influence productivity without interference from other variables and vice versa.

The summation of the two hypotheses is that the three independent variables of (knowledge, attitude and use) can both independently and jointly predict increase in the productivity of small-scale farmers in southwestern Nigeria.

UNIVERSITY OF IBADAN

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter contains the summary, conclusion, recommendations and contributions to knowledge as well as limitations of the study and suggestions for further studies.

5.1 Summary

The study followed the university-approved sequential format of five chapters, starting from the first chapter, which is the general introduction, to the fifth chapter that ends the study. The study focused on knowledge, attitude and use of agricultural information as predictors of increased productivity among small-scale farmers in southwestern Nigeria. This was with the aim of understanding how knowledge of agricultural information can enhance increase in the output of small-scale farmers. Attitude in terms of farmers' disposition towards agricultural information in relation to achieving an increase in their farm output and utilisation, deals with the decision to make use of agricultural information with the intention of a high output at the end of the farming year.

A comprehensive review of past but relevant literature was done with respect to the major variables of the study. This is with the aim of associating the present with the past studies in order to bring out distinctly the gap that this study fills.

This study was conducted using the descriptive survey research design of the *ex post facto* type. A total of 1,172 respondents, comprising 591 from Oyo, 479 from Ogun and 102 from Ondo States in southwestern Nigeria.

The findings from the study established that:

- There is significant joint contribution of the three independent variables (knowledge attitude and practice) to the prediction of the dependent variable(Increased productivity).
- There is significant relative contribution of each of the three independent variables (knowledge attitude and practice) to the prediction of the dependent variable(Increased productivity).
- Knowledge of agricultural information predicts increase in productivity of small-scale farmers.
- Attitude to agricultural information predicts small scale farmers increase in productivity.

- Practice of agricultural information has a positive relationship with small scale farmers' productivity.
- There is significant relationship between productivity of small scale farmers and knowledge of agricultural information.
- There is a significant relationship between productivity and attitude to agricultural information.
- There is a significant relationship between productivity and practice of agricultural information.
- There is a significant relationship between knowledge of agricultural information and attitude of farmers' agricultural information.
- There is a significant relationship between knowledge of agricultural information and practice of agricultural information.
- There is a significant relationship between attitude of farmers to agricultural information and practice of agricultural information.
- Irregular visit by extension agents to small-scale farmers is a hindrance to agricultural information dissemination.
- That absence of constant electricity supply and poor radio transmission signals affects easy access to and use of agricultural information.
- That access to soft loans with low interest rates is a difficulty and it affects the productivity of small-scale farmers.

5.2 Conclusion

This study has been able to point out that the productivity of small-scale farmers can be increased if they have timely access to quality agricultural information. This makes them more knowledgeable about their farming practices, ensures that they have the right attitudinal formation towards the information received, if they utilize such information accurately. Crucial to agricultural information delivery system is the extension agent who serves as the middleman or bridge between the small-scale farmers and the researchers. When the extension agents are empowered, the flow of information to and from the rural farmers is smooth, thereby keeping all the concerned parties up to date.

There are a number of reasons why the production of small-scale farmers in south west Nigeria is fluctuating. These include lack of credit facilities, poor transportation, low-yield seedlings, inadequate farm land, climate change, and cost of fertilizer and its

availability. It is believed that when these problems are addressed, increase in farm output can be achieved. This will ensure hunger reduction and food security.

5.3 Recommendations

Based on the findings of this study, the following recommendations are imperative;

- The extension agents, in disseminating agricultural information, should be empowered to be able bridge the information gap between the small-scale farmers and other actors in agricultural development.
- Small-scale farmers need to be empowered and encouraged to utilize the agricultural information that they are exposed to accurately.
- Information at the disposal of small-scale farmers should be compatible with their local practice, affordable and profitable.
- Many channels of agricultural information dissemination should be worked on so that the small-scale farmers have easy and unhindered access to information as and when needed.
- Small-scale farmers should be allowed to have easy access to farm machineries, credit and farm input.
- Small scale farmers need to be consulted before innovations are made so that they are tailor-made to the immediate needs of the farmers.
- Therefore, extension agents' visits to small-scale farmers should be regularised. Constant electricity supply, strong radio transmission signals and easy access to soft loans with low interest rates should be adequately ensured.

5.4 Contributions of the study to Knowledge

This study has been able to contribute significantly to knowledge, particularly as it concerns small-scale farmers and a desire for increased farm output in the following area: The study has been able to establish that three key variables are highly essential if increased productivity of farm yields is to be attained by small-scale farmers. These variables are knowledge of agricultural information, the attitude that small-scale farmers have to the agricultural information obtained, and the actual utilisation of agricultural information by the small scale farmers to improve their productivity.

In other words, if small-scale farmers are aware of agricultural information and exhibit a positive attitude towards it and if such information is put to good use, they can achieve the desired increase in productivity.

5.5 Limitation to the study

This study was not without its challenges and limitations. The first limitation was the delay in reaching the extension agents who were few but scattered all over. The second limitation was the difficulty of a convenient time in which the farmers would meet as they could only be gathered on meeting days, which was about once in a month. The last limitation was the language barrier, as most of the farmers were literate; they could not read or write. As a result, each item of the questionnaire was translated into their dialects, which was time consuming.

5.6 Suggestions for Further Study

Future researchers are advised to pay attention to the following areas.

1. They can expand the scope of the study to include large-scale farmers.
2. This study can be replicated on comparative basis, between two geo-political zones in the country.
3. This study can equally be replicated between two or more countries to find out if the findings obtained in this study can be considered statistically reliable.
4. This study can also be replicated on comparative basis between small-scale farmers and large-scale farmers to ascertain if statistical difference will exist between the findings of this study and that to be obtained in this new study.

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APPENDIX 1

QUESTIONNAIRE FOR SMALL SCALE FARMERS

Department of Adult Education, Faculty of Education, University of Ibadan, Ibadan.

This questionnaire is designed for a pos-graduate research in the department of Adult Education, University of Ibadan. It is intended to have your responses on your knowledge, attitude and level of practice of Agricultural Information for increased productivity on your farms. The information supplied will be treated confidentially. **The research is titled: knowledge attitude and use of agricultural information as predictors of increased productivity among small scale farmers in south west Nigeria**

Adegebo, A.A.

SECTION A

(Demographic characteristics of respondents.)

1. **Name of Village:**.....
2. **L. G.A**
3. **Extension Zone:**.....
4. **Extension Block**.....
5. **Extension Cell:**.....
6. **State**
Oyo State ()
Ogun State ()
Ondo State ()
7. **How many years have you been farming?**
1-5 years ()
6-10 years ()
11-15 years ()
16-20 years ()
21-25 years ()
25-30 years ()

30 years and above ()

8. Age:

25-30 ()

31-35 ()

36-40 ()

41-45 ()

46-50 ()

50 and above ()

9. Sex

Male ()

Female ()

10. Educational Status:

(a) Have not attended formal school system ()

(b) Primary School ()

(c) Secondary School ()

(d) OND/NCE ()

(e) HHD, B.Ed, B.Sc, B.A. ()

(f) M.Ed, M.Sc, M.A ()

(g) Ph.D ()

11. Religion:

(a) Christianity ()

(b) Islam ()

(c) Traditional Worship ()

12. Marital Status:

(a) Married ()

(b) Single ()

(c) Separated or Divorced ()

(d) Widowed ()

13. What is the size of your farm?

- (a) ½ Hectare ()
- (b) 1 Hectare ()
- (c) 2 Hectares ()
- (d) More than 2 Hectares ()

14. What portion of your farm is currently under cultivation?

- (a) ½ Hectare ()
- (b) 1 Hectare ()
- (c) 2 Hectares ()
- (d) More than 2 Hectares ()

15. How did you acquire your farm?

- (a) Purchased the land ()
- (b) Hired the land ()
- (c) Inherited the land ()
- (d) Gift ()

SECTION B

KNOWLEDGE OF AGRICULTURAL INFORMATION SCALE (KAIS)

Please tick (✓) the column that matches your response(s)

16. From which of the following sources do you obtain agricultural information?

S/N	Sources of Agricultural Information	Yes	No
a.	Extension Agents		
b.	Farmers' Union		
c.	Radio		
d.	Television		
e.	Newspaper		
f.	Handbill		
g.	Posters		
h.	Town Criers		

i.	Cinema		
j.	Traditional Ruler		
k.	Workshops		
l.	Fellow Farmers		
m.	Agricultural Shows		
n.	Text Messages		
o.	Exhibition		
p.	Books		
q.	Pamphlets		

17. How frequently do you source for agricultural information?

S/N	Sources of Agricultural Information	Frequency of sourcing information		
		Weekly	Fortnightly	Monthly
a.	Extension Agents			
b.	Farmers Union			
c.	Radio			
d.	Television			
e.	Newspaper			
f.	Handbill			
g.	Posters			
h.	Town Criers			
i.	Cinema			
j.	Traditional Ruler			
k.	Workshops			
l.	Fellow Farmers			
m.	Agricultural Shows			
n.	Text Messages			
o.	Exhibition			
p.	Books			
q.	Pamphlets			

18. Which of these sources of agricultural information has met your Agricultural Information needs?

S/N	Sources of Agricultural Information	Agricultural Information need have been met	
		Yes	No
a.	Extension Agent		
b.	Farmers Union		
c.	Radio		
d.	Television		
e.	Newspaper		
f.	Handbill		
g.	Posters		
h.	Town Criers		
i.	Cinema		
j.	Traditional Ruler		
k.	Workshop		
l.	Fellow Farmers		
m.	Agricultural Shows		
n.	Text Messages		
o.	Exhibition		
p.	Book		
q.	Pamphlets		

19. What type of information are you always exposed to:

- 1) Technical Information ()
- 2) Economic Information ()
- 3) Legal Information ()
- 4) Social Information ()

20. Which of the following **TECHNICAL INFORMATION** do you have regular access to?

Technical Information	Once every two weeks	Once in a month	Once in Six Months	Once in a Year
Crop Combination				
Weather Forecast				
Fertilizer Application				
Disease/Pest Control				
Soil Management				
Improved Seeds/Seedlings				
Harvesting Techniques				
Livestock Rearing				
Storage Methods				
Farm Machinery Operations				
Agricultural Produce Processing				
Home level Agro-processing				
Animal Products Processing and by products				
Land preparation				
Correct plant population and spacing				

21. Which of the following **ECONOMIC INFORMATION** do you have regular access to?

Economic Information	Once every two weeks	Once in a month	Once in Six Months	Once in a Year
Credit Procurement Procedure				
Agricultural Insurance				
Credit Management				
Current Market Price				
Future Market Price				
Market Locations				
Pricing/Export Produce				
Exporting Procedure				
Credit Sources				
Stock/ Record Keeping				
Profit Maximization				
Benefit of selling beyond farm gate				
Risk Management in Agriculture				
Cooperative Societies Adult Education Availability of Labour				

22. which of the following **LEGAL INFORMATION** do you have regular access

Legal Information	Once every two weeks	Once in a month	Once in Six Months	Once in a Year
Government Regulations				
Land Dispute Settlement				
Land Tenure System				
Procedure for Land Compensation				
Landlord/Tenant Agreement Procedure				

23. Which of the agricultural information do you think you need most to enhance your productivity?

Please indicate the extent to which you agree or disagree with the following statements on your knowledge of agricultural information. The rating keys are SA = Strongly Disagree, A = Agree, D = Disagree and SD = Strongly Disagree

	Knowledge	SA	A	SD	D
D	With agricultural information, I can identify the various types of fertilizers.				
E	Agricultural information helps me apply fertilizers correctly				
F	Agricultural information helps me to identify quality seeds				
G	Because of agricultural information I know where and how to source for quality seeds/ seedlings.				
H	I know how to access low interest loan because of agricultural information				
I	Agricultural information has helped me to learn about modern farming methods				
J	Agricultural information supplies information on current and				

	future market prices				
K	Agricultural information teaches us how to store farm produce well				
L	Agricultural information can assist farmers to get high yields from the farm				
M	Agricultural information helps me to know about government policies and how they affect me				
N	Awareness of agricultural information helps me to access modern farming implements				
O	With agricultural information, I can control pest and weed on my farm				

SECTION C: Attitudinal disposition of small scale farmers in adopting agricultural information (AAIS).

(24) Please indicate the extent to which you agree or disagree with the following statements on your knowledge of agricultural information. The rating keys are SA = Strongly Disagree, A = Agree, D = Disagree and SD = Strongly Disagree.

S/N	STATEMENTS	SA	A	D	SD
A	Farmers' attitude to agricultural information received is very essential for increased productivity.				
B	I always wish to receive modern agricultural information.				
C	My attitude to technical information is always very high whenever I receive it.				
D	My attitude to economic information is always very high whenever I receive it.				
E	My attitude to legal information is always very high whenever I receive it.				
F	My attitude to social information is always very high whenever I receive it.				

G	I don't believe modern agricultural farming practice is better than the traditional practice if increased productivity is desired.				
H	Traditional farming practices need to be combined with modern practices if increased productivity is desired.				
I	I will not forgo the Traditional farming practices no matter the amount of modern information provided.				
J	I am willing to embrace the modern agricultural information provided such information can be practicalised.				
K	My attitude to agricultural information has had impact on my productivity level.				
L	If I have positive attitude to agricultural information, my productivity level will increased.				
M	My attitude to agricultural information will be enhanced if such pieces of information are readily available.				
N	My attitude to agricultural information will be enhanced if such piece of information is practically demonstrated.				
O	My attitude to agricultural information will be enhanced if such pieces of information come from extension agents alone.				
P	My attitude to agricultural information will be enhanced if such pieces of information are culturally known to me.				
Q	My attitude to agricultural information will be enhanced if such pieces of information are very cheap to implement.				

SECTION D

USE OF AGRICULTURAL INFORMATION SCALE (UAIS)

(25) Please indicate the extent to which you utilize or apply these **TECHNICAL agricultural information in your farming practice.**

1.	Technical Information	UTILIZATION		
		Often	Rarely	Never
a.	Crop Combination			
b.	Disease/Pest Control			
c.	Weather Forecast			
d.	Soil Management			
e.	Fertilizer Application			
f.	Improved Seeds/Seedlings			
g.	Harvesting Techniques			
h.	Livestock Rearing			
i.	Storage Methods			
j.	Farm Machinery Operation			
k.	Animal Products Processing and by products			
l.	Agricultural Produce Processing			
m.	Home level Agro-Processing			
n.	Correct plant population/ spacing			
o.	Land preparation			

(26) Please indicate the extent to which you utilize or apply these **ECONOMIC agricultural information in your farming practice.**

2.	Economic Information	UTILIZATION		
		Often	Rarely	Never
a.	Credit Procurement Procedure			
b.	Agricultural Insurance			
c.	Credit Management			
d.	Current Market Price			
e.	Future Market Price			
f.	Market Locations			
g.	Pricing Export Produce			
h.	Exporting Procedure			
i.	Credit Sources			
j.	Stock/ Record Keeping			
k.	Profit Maximization			
l.	Benefit of selling beyond farm gate			
m.	Risk Management in Agriculture			
n.	Cooperative Societies			
o.	Adult Education			
p.	Availability of Labour			

27. Please indicate the extent to which you utilize or apply these **LEGAL agricultural information in your farming practice.**

3	Legal Information	UTILIZATION		
		Often	Rarely	Never
a.	Government Regulations			
b.	Land Dispute Settlement			
c.	Land Tenure System			
d.	Procedure for Land Compensation			
e.	Landlord/Tenant Agreement Procedure			

28. Please indicate the extent to which you need these **TECHNICAL** agricultural information in your farming practice.

1.	Technical Information	EXTENT OF NEED		
		Very Often	Often	Not Needed
a.	Crop Combination			
b.	Disease/Pest Control			
c.	Weather Forecast			
d.	Soil Management			
e.	Fertilizer Application			
f.	Improved Seeds/Seedlings			
g.	Harvesting Techniques			
h.	Livestock Rearing			
i.	Storage Methods			
j.	Farm Machinery Operation			
k.	Animal Products Processing and by products			
l.	Agricultural Produce Processing			
m.	Home level Agro – Processing			
n.	Correct plant population/ spacing			
o.	Land preparation			

29. Please indicate the extent to which you need these **ECONOMIC** agricultural information in your farming practice.

2.	Economic Information	Extent of need		
		Very often	Often	Not needed
a.	Credit Procurement Procedure			
b.	Agricultural Insurance			
c.	Credit Management			
d.	Current Market Price			
e.	Future Market Price			
f.	Market Locations			
g.	Pricing Export Produce			
h.	Exporting Procedure			

i.	Credit Sources			
j.	Stock/ Record Keeping			
k.	Profit Maximization			
l.	Benefit of Selling Beyond Farm Gate			
m.	Risk Management in Agriculture			
n.	Cooperative Societies			
o.	Adult Education			
p.	Availability of Labour			

30. Please indicate the extent to which you need these **ECONOMIC** agricultural information in your farming practice.

3	Legal Information	Extent of need		
		Very often	Often	Not needed
A	Government Regulations			
b	Land Dispute Settlement			
c	Land Tenure System			
d	Procedure for Land Compensation			
e	Landlord/Tenant Agreement Procedure			

31. Which of the following capacity support initiatives have you benefited from?

	CAPACITY SUPPORT INITIATIVES	Yes	No
a.	Fertilizer Subsidy		
b.	Improved Seedlings		
c.	Low Interest on Agricultural Loan		
d.	Tractors and other farm machineries		
e.	Pesticides and Herbicides		
f.	Storage facilities		
g.	Irrigation		
h.	Workshop and Trainings		

32. Please fill the table below indicating the type of crops you plant, the portion in which you plant each crop and your total output for each crop in the last three years.

	Crops	Land Area (Hectares)	Total Output (Yield in Ton)		
			Year 1	Year 2	Year 3
a.					
b.					
c.					
d.					
e.					

SECTION E

33. Please indicate the extent to which you agree or disagree with the following statements on problems militating against productivity on your farm. The rating keys are as follows: SA = Strongly Agree, A = Agree, D = Disagree and SD = Strongly Disagree.

	Productivity Problems	SA	A	SD	D
a.	I don't have access to agricultural information				
b.	Message does not get to us as at when needed				
c.	Irregular visit by the extension agents				
d.	I don't have access to quality fertilizer				
e.	I don't apply fertilizer appropriately on my farm				
f.	My farm implements are crude				
g.	I don't have access to quality seeds/seedlings				
h.	Agricultural Information not compatible with our traditional farming methods				
i.	Pest and weeds disturb on my farm				
j.	Agricultural Information not practicable on my farm				
k.	Sources of Agricultural Information are few				
l.	I don't have access to loan				
m.	The agricultural information given to us is not relevant to our needs				
n.	I don't have good storage facility				
o.	Extension agents visit us at odd times				
p.	Climate change				

34. Please state other reasons for low productivity on your farm:

- i. -----
- ii. -----
- iii. -----
- iv. -----
- v. -----

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APPENDIX II

FOCUS GROUP DISCUSSION GUIDE

Background information on group (Age, Sex, State, Extension, Zone, Block & Cell)

A. TYPE/ACCESS TO AGRICULTURAL INFORMATION

1. Do you have access to Agricultural Information?
2. Mention the types of agricultural information you are exposed to
3. How often do you receive agricultural Information?
4. When did you first hear of agricultural Information?

B. ATTITUDE TOWARDS AGRICULTURAL INFORMATION

5. What is your opinion on Agricultural Information?
6. What is your view on accessibility to Agricultural information?
7. How do you perceive the sources of Agricultural information?
8. Does Agricultural Information add any value to your farming activities?

C. KNOWLEDGE / SOURCE OF AGRICULTURAL INFORMATION

9. What did you understand by agricultural information?
10. How do you get agricultural information?
11. Which is your preferred source and why?

D. USE OF AGRICULTURAL INFORMATION

12. Do you make use of agricultural information?
13. How often do you make use of agricultural Information?
14. What motivates you to use agricultural information?
15. For how long have you been making use of agricultural information?

E. AVAILABILITY OF OTHER CAPACITY-SUPPORT INITIATIVES

16. Do you receive some other capacity support initiatives?
17. What are some of the capacity support initiatives?
18. Mention some capacity support initiatives you desire but do not receive presently

F PROBLEMS OF PRODUCTIVITY

19. What are the hindrances to use of agricultural information?
20. What are the challenges to agricultural productivity on your Farm?

KEY INFORMANT INTERVIEW GUIDE

- 1) Are small-scale farmers aware of agricultural information?
- 2) How accessible is agricultural information to small-scale farmers?
- 3) How often do small-scale farmers receive agricultural information?
- 4) What are some of the agricultural information that you give to small-scale farmers?
- 5) Do small-scale farmers understand agricultural information given to them?
- 6) What is the response of small-scale farmers to agricultural information?
- 7) What is the perception of small-scale farmers to agricultural information?
- 8) Do small-scale farmers believe that agricultural information helps in their farming activities?
- 9) What are the sources for agricultural information transmission to small scale farmers?
- 10) Which of the sources of agricultural information do farmers prefer?
- 11) Do small-scale farmers use agricultural information?
- 12) What motivates small-scale farmers to make use of agricultural information?
- 13) How often do they use agricultural information?
- 14) What are some of the agricultural information that small-scale farmers use?
- 15) Do small-scale farmers reject some agricultural information?
- 16) List some agricultural information that small-scale farmers do not use
- 17) What are the hindrances to the use of agricultural information?
- 18) What are some of the problems militating against small scale farmer's productivity?