INFORMATION SERVICES PROVISION FOR ACCESS AND UTILIZATION OF AGRICULTURAL SCIENCE STUDENTS BY NATIONAL AGRICULTURAL EXTENSION RESEARCH AND LIAISON SERVICES, AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA

BY

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A MASTER DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER DEGREE IN LIBRARY SCIENCE (MLS)

OCTOBER, 2019

DECLARATION

I declare that this research, titled **"Information Services Provision For Access and Utilization Of Agricultural Science Students by National Agricultural Extension Research And Liaison Services, Ahmadu Bello University, Zaria, Nigeria,"** was carried out by me in the Department of Library and Information Science, Faculty of Education, Ahmadu Bello University, Zaria, under the supervision of Dr. Sani M. Ridwan and Dr (Mrs) Romoke Opeyemi Quadir. It is a record of my own research effort and objective thoughts. It has not been presented in any previous application for a higher degree or the like. All quotations are indicated by quotation marks and other sources of information are acknowledged by means of references.

_____ _____

Ogbonyomi, Abel Adegoke Date

CERTIFICATION

This dissertation titled **"Information Services Provision For Access and Utilization of Agricultural Science Students by National Agricultural Extension Research And Liaison Services, Ahmadu Bello University, Zaria, Nigeria,"** by Ogbonyomi Abel Adegoke has been read and accepted to meet part of the requirements governing the award of the Degree of Masters of Library Science (MLS) by the School of Postgraduate Studies Ahmadu Bello University, Zaria, and it is approved for contributions to knowledge and literary presentations.

_____ _____

Dr. Sani M. Ridwan — Date
Chairman Supervisory Committee

_____ _____

Dr (Mrs) Romoke Opeyemi Quadir — Date
Member, Supervisory Committee

_____ _____

Dr. Mohammed Habibu — Date
Head of Department

_____ _____

Prof. Sanni Abdullahi — Date
Dean, Postgraduates School

DEDICATION

This work is dedicated to the evergreen memories of Mary and Ben, my parents of blessed memory and to all job seeking Nigerian graduates longing for self reliance.

ACKNOWLEDGEMENT

It was not easy in any way. It was all about the good, the bad and the ugly. But thanks to God for every sustenance in every stage of this work, much more for the initiative for further studies.

To Dr. Sani M. Ridwan, Chairman, Supervisory Committee and Dr (Mrs) Romoke Opeyemi Quadir, member, supervisory committee I thank you for all your efforts.

My appreciation goes to the management of Ahmadu Bello University, Zaria, for the permission and support to run the program.

National Agricultural Extension Research and Liaison Services staff were always receptive, allowing interactions and for information provided whenever the need arose, thank you all.

Thanks to the academics of the Department: Prof. Zakari Mohammed, Prof. Umar Ibrahim, Prof. Tijjani Abubakar, Dr. Mohammed Habibu, Dr. (Mrs) M. F. Mohammed, Dr. Hayatu Musa, Dr. Abdulkadir Aliyu, Dr. Abdullahi Musa, Dr. Babangida Dangani, Dr. Abu Yusufu and Dr. Baba Aduku. Others are Abdulkarim Bube, Jibrin Abdulrahman, Abba, Idris Dauda and Aliyu Lawan.

To the all the Non Academic staff of the department I say thank you for your roles.

To my colleagues and friends: Mr John Aruya, Mrs Nock, Dr. Michael Esew, Dr. Suleiman Sambo, and Dr. Hussaini. Also Aminu Musa, Sekinat Yusuf, Rachael, Ruqaiya Tijjani, Ahmed Yusuf, Karaye, Ma'aji Ali, Adulfatah, Aliyu Ahmed; thanks for always being there.

Dr. Otegwu Isaac of Caritas University, Abuja and Mr Innocent Egwemi, of Faculty of Science were always ready to give a hand and I say thank you both.

For the oneness and love from P15 MLS/MSc Class: Segun, (Segs), Sarki, Aliyu Bege, Aminu, Alhaji Tajo, Vera, Felix, Saratu, Liviticus, Jamila, Habeeba, Habeeb, Bilkisu, Onyeka (Madam Jos), Azizat, Danjuma, Fati, Retplang, Kuta, Al-Gulam and Atiku (the political class rep) may God continue to keep us.

A word of admiration to my children: 'Tani, Dami and Eyitope; to Maria, my wife; for times I was supposed to be there but not due to the demand of the work, thank you and I surely love you all, may we not labour in vain, amen.

Above all, thank you God.

ABSTRACT

This study was carried out to investigate the Information services Provision for access and utilization of Agricultural Science Students by National Agricultural Extension Research and Liaison Services, (NAERLS) Ahmadu Bello University, Zaria, Nigeria. Six research questions were raised to guide the study. The questions found out the types of agricultural information services for access and use by agricultural science students from NAERLS, ABU, Zaria, the level of awareness of agricultural science students on agricultural information services provided by NAERLS, ABU, Zaria, the preferred channels of accessing agricultural information services by the students, the extent to which agricultural science students utilize agricultural information services by NAERLS, the level of satisfaction of agricultural science students with agricultural information services by NAERLS and the attendant challenges agricultural science students face in accessing and utilizing agricultural information services by NAERLS, ABU Zaria. The study adopted quantitative research method and descriptive research design. The population of the study was 995 and a sample size of 320 was drawn for the study. The instrument used for data collection was the questionnaire, while proportionate stratified random sampling technique was used in selecting respondents for the study. Data collected were analysed using frequency tables, simple percentages and descriptive mean of standard deviation. Findings revealed that agricultural science students of Ahmadu Bello University Zaria access and use services like technical/scientific and commercial agricultural information services but others are not aware of these services. Owing to low level of or non awareness, the students would not highly utilize agricultural information services. And if for obvious reasons accessing and utilizing some of these services, the preferred channels are through recommended practices, researches and training and visits. Ratings on satisfaction were low which could not be far from the fact that the services were not highly accessed and utilized by the students. Among the attributed challenges to the utilization of agricultural information services are, but not limited to technophobia and lack of proper orientation. The study concluded that agricultural science students of Ahmadu Bello University Zaria are interested in access and use of Agricultural Extension Information Services (AEIS) but not up to date, and not much aware of the AEIS of NAERLS. Many do not know of the existence of such information services in NAERLS even though they are available. It is recommended that awareness should be created on the availability of these agricultural information services as they are of importance to the entire students of Ahmadu Bello University Zaria and not the agricultural science students alone. Also efforts should be intensified on creating a pact between NAERLS, their international counterparts and their immediate environment which they are expected to serve.

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LIST OF ABBREVIATIONS

ABU	Ahmadu Bello University
ADP	Agricultural Development Projects
AEIS	Agricultural Extension Information Services
DATIS	Dissemination of Agricultural Technical Information Services
DFRRI	Directorate for Food, Road and Rural Infrastructure
FAO	Food and Agricultural Organization
FDSN	Farmer Decision Support Network
FEAP	Family Economic Advancement Program
FMA	Federal Ministry of Agriculture
FSP	Family Support Program
GDP	Gross Domestic Product
ICT	Information Communication Technology
IFPRI	International Food Policy Research Institute
NAERLS	National Agricultural Extension Research and Liaison Services
NARIs	National Agricultural Research Institutes
NTC/BAT	Nigerian Tobacco Company/British American Tobacco
OFN	Operation Feed the Nation
REFILS	Research Extension Farmer Input Linkage System
SAP	Structural Adjustment Program
SMS	Short Message Services
T&V	Training and Visit
TCARC	Technical Centre for Agricultural and Rural Cooperation
TV	Television
WSIS	World Summit on Information Services
YOUWIN	Youth with Innovation in Nigeria

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Information provision in all ramifications is a calculated and deliberate attempt made by an individual or a group to circulate generated and stored information to a particular targeted audience and for a particular purpose (Empowerment, Self Reliance, Health, Education etc). This Information is either provided willingly at the provider's accord or at the demand/request of the user. Provision of information is central to all discipline and human endeavor. The amount of information an individual or a group is inclined to through provision determines how they fare in today's world. This is especially true when the information to be provided has to do with self reliance or personal development. Adequate information provision and understanding of how information impact behavioral changes have implications in many domains (youth/student, development, reliance empowerment, health, education etc)

The importance of information provision to a group of people cannot be overemphasized most especially when it has to do with students. These groups of individuals are expected to use whatever information at their disposal to brace themselves for graduation in order to be self reliant in a nation where government employment is bleak. Students generally need information provision for one thing or the other but agricultural information provision for agricultural science students takes the lead. This is for the fact that, the government on many occasions have encouraged not just the students, but the entire nation to embrace agriculture with the believe that Nigerian weather and climate is agricultural friendly.

For effective information provision, students/users need to be aware of the types of information services available with the agencies responsible for such services. It is when awareness is achieved that users can eventually access and utilize the services available.

As a result of the above, there have been intense growing interests in information provision relating to Human Capital Development (HCD). This is mostly targeted towards students in order to assist developing countries in Africa and Nigeria particularly to reduce poverty, create empowerment, sustain self reliance and promote food security through agriculture and Agricultural Information Services (AIS). Improvement on agricultural practices and embracing agricultural produce were chosen as major means of this process of empowerment and poverty alleviation (Adams, 2011). To this effect, different agricultural programs were initiated at different times in different locations in Africa and Nigeria was privileged to be one of such chosen countries for these agricultural projects. These projects are being carried out by different bodies; such as Technical Centre for Agricultural and Rural Cooperation (TCARC) and National Agricultural Research Institutes (NARIs) under which National Agricultural Extension Research and Liaison Services belongs.

Their mandates are towards providing Agricultural Extension Information and Services (AEIS) that will improve access to information on agricultural development and to strengthen the capacity of continents like Africa and countries like Nigeria, to produce, acquire, exchange and utilise agricultural information for self reliance among students (Bokor, 2011). Similarly and in line with the above, there were also foundations and research institutes such as the International Food Policy Research Institute (IFPRI) established to carry out researches to find sustainable solutions to ending hunger and poverty alleviation while promoting empowerment and self reliance in developing world through agricultural extension information provision and services.

In Nigeria particularly, the National Agricultural Extension Research and Liaison Services (NAERLS) is one of such organizations primarily saddled with the responsibility of making known to the public new agricultural innovations and information services for improved production. NAERLS is one of the 18 agro based research institutes under the Federal Ministry of Agriculture (FMA) for these purposes (Idachaba, 2010). For the effective coverage of the

country, NAERLS has five zones (North East Zone, North Central Zone, North Western Zone, South Eastern Zone and South Western Zone). According to Shaib, Aliyu, & Bakshi (1997), NAERLS' specific mandate includes the development, collation, and dissemination of appropriate agricultural information technologies including monitoring and evaluation of general agricultural information and providing such to the public. NAERLS goes further offering special agricultural services to individuals and organizations on training in any aspect of agriculture, extension information publications, research based agricultural publications, documentaries on livestock production, mechanization, agricultural youth clubs, irrigation, publicity, campaigns, agricultural development and professional advice (NAERLS, 1993). All these are to make available to the public essential farming and agricultural information for better practices aimed at empowerment of the populace especially in agricultural activities thereby discouraging mono economy and overdependence on oil as it is the case in Nigeria.

According to Adams (2011) agriculture and farming in Nigeria is incomparable to petroleum and the most important contributor to the Gross Domestic Product (GDP) in terms of employment, empowerment, self reliance and development. Before the oil boom, Nigeria was almost self-sufficient and reliant in agricultural production from which most foreign exchanges were earned through cash crop export (FAO, 2011). But due to complacency towards essential agricultural knowledge, practices and acquisition of farming information on the part of the Nigerian masses, the country supplements its agricultural production for imports of food and agricultural materials from countries whose Agricultural Extension Information Programs proves vibrant (Anderson, 2010). The place of agricultural information services and utilization pointing to its relevance in the area of self reliance cannot be overemphasized. Therefore if agricultural information has to be made available for self reliance, there is the necessity for adequate knowledge and awareness on agricultural information services from places like NAERLS. In the light of serving the interest of the Nigerian populace by disseminating agricultural information

on various innovations, the NAERLS services are therefore geared towards meeting needed public services. In this regard therefore, it can be conclusively put that NAERLS engages in agricultural information provision, services and dissemination to the general public. But what is the extent of public and agricultural science students' knowledge about NAERLS services bearing in mind that Nigeria is blessed with arable land to support agriculture practices in all ramifications?

The knowledge of Agricultural Information Services and its provision has a great importance for intended practitioners. Agriculture Extension information, Agricultural Development Projects and researches keeps emerging with new and improved agricultural information communication processes, but many have not still seen the place of agriculture in the society. More specifically, in the study area (Ahmadu Bello University, Zaria), agricultural research institutes abounds in avalanche (Institute for Agricultural Researches, Division of Agricultural Colleges, National Animal Production Research Institute). Therefore, Agriculture Extension Information knowledge which involves the conceptualization, design, generation, development, evaluation and application of innovative ways to apply agricultural information for empowerment by the public needs to gain wide coverage and acceptability to adequately meet public/students demand for national development.

A central issue worthy of note is that AEIS is one of the action lines identified for national development in the declaration and plan of action of the World Summit on Information Society (WSIS). It is mainly on the applications of Agriculture Extension knowledge and information services for self reliance. Agriculture Extension Information Service (AEIS) as an integration and utilization of information technology in farming related operations could be rewarding if the services are well tailored (Scott, 2013). Its acceptability has to do with the integration of much diverse technologies beyond just the storage of agricultural information but extending such information to the public. This is against the notion that general location of farms

and agricultural practices are in rural areas where technology cannot thrive and that agricultural production are limited to land tillage alone. Agreeably, access to extension information and communication technology like computers, wireless network and the internet might be generally low in rural areas (Scott, 2013). AEIS should transcend agricultural practices applicable solely to tillage and encompasses technological transfer, crop cultivation; water management, fertilizer application; pest management; harvesting; post-harvest handling, transportation of food/food products; packaging; food preservation; food processing/value addition; food quality management; food safety; food storage and food marketing (Jones, 2015). Stakeholders in agricultural industry especially students need information and knowledge about these services to manage their activities efficiently. For this reason, AEIS for acquiring information and knowledge for making decisions in agricultural industry should deliver accurate, complete and concise information to the public. For effectiveness, the information provided by the system must be user-friendly, well channelled and targeted to the expected users (Reddy, 2012).

Also, agricultural extension information services being systematic processes in nature where agricultural information is generated, transformed, transferred, consolidated, received and fed back in such a manner that these processes function together should be systematic. This underpins that the knowledge acquisition and information dissemination by agricultural producers are expected to be vibrant for utilization where extension institutes are located like the study area (Roling, 2008). Extensions are expected to disseminate emerging ideas amongst their prospective clients. This is in view of the role of research and advisory services in agricultural extension information works which is to give highly accurate, specific, unbiased, technical, agricultural information and advice in direct response to the needs of their clients (Maningas, 2014).

In view of this, NAERLS stands a central place in the provision and not just storage of AIS meant for sustainable agricultural production. Agricultural Information stored is useless

except disseminated through extension services. So, knowledge of information stored and the medium of communication have a central role to play in facilitating the exposure of agricultural information seekers to a variety of agricultural related information. This according to Blackenburg (2012) could only be made possible through the proper articulation and transmission of related agricultural extension information through appropriate technologies and medium to the clients. Moreover, communication of agricultural information forms an important factor that should interact with the entire productivity processes.

Productivity of these other factors, such as land, labour, capital and managerial ability, can be improved by relevant, reliable and timely agricultural information provision through AEIS (Bokor, 2011). This agricultural information provided by extension research, education and agricultural organizations will in turn enable stakeholder make productive decisions. Maningas, (2014) supported the above revealing that agricultural extension information and its communication within the reach of the prospective clients is equivalent to empowerment through control over their resources and productive decision-making processes. Productive communication of agricultural extension information is very important for self reliance and urban growth. It provides income for members of the communities depending upon raising agricultural extension information and productivity through proper information communication channels (Hayami & Ruttan, 2011). In achieving this, Jones, (2015) stressed that there is a need for a collaboration between agricultural extension information providers, their immediate public and governments of the Nations for information sharing on agricultural information services to create employment, self reliance among the nationals. This is vital among Nigerian teeming unemployed population.

The Nigerian government in its bid to improve on her students' reliance and in order to reduce the danger of unemployment had always stressed the importance of self-sufficiency in

agriculture and food production. These have been through measures like Operation Feed the Nation (OFN), 1976 dated back to Obasanjo Military Administration, Green Revolution in 1980, Directorate for Food, Roads and Rural Infrastructure (DFFRI) 1986, Agricultural Development Projects (ADPs) between 1979 to 2016, River Basin Development Authority(ies) 1976, Better Life for Rural Women, Family Support Program (FSP) in 1993, Family Economic Advancement Program (FEAP) in 1996, Structural Adjustment Programme (SAP) 1986 to 1988, the introduction of entrepreneur education for self reliance in universities and a host of other programs.

Even though some of these programs have not produced sustainable and instant results, other measures by government include the agricultural transformational agenda designed to boost employment generation by creating agricultural value chain to keep the masses abreast of practicable agriculture, Youth With Innovation In Nigeria (YOUWIN); Graduate Internship, Community Service Program, N-Power Agro and FADAMA III & IV all present opportunities for reliance. Inclusive is the approval of 15 billion revolving agricultural loan which according to some beneficiaries' have been cumbersome in accessing (Idachaba, 2010). Even with the above, the Nigerian students, churned out yearly in our tertiary institutions haunt for white collar job which the government is yet to provide.

1.2 Statement of the Problem

Viable AEIS is supposed to occupy a central place in self reliance and development in societies where the services are available. This is because AEIS in agriculture and food production are key facets of inclusive national development. The society and students in particular have agricultural information needs to empower them which can be fulfilled through a well coordinated AEIS based on appropriate modern technologies. Agriculture being an important sector of most

growing economy as studies have shown has high potentials for self reliance, employment generation, food security and poverty reduction (Idachaba, 2010; Anderson, 2012 & Scott 2013).

Despite the place and importance of agriculture, it remains unclear why farming and agricultural practices are not fascinating to students. The fact remains that unemployment population growth is not met with job provision at the desired level and poverty is still high. Even with evident potentials of agriculture and the suitability of Nigerian climate/weather for practices, students from different higher institutions and Ahmadu Bello University inclusive are finding it difficult to embrace agriculture for empowerment knowing full well they have limited choices in national job security.

The question therefore remains as to whether these students lack the knowledge and awareness of the available types of AEIS in services of NAERLS that could cater for their empowerment needs against social ills. Smith (2011) and Rivera (2013) argued that important ideas generated by extension workers will have no use unless communicated to the appropriate quarters. They noted that most researches on agricultural extension information services do not reach the end users owing to inefficient channel thereby making generated information useless.

In the case of this study, NAERLS is situated in Ahmadu Bello University, Zaria. By its mandate, it is saddled with providing agricultural related information services to their host community and beyond using different media. Through such agricultural institutions like NAERLS, Continents and Countries like Asia, India, Mauritius, South Africa and others have boasted of graduate empowerment and reliance with recorded successes (Smith, 2011).

Observation by the researcher however, revealed that most students of Ahmadu Bello University, Zaria, are victims of unemployment and prey to antisocial behaviours whereas services in NAERLS can sustain them. From further observations and as a result of the above, most students of ABU, Zaria resort to proceeding for their second or third degrees as the case may be due to lack of immediate job opportunities after graduation. This study therefore

becomes necessary to find out agricultural science students' access and utilization of AEIS provision and dissemination by the NAERLS, Ahmadu Bello University, Zaria, Nigeria.

1.3 Research Questions

The study seeks to provide answers to the following research questions:

1. What types of agricultural information services are required by agricultural science students in NAERLS, ABU, Zaria?
2. What is the level of awareness of agricultural science students on agricultural information services available in NAERLS, ABU, Zaria?
3. What are the preferred channels of accessing agricultural information services by agricultural science students available in NAERLS?
4. To what extent do agricultural science students utilize agricultural information services available in NAERLS?
5. To what extent are agricultural science students satisfied with agricultural information services in NAERLS?
6. What challenges do agricultural science students face in utilizing agricultural information services in NAERLS, ABU Zaria?

1.4 Objectives of the Study

The objective of the study is to assess the Information Services Provision for access and utilization of agricultural science students by national agricultural extension research and liaison services, Ahmadu Bello University, Zaria, Nigeria. In specific terms, the study aims at achieving the following objectives:

1. To find out the types of agricultural information services required by agricultural science students in NAERLS, ABU, Zaria

2. To determine the level of awareness of agricultural science students on agricultural information services available in NAERLS.
3. To identify agricultural science students' preferred channels of agricultural information service access form NAERLS, ABU Zaria.
4. To determine the extent of utilization of agricultural information services to agricultural science students.
5. To determine the level of satisfaction of agricultural science students on agricultural information services by NAERLS.
6. To identify the challenges faced by agricultural science students in utilizing agricultural information services by NAERLS.

1.5 Significance of the Study

Information forms the root of any meaningful achievement especially when it has to do with self reliance and National development. Awareness of its availability and communicating it efficiently is also very important. In a world of unemployed graduate in the balance, information not only matters but communicating AEIS takes the central stage. This is because AEIS will enable both agricultural information providers and the students respond to the needs of the public in the area of agricultural information provision for reliance and development.

The findings and recommendations of this study will create more awareness on one hand to assist NAERLS to serve the students and the public better in the area of the information services it provides. On the other hand, it will motivate students to appreciate the usefulness of AIS in the area of empowerment, self reliance and job provision. It will also add to literature on utilization of agricultural information showing its importance in empowerment and self reliance.

1.6 Scope of the Study

The focus of this research was to assess the place of Agricultural Information provision for Self-reliance among agricultural science students by the National Agricultural Extension

Research and Liaison Services. The study was limited to Agricultural Science Students, Faculty of Agriculture, Ahmadu Bello University, Zaria. This is because ABU, Zaria is one of the institutions where agriculture extension information services are to be provided to the public through the National Agricultural Extension Research and Liaison Services.

1.7 Operational Definition of Terms

The following are the operational definitions of the key terms used in the study:

Agricultural Extension Services The activity and practice of generating and disseminating research information, technological findings and innovations on agriculture to the expected users of such information in person.

Agricultural Information Services The functions and activities carried out by organizations to ensure availability of agricultural information to clients through media broadcast, publications, extension visits, etc

Agriculture The processes involved in tilling, cultivating and preparing the land for planting crops and rearing of animals for human need.

Information Provision This is the act and process of reaching out to the public particularly those who need information with the resources of an organization either on demand or wilfully.

Reliance The creation of enabling environment through provision of information and services for people to be able to carry out activities that will make them independent.

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CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter deals with the review of related literature in the area of Agricultural Extension Information Services around the world as it relates to self reliance and national development. It involves the breakdown of the concepts and related literature in line with the objectives of the study as guides to the reviewed literature. The review is centred on the following headings:

2.2 Concept of Agricultural Extension Information Services

2.3 Types of Agricultural Extension Information Services

2.4 Awareness of Agricultural Extension Information Provided to the Public

2.5 Channels of Agricultural Extension Information Provision

2.6 Utility of Agricultural Extension Information

2.7 Satisfaction with Agricultural Extension Information

2.8 Challenges Faced in Utilizing Agricultural Information

2.9 Review of Empirical Studies on Agricultural Information Services

2.10 Summary of the Review

2.2 Concept of Agricultural Extension Information Services

The making of a good agricultural extension information service centres depends on the quality and quantity of agricultural information it acquired and the ability to provide such information to the public for self reliance. Adams (2015) defined agricultural information services as processes, services and programs that are designed by agricultural extension information workers and primarily targeted towards the public in order to make the practices of agriculture simpler and productivity higher. This is said to include technological methodologies and approaches towards choices of types of agricultural practices and best directions to channel

agricultural information and resources. Agricultural information services provision according to Anandajayasekeram (2008) revolves around providing related agricultural information in the areas of agricultural practices, productivity, profitability, and sustainability in the developing world. The success of this depends on the ability of AES personnel to persuade the public to embrace change through the use of technologies, management systems, organizational arrangements, institutions, and environmental resources in their agricultural practices. This includes expanding the people's capacity to innovate which is basically hinged on their access to knowledge and information services on agriculture needed for practices (Anaeto, 2012).

The main aim of AIS provision and rural extension is to serve as an advisory body to meet the immediate needs of the public as they yearn to adopt change for agricultural production as means of livelihood (Agbamu, 2015). As a whole, Orivel (2016) sees concept of agricultural information services as related to providing advice to farmers on problems or opportunities in agricultural production, marketing, conservation, and family livelihood. This also includes facilitating development of local skills, links with other programs and institutions, address public interest issues in rural areas, resource conservation; health and food security monitoring; agricultural production monitoring; food safety, nutrition and family education, transfer new technologies to farmers and rural people, and above all youth development.

In a technological driven world, AEIS keeps changing from focus on public sector technology transfer of advisory services to a more complex agricultural knowledge and information services that serve diverse needs of the public. This according to Bello and Schwartz (2012) encompasses diverse public and private sector providers, including input suppliers, produce buyers, farmer organizations, NGOs, consultant firms, and government organizations, efficient delivery of knowledge and information services through the private sector or mass media. It addresses problems of diverse groups of rural people, including commercial farmers,

women, resource poor farmers, youth, and non-farm populations, provide market information, organizational development, and family services as well as agricultural information production through technological adoptions.

2.3 Types of Agricultural Extension Information Services

AEIS in agricultural production is indispensible as it offers more than just expert assistance in improvement of agricultural production and processing. Different AEIS enables flow of information, transfer of knowledge and scientific findings for agricultural productivity (Zivkovic, Jelic & Rajic, 2009).

Agricultural extension information services and their personnel interact to enhance agricultural productivity in a variety of ways ranging from decisions regarding land, labor, livestock, capital and management. In line with this, Contado (2009) asserted that agricultural productivity can be improved by relevant, reliable, useful information and knowledge of the different types of agricultural practices. This is primarily hinged on types of agricultural information available, provided or possessed at any moment. Therefore, the sensitization and creation of agricultural information by extension services, research, education programs and others through individual, group and mass media extension bodies is a necessity. These bodies create avenues to exhibit the available types of agricultural information to farmers so that farmers can make better choices and finally decisions in order to take advantage of numerous practices of agricultural opportunities to manage continuous changes in their agricultural production systems.

Knowledge and understanding of different types of agricultural information practices to equip practitioners according to Al-Sharafat (2012) is an empowerment itself because it spells out what a practitioner can do at different seasons of the year ranging from management to legal issues. Knowledge of these processes has been seen to be non negotiable in achieving full scale

agricultural information provision and services. Knowledge of typology, in this regard as documented by FAO (2016) holds key to success of self reliance campaigns. This activity i.e knowledge of typology is majorly noted for its importance in right choice of agricultural practices which potential farmer intends to embark upon.

Studies by Friedman (2011) and Lionberger & Gwin (2015) both emphasized that most people lack knowledge on types of agricultural Information services needed thereby unable to make right decisions for effective practices. Whereas improving practices and income of farming community depend crucially upon knowledge of the needed types of agricultural information for successful farming practice. Mathur & Sinha (2013) posited that achieving sustainable agricultural development is less based on material inputs (e.g., seeds and fertilizer) or on the people involved in their use but on the basic knowledge of suitable types to practice in or out of season for better productivity. Basically, types of agricultural information and knowledge for decision making revolves around the followings: Technical/scientific agricultural information (increased production, pest management, disease control etc), commercial agricultural information (marketing of produce, credits, cooperatives, loans etc), socio-cultural information (practices, local cultures, labor availability, information on farming community, etc) and legal agricultural information (land tenure, production, distribution, sales practices, fishery, forestry etc) (Al-sharafat, 2012).

According to Anandajayasekaram, (2008) types of agricultural information for productive agricultural practices works hand in hand with services like Short Message Services, Price Information Services, Dissemination of Agricultural Technical Information Services (DATIS), Awareness Services, Public Relation Services, Designing and Media Production Services, Agricultural Teaching Aids Services, Agricultural Production Services, Illustrations/Translations Services, Advertising Services, Audio Recording Services, Agricultural Radio Services,

Broadcasts Services, Audio Visual Services, Agricultural Air Space Services for advertising. To this effect, there is a need to consider typology for increase in knowledge and information sharing about agricultural production, as well as appropriate communication methodologies, channels and tools that make information services reach the public.

Farming practices is a knowledge-intensive industry when aimed for whatever intent. To buttress this, Schram, (2010) asserted that farming for self reliance differs from farming for demonstrations and researches. Therefore, he advocated that intended farmers need to know, obtain and process information on different types of agricultural practices necessary. Most of these information also centers on financial support available for farming, types of climatic conditions suitable for certain practices, types of technical/scientific innovations available, commercial feasibility, socio/cultural information on geographical settings and legal/regulatory information to manage their farm activities. For efficiency and efficacy of the above, both public and private institutions have emerged to supply farmers with different types of agricultural information.

However, Mcnamara (2009) noted that the inadequacies in types of agricultural information provision such as the inability to consistently provide accurate, timely and easily accessible information, present several challenges to farmers. Therefore, the understanding of the available types of agricultural information, the provider and the consumer of certain types of agricultural information is of importance for information validity and reliability. This is vital for sustainable agricultural practice for intending farmers most especially as it focuses on self reliance. Farmers to-be must be abreast of information on the practicable types of agricultural practices based on information services available within their geographical locations. This is because adequate knowledge of types of agricultural information is ground for improved

agricultural practices (Leeuwis, 2016). In other words, types of agricultural information for farming are as important as the practices itself.

Having recognized the importance of the knowledge of typology of agricultural information to the success of agricultural practices, its place, and steps on improvement in information transfer in this quarter, the stake holders are making effort to create link between those who generate the information and those who need it. This is to ensure reliable provision of varied agricultural information services to the public which according to Wheeler (2008) is the key to food security, poverty eradication and development. Wheeler further noted that in as much as the different types of agricultural information are important for intending and actual practitioners, availability and communication is also important. These in conjunction with a good insight on knowledge and understanding on types will form a foundation for creating universal awareness on the rudiments of suitability of types of agricultural information and practices for prospective clients.

2.4 Awareness of Agricultural Extension Information Services

Awareness of the availability of particular information plays an important role in its utilization. Awareness, access and utilization of agricultural information for reliance and development go hand in hand. Without types and its availability, there will be no awareness, access nor utilization. As much as awareness is important, it is not all inclusive. Maximal use of agricultural information provided by AEIS, the mode and channel of communication to the user are of great importance alongside satisfactory communication medium. Sinkaiye (2011) reported that Agricultural Extension Information Service (AEIS) has reached the limits of available natural resources such that future increases in agricultural production and rural development are hinged on proper awareness of the services available. For the reason above, awareness in AEIS is changing the quantity/quality and nature of information clients need. The emerging role of awareness in AEIS is closer to that of socio economic/rural development than technical expertise

while the training of AEIS personnel is a necessity for both (Blackburn & Flaherty, 2012). The above, confirms that awareness of agricultural information services and provision to clients needs increase both with greater commercialization of agriculture and in light of the innovations that are likely to prove important for self reliance and national development.

Therefore, awareness on knowledge, information, skills, technologies, and attitudes in AEIS are to be explored for the intensification of agriculture for rural development (FAO and World Bank, 2014). They further noted that awareness of AEIS in any society plays an important role in agriculture and rural development as it brings the farming community information on new technologies that can be adopted to improve production, incomes and standards of living. Sinkaiye (2011) reported that creation of awareness through radio programs, television programs, extension publications, news paper articles, newsletters, leaflets, practices, agents, shows, field days and interactions with farmers provides means by which they are edified. AEIS awareness and productivity cannot be overemphasized. It is through this that access to competitive production resources such as credit, inputs, marketing services, information, skill and competence with massive awareness is achieved (Oladele and Sakagami, 2012).

With competitive agricultural production powered by globalization, awareness of agricultural information plays significant role for embracing agriculture for empowerment. This awareness should be made known to clients to overcome focus on production which before now was less based on market demand and profitability (Van Den Ban & Hawkins 2008). According to the United Nations Development Programs (2013), awareness in extension services is seen as essential to help farmers remain competitive, profitable; diversify production, produce for markets and more value-added production. AEIS being a growing avenue of information provision to clients in most African countries, it plays significant role in affecting farmers'

adoption of innovations which hinges on effective awareness creation to varied practitioners (Agbamu, 2015).

Van Den Ban & Hawkins (2008) further posited that the effectiveness of AEIS delivery is critically dependant on the awareness of clients on the various agricultural innovations available. This is based on the fact that awareness of clients will influence their attitude in approaching the agricultural related practices. In line with Van Den Ban & Hawkins, Wheeler (2010) noted that the mission of agricultural extension information services is to create awareness on research based information, educational programs and technology on farmers' needs enabling them to make informed decisions about their economic, social and cultural well-being. This, they conclude will not be possible without adequate awareness. Awareness therefore should be given priority as to long-term ecological practices such as biodiversity and soil quality, rather than short-term productivity gains (Abdullahi 2013).

Central element of the AEIS on awareness focuses on the efficient use of on-farm and local resources like farmyard manure, indirect crop protection and local seed. This, according to Schram (2010) promotes the powers of self regulation and resistance which plants and animals possess naturally. Therefore, awareness of AEIS is not just partly a solution for efficiency in agricultural production but paramount in general agricultural management for the populace.

As a result of the role of awareness of AEIS in developed nations, awareness in AEIS is being supported by legislation and government standards in order to keep clients abreast of developments in agricultural related areas. According to Blackburn & Flaherty (2012) it includes rules for processing, trading, monitoring, and certifying agricultural produce. Through awareness and application of AEIS, South Africa, and some Asian countries are not only self-sufficient in virtually all major agricultural products, but are described as a fertile territory for crops (Paulo-Freire, 2015). Anaeto (2016) confirmed Blackburn & Flaherty (2012) by describing

available agricultural information and the awareness of such information to being one of the critical factors in adoption rates of innovations among farmers for high productivity.

Van Den Ban (2008) illustrated quantitatively the positive role awareness play in agricultural innovations and technological breakthrough to be 75% success. Also Oladele (2011) reported that farmers indicated that the most dependable source of AEIS awareness is through agricultural extension information agents which Wheeler (2010) noted with dismay that some farmers have often complained about agricultural professionals' attitude about awareness creation.

Evidences from FAO and World Bank (2014) also buttress the fact that farmers often state that if AEIS professionals remained open-minded and took time to create awareness on agricultural information where available, intending farmers would be more likely to think positively about adoption of agricultural practices. Wheeler (2008) further asserted that conservative awareness attitudes still persist within some agricultural scientific, academic community and extension personnel which calls for concern because they are significant barriers to awareness creation on research output.

Considerable researches have been devoted to AEIS, but there have been little studies on the extension officers in relation to creating awareness on how agriculture information could be made available to the clients with special reference to preferred channels by clients. Without doubt, AEIS effectiveness will be determined by the level of awareness of extension services created among the farmers using different channels. The number of visits paid by the extension workers, meetings held between farmers and extension workers, regularity of meetings, number of field days organized by village extension workers, number of demonstrations within specified time frame, supervisory visits, research-extension linkage workshops, training sessions and through whatever channels possible are significant for envisaged successes. Channelling and

convenient access must be put into cognizance in achieving an effective and efficient AEIS awareness among clients.

2.5 Channels of Agricultural Extension Information Services Provision

The channels of agricultural information communication cannot be down played if it should make impact on agricultural practices. Hybells & Weaver (2015) perceived effective information communication channel as a means to general livelihood. Having an effective channel of communication in agricultural information provision implies raised standard and signifying better and meaningful ways of life (Anaeto, 2012). With much harp on agricultural practices and the extension service experiencing a continuing growth and recognition in developing nations, more emphasis is being placed on the use of ICT and mass media for preferred channelling of agricultural information transfer and access. Hence the growth of AEIS necessitates a transition from the traditional interpersonal methods of information transfer channels, such as on farm demonstrations and conferences, to mass media methods, such as publications, computer-assisted instruction and home study and eventually to interactive video and telecommunication (Al-sharafat, 2012). Long & Shorzel (2010) observed that the use of mass media (television, radio telephones, newspaper apps) and other ICT facilities as channel of information transfer and access has the potential to greatly increase the efficiency of individual practitioners of agriculture.

In view of the above, there is an urgent need to determine the most preferred channels clients will like to access agricultural information at their disposition in their geographical locations. Bello & Schwartz, (2012) in their study on the determination of farmers' preferences for available agricultural information transfer and access noted that designing effective and efficient method of information transfer and access would aid extension workers in reaching out to farmers. The development and testing of agricultural information channelling and system based on Agricultural Information Dissemination System (Agrids) is vital to production. Bachu

(2013) stressed that the channels of agricultural information transfer and access enhances adoption and acceptability of practices. This is seen in conservation of time; money and energy; enabling correct diagnosis of the problem; strong database to support decision making; zooming facility which adds an extra dimension; accountability to the farmer; capacitating of rural livelihoods and employment generation; documentation of success stories and content development; and majorly feedback channels which helps to enhance information transfer, access and improve performance.

Anderson & Feder (2012) reported that an effective AEIS channel in transfer and access of information consolidates a Farmer Decision Support Framework both for adoption and satisfaction. Farmer Decision Support Network (FDSN) is a framework which has been created to assist growers in transfer and access to agricultural information. The dissemination of farming information collected from various sources such as paper-based publications, websites, agricultural advisors and other farmers around the globe are channelled through FDSN in order to meet the needs of the clients. Bachu (2013) further noted that farmers prefer the customized information channels on crop performance provided for their local situation. However, channelling information through these sources and distributing it locally is often a challenge in developing countries (Mathur & Sinha 2013).

With the Internet creating a wider access in information communication, innovative farmers source and use information communication technology much more to seek information and conduct their agricultural businesses. For example, Anderson & Feder (2012) noted that most Asian countries have provided decision-aid systems which allow AEIS personnel to channel recommended varieties to enable farmers make more informed decisions. Unfortunately, Gustafon & Rivera (2013) noted that the problem with this channel of delivery is that the program needs to be downloaded regularly in order to get the latest information hence seen as a

setback to farmers who are not knowledgeable in information communication technology as seen in the developing nations.

Similarly, Fedale (2010) reported that with the growth and adoption of Information and Communication Technology (ICT) as channels of agricultural information communication in Kenya as of 2009, World Bank statistics showed that considerable population preferred mobile phones as channels of agricultural information communications. This is seen to have facilitated channelling agricultural extension information services to farmers. The usefulness of effective approach to channelling agricultural information using technology generation and dissemination is widely acknowledged by Nagel (2009), Elliott (2012), Swanson & Peterson (2013) and Roling (2013), as second to none in reaching the clients although they are sometimes criticized as abstract.

To this effect, Diepeveen (2008) explores the holistic focal points for understanding the factors that impede the channels of flow of agricultural information dissemination between farmers and the extension bodies and summed it up that the components and channels of communication must be well defined and analysed for proper efficiency to aid utilization and subsequent satisfaction. These components used in analyses of the channels in agricultural information transfer and access consist of technology generation, technology transfer, technology utilization, and technology policy (Sand, 2014). Mostly they are established by governments to improve and enhance agricultural information communication channels between farmers and extension personnel. Their functions and linkages related to the flow, channel and feed back of technology and information in the system defines the component (Wheeler 2008). Diepeveen (2008) outlined the ways of channelling agricultural information for effectiveness and noted that they are not far from planning, administration and implementation of research activities to develop, assess, adapt and test improved agricultural technology for farmers and other users.

However, because the natural environment strongly influences modes of extension planning and operations, Friedman (2011) suggested that proper channelling of technological needs of farmers in different agro ecological zones is essential for consideration for effectiveness. Differences in temperatures, rainfall, soil types, evapo-transpiration, and so forth are reflected in the diversity of farming conditions and production systems which necessitate effective channels of agricultural information communication modes. Schrams (2010) put forward that agricultural extension information communication channels should mostly encompass face-to-face training, training products such as manuals and videos, or information and communication technologies (ICTs), such as radio and short message services (SMS). Contado (2009) sees the most effective systems as two-way communication channels and combine different modes which is why a successful agricultural extension information system can be described in terms of how communication channels operates, why and how.

The continuing rapid development of telecommunications and computer-based information technology is obviously the biggest factor for change in AEIS communication channels, one which will facilitate and reinforce other changes (FAO, 2016). ICT has aided concentration on tasks and channels where human interaction is essential in helping farmers individually and in small groups to diagnose problems, to interpret data and to apply their meanings (Leeuwis, 2016). This has brought about more independent and more client-oriented agricultural information services. The emphasis on channel has been on the quality of interaction between agent and client. Here, channelling the expertise of farmers, extension breakthroughs and the best available scientific knowledge to develop farms and local agricultural economies.

Generally, in agricultural extension, both interpersonal communication channels and mass media have been widely applied to transfer and access information to the public in order to facilitate utilization of agricultural information and services. Okwu & Obinne (2009) suggested

that whichever preferred channels of transfer to be adopted for effective utilization should be inclusive to cover extension agents, farmer-to-farmer contact, mass media newspapers, magazines, posters, smart phones, radio, television, film, slides and file strips. Okwu & Obinne (2009) further concluded that a popular generalization from communication research on information access and utilization is that interpersonal communication is more efficacious in agricultural information utilization than mass communication in bringing about desirable change. They argued that mass media utilization though necessary to achieve economies of scale, are inferior to personal contact as means of persuading people to utilization of agricultural information.

2.6 Utilization of Agricultural Extension Information Services for Empowerment

Processes of utilization, uses, usefulness and satisfaction climax information provision in all ramifications. Utilization of Agricultural information according to Ozowa (2011) is now gaining recognition and acceptance in agricultural practices owing to the central place it occupies in reliance. Utilization of agricultural information has advanced to include the different strategies and processes involved in putting agricultural information into practical use by applying the knowledge and awareness gained into the daily agricultural practices by the public.

Utilization of agricultural information as seen by Ahmed (2015) involves knowing the actual time and season to put certain suggestions offered by extension personnel into action for effective and efficient result. This he said includes the process of utilization of knowledge on procurement and use of additive, planting time, harvest technologies, weed control, higher yields, marketing time, credits/cooperatives, investments, labour availability, insurance, tenures, improved seeds, control/prevention etc. Sands (2014) added that the process of utilization of all of these in addition to effective and efficient channels of communication presents maximum satisfaction to the users of agricultural information and therefore gives embracement to agriculture. Yahaya (2013) however argued that utilization strategies in agricultural information

can only be sustainable if extension organizations are well equipped. This is because parameters to measure utility involves interviewing, visitation, reportage which needs facilities to bridge and connect to the diverse users of agricultural information to weigh efficiency and effectiveness.

To this effect, as the activities of AEIS progressed in the century, extension organizations matured and changes in services occurred. Their objectives became broader while the extension workers are becoming better trained and more professional by helping farmers realize the intent of their activities through enhancing the process of utilization of agricultural information. If the above is well harnessed, Mody (2013) concluded that utilization of agricultural information service will produce a sustainable economy and create comparable agricultural-related commercial companies, agricultural commodity marketing boards and trustees to guarantee the supply of quality specific agricultural product to users. Also, agricultural development projects could be made visible to the wider world through the utility of available agricultural information services.

Recently, extension services in developing nations have tried to make utilization of agricultural information and services become more diversified by making agricultural practices attractive to intending clients. In the developed countries utility of agricultural information has transformed the main focus on food production with that of a growing recognition of the need to reach, influence, and benefit the multitudes of small, resource-poor farmers by utilizing agricultural information for practices. According to Foo (2014) utilization of agricultural information has aided the persistent training and visit system which has brought to fore many commercial farmers thereby overcoming the problem of surplus production and reversing farmers facing economic and policy pressures. Issues regarding environmental deterioration and livestock welfare have also been a thing of the past as a result of utilization of agricultural information through AEIS (Okwu & Obinne, 2009). Consequently, the process of utilization is becoming important for extension work particularly as its utilization centres on practice guidance

which focuses on means by which farmers can maximize their income level from practices with moderate input and minimal loss.

Agbamu (2015) noted that it is by maximal utility of AEIS that it has become recognised as an essential mechanism for delivering agricultural information and advice as an input into modern farming. He further submitted that the participation of agricultural extension workers in adaptive research trials also allows them to become familiar with the technologies through constant agricultural information utilization processes thereby improving satisfaction on practices among clients. Satisfaction here is enhanced because the utility promotes and ensures that the sociological dimensions of farming are not neglected in the recommended improved farming practices (Adams, 2015). Since commercial farmers and the general public derive satisfaction through direct financial and advisory benefit from maximal utility of agricultural information services, Oladele (2011) sees utility as affecting the pace of change in the extension agricultural information, organization, functions, strategies and approaches as clearly accelerating to accommodate job creation, self reliance, sufficiency and employment provision among the teeming populace.

2.7 Satisfaction with Agricultural Extension Information Services

The essence of assessment of knowledge, types, awareness, channels and usefulness of agricultural information service all borders around eventual satisfaction of whoever the services are directed to. Satisfaction in any information provision outlet is a necessity as the entire services are directed to humanity. It is of more importance in AEIS aimed at reliance of youth. Satisfaction in agricultural information services as it focuses on reliance is all about the public ratings, the image and the activities therein. Bokor (2011) submitted that AEIS being the different programmes, projects, and recommendations which the extension service personnel make available to their clientele through the use of extension education programs satisfies different clienteles differently. Notion on success or failure, positive or negative impacts,

effectiveness, efficiency of the programs all centres on satisfaction and extent of utilization.

Contado (2009) also shared the view of Bokor stating that AEIS which encompasses all aspects of agricultural extension programs and includes provision of timely information, linking of farmers with sources of farming inputs and credit facilities and most importantly, provision of education services to farmers take diverse perception when it comes to satisfaction. A different image as related to satisfaction is that of limiting agricultural extension services and programs to helping the farmers to procure their planting inputs and other inputs needed on their farms. Others through experiences have come to notion of the fact that for any agricultural project or programme to satisfy clients, AEIS must transcend the usual close-minded practices of leaving information at management corridors.

Anaeto (2016) noted that satisfaction among clienteles in modern AEIS and programs in the world today, covers a wide range of expectation and desires in the agricultural information services offered to the clients. For maximum satisfaction, Orivel, (2016) suggested services should encapsulate all the clients need from the beginning to the end of production processes so as to boost satisfaction and foster reliance. The opinion of Oladele (2011) supports that of Anaeto (2016) on the satisfaction of majority of farmers that agricultural practices and AEIS are not just limited solely to land tillage but combined with services and programs relating to price incentives, input supply, credit, seed multiplication and so forth. However,

Contado (2009) posited that the sole activities of satisfaction are an improvement on already known relationship between Research-Extension-Farmer Linkage thus resulting in Research-Extension-Farmer-Input Linkage System (REFILS). Though this linkage has not really improved the satisfaction of farmers, hence Anaeto (2016) reiterated the need for involving extension service and program in direct labour distribution in addition to farmer educational services provided by AEIS personnel. The above as an aspect of AEIS on satisfaction as seen by wheeler (2010) can be clarified with the economic concept of division of labour, which states

that individuals work in different sectors of the economy just as different approaches are to extension services to bring maximal satisfaction to clients. Satisfaction could be enhanced through government agency or ministry responsible for promoting the adoption and utilization of new scientific farming practices through formal educational programs (Agbamu 2015). The above supports Uwakah (2012) that many AEIS, for the purpose of boosting clients' satisfaction, has been co-opted into the activities of non-governmental organizations (NGOs), private firms and organizations such as NTC/BAT, Coffee-Growers Association, Shell Corporation, and some Religious organizations.

The role of AEIS according to Anandajayasekeram (2008) to boost satisfaction therefore includes act as link between agricultural development institutions such as research institutes, universities, colleges of agriculture and target group to carry out formulated agricultural extension policies, links the farmer with sources of farming inputs and credit facilities, provide the timely information on new innovations and practices meaningful to agricultural development. Inclusive is provision of educational services to farmers which plays active role in the rural and community development of many nations. The above as seen by Wasihun (2014) and Adams (2015) explained why satisfaction in AEIS remains core in agricultural information provision throughout the world. It centres on the ability of extension agents assisting people to minimize their own problems, help them find desirable solutions and encourage them to take action, foster beneficial changes to meet changing conditions and to modify its programs to suit the expectation of the larger society. It goes further to provide maximum opportunity for the society to participate in attaining a rewarding practice through AEIS programs. Above all, it is to promote efficient agricultural production and the development of institutions to ensure proper education and dissemination of information relating to agriculture (Adams, 2015).

In most developing countries such as Nigeria, where subsistence agriculture dominates the practices, advancement in AEIS programs for satisfaction is indispensable. This

can only be achieved by improving agricultural information services on the part of extension workers (Aker 2010). A great deal of information provision and subsequent satisfaction is expected from AEIS providers. They are to enhance satisfaction as an adviser, a technician and a middleman operating between agricultural research institutions and the public (Fedale 2010). Also Nagel (2010) see an extension worker as a change agent, consultant and advocate helping farmers to identify their problems and find solution. He works for the creation of community harmony essential for group projects and a manager planning and organizing his work and that of his clients.

The effectiveness of AEIS personnel in boosting satisfaction can largely be used to assess success of extension programme. If appropriate teaching/learning situation is provided, it follows that knowledge is permanent and positive satisfaction and change in behaviour of the farmer would take place. In a study by Oladele (2011) on approaches to satisfaction on agricultural extension programs, it showed that from the mass media method approach to technology transfer, on average, television programs was rated satisfactory as an effective approach and other mass method approaches to technology transfer were rated to be only somewhat satisfactory. Training/seminar, farmer field schools and demonstrations were satisfactory approaches to technology transfer. Face to face and farm/personal visit approaches to technology transfer were also rated satisfactory approaches.

On farmer satisfaction of extension programs regarding various sources of information as used by them and their effectiveness, Ahmed (2015) reported radio, magazines, brochures and agricultural suppliers as often satisfactory. To boost satisfaction of farmers, Eponou (2016) suggested that mass media (TV, Radio, publications) must be effectively used to transfer new agricultural practices to the farming community. Personal contact is also a sine

qua non. This is as a result of few opportunities provided extension personnel to conduct demonstration plots and face to face meetings.

However, Eponou (2016) emphasized the need to conduct training/seminars as they proved to be satisfactory in transferring agricultural information. Both extension and research personnel were of the opinion that mass media programs must be used effectively in order to get maximum satisfaction with minimum efforts (Roling, 2013). Emphasis is also placed on the need to conduct seminars/training and also the strong role of private extension services (pesticide and fertilizer agencies) and agricultural suppliers in farmers' decision making to enhance their satisfaction. In the study by Contado (2009) two methods perceived to be highly satisfactory by farmers were training and demonstrations. The study further revealed that the following extension programs were perceived to be satisfactory by farmers: workshops, print materials and office calls.

Sinkaiye (2011) reported that the role of AEIS involves building capacity of farmers and help them make informed decisions. However, the effectiveness of extension service and programs is highly dependent on the ability of competent extension workers to transfer satisfactory information to the farmer (AL-Sharafat, 2012). Furthermore, satisfaction on extension activities has high impact on the public when management practices, rate of adoption of new technology and level of understanding of clients are assured.

According to Sallam (2012) satisfaction of clients by extension programs is very important to support an agricultural practice which is moving from production to sustainability. Hence it is imperative to have strong AEIS delivery inclined towards increase participation of farmers (Wasihun, 2014). A fascinating account by Uwakah (2012) on applications of some extension programs as regards satisfaction by farmers includes regular farm visit deemed crucial

for dissemination of extension information. However, visits should be meaningful and have a purpose in order to have a positive satisfactory impact. Ineffective extension program contributes to negative impression on agricultural practices. With technology it becomes easier with a wide range of AEIS and programs on new or innovative farming programs made available to farmers.

However, there is little evidence that the increased availability of information technology effectively satisfies AEIS diffused to farmers (Lionberger & Gwin, 2015). In today's agricultural industry, Fedale (2010) and Reddy (2012) noted that survival depends on having an edge on satisfactory agricultural information related to production and market state, efficient allocation of available resources and use of new innovative farming practices is paramount to understanding information content.

Innovative technology and information could be left sitting idle in research centres for lack of understanding information dissemination strategies while providing unsatisfactory services (King and Benoit-Cattin, 2012). This challenges as noted by Wheeler (2010) have often been communication gap between researchers-extension personnel on the one hand, equipments facilities and farmers on the other. The contention is that the communication gap lies not so much in language or cultural differences but as in the methods employed for the transfer and access to agricultural extension information services and programs by users. Various means and methods, including field trips, guest speakers, group discussions, workshops, on-farm demonstrations, audio-visual materials, printed matter, and interactive telecommunications have been advocated for farmer satisfaction by agricultural extension practitioners for agricultural information dissemination in today’s agriculture practices but not without their juxtaposed challenges.

2.8 Challenges faced in utilizing Agricultural Extension Information Services

Every aspect of human activities and needs come with its attendant challenges. Information provision for whatever purpose is not without one challenge or the other though the challenges might vary from one location to the other. In developing countries like Nigeria, the acceptance and use of technology in agricultural information transfer to farmers has its challenges. Technologically, the use of mass media in agricultural information transfer in the absence of education, technical skills, appropriate infrastructures and material resources is unlikely to yield result. In agricultural information transfer, Mody (2013) maintained that printed and print media serves little purpose in developing countries where clients are down to earth and prefer information provision delivered on finger tips. Even though literacy level is not a pre-requisite for the use of electronic media for the purpose of agricultural information provision, it cannot be effectively used in multi-lingual societies therefore constitute a challenge (Sallam 2012). At the same time, it may not be feasible to translate a particular programme into all the languages in a multi-lingual society. Also the mass media outfits, according to Lionberger and Gwin (2015), constitute unusual top-down structures with limited scope for public participation in the process of general information transfer and access and also exhibits challenge in the inability to narrow geographical distance without obvious bias.

Interpersonal mode of agricultural information provision on its part has the challenge of being costly in terms of workforce requirements, time and clientele's movement compared with mass media (Aker, 2010). Generally, the quality of interpersonal channels is low due to the fact that messages become greatly distorted as they flow along interpersonal chains. Wheeler (2010) and Fenley & Williams (2012) observed that such interpersonal visits could simply degenerate into personal services by the extension agent or into a personal visits if extension agents were used as the main agents of liaising between the extension services and the beneficiaries. Abduallhi (2013) argued that there are bound to be problem in effective delivery system if the

extension agents are in disparity in handling communication between the farmers they were meant to interact with. Further important factor challenging effective agricultural information provision and utilization between farmers and extension workers/agents is the gross inadequacy of extension agents (Bello 2010). Orivel (2016) reported that most extension workers lack mobility usually few in number compared to the clients. Fedale (2010) observed that transportation is one of the main causes of lack of effectiveness on the part of extension staff. Orivel (2016) added that under remunerations of extension staff contributes to lack of motivation and quick turnover of extension staff causes poor performance and they are challenges to their activities.

In the broadcasting industries, Ozowa (2011) noted that poor reception quality is one of the obvious constraints in the use of broadcasting media in agricultural information transfer and access in the developing world. This has affected the extension services. He further noted that little has changed during the last two decades to remedy problem as field work in most developing countries is characterised by conditions that foster low morale, lack of mobility and extremely low salaries. For many extension workers, tapping additional income sources is a question of physical survival. Therefore quality performance is further impeded by low educational qualifications and lack of advancement possibilities (Swanson, Farmer and Bahal, 2014).

While working conditions of extension workers have deteriorated, expectation with regards to their role is increasing. They are no longer to be simply transmitters of technical knowledge but practise participatory, methods, identify indigenous needs and problem solutions, and serve as a link to the world outside their localities. Foo (2014) observed that the dimensions of AEIS challenges go beyond, the capacities of developing countries, notably Africa; foreign funded projects have tried addressing the issue in a piecemeal fashion but have often drained non project area of personnel. Neither approach has solved the basic dilemma: insufficiency of

material and human resources to reach universally accepted societal goals. FAO & World Bank (2014) reported that while having to count on their own resources for extension, many countries will not be in a position to implement technological transfer, much less the more demanding strategy of human resource development. They further concluded that regardless of specific extension approaches, there is no alternative to a strong international commitment to strengthening and revitalizing extension personnel resources for agricultural information transfer.

The political and economic environment also pose challenges to AEIS in many ways one of which is policy implementation and forms the most significant factors is a country's stage of economic development. Another is the level of government's investment in public sector extension (Mathur & Sinha, 2013). According to Idachaba (2010) this is influenced by the presence or absence of structural adjustment programs, the degree of economic dependence on agriculture and proportion of the population economically active in agriculture as opposed to industries. Political shifts at the national level often results in key changes in some AEIS personnel, management and programmes. High turnovers of top managers undermine management experience and continuity in leadership while, political unrest and war often make extension efforts impossible (Gustafson, 2012).

Al-sharafat (2012) in his study noted that in many countries, socio cultural factors are leading challenges to the effectiveness of extension. Language difference and illiteracy can impede the communication of improved technology unless they are taken into account. The division of labour between the sexes can differ along cultural lines and influences the nature of farming system in different regions. In many countries, the men are employed off-farm, leaving the operations to women. Cultural differences among farmers as well as differences in their resource endowments also need to be taken into account. In particular, these are reflected in land use strategies.

Pastoral herders for example require different types of subject matter expertise, and extension need to use different strategies to transfer technology to them than to permanent field agriculturalists (Sallam 2012). For this reason, extension works that focuses on cultural practices and affordable technologies may be more appropriate in countries with large numbers of resource-poor farmers. As observed by Fenley & Williams (2012) the policy component of an agricultural technology system can enable or limit extension in ways beyond the reach of extension managers and clients. The principal areas of influence are price signals to farmers and decisions by government that affect public agricultural development organizations. The amount invested by government in agricultural development influence the pace and scale of effort. In many instances, spending top limit for public institutions have been imposed by a structural adjustment programme agreed to by government. Nagel (2010) suggested here that AEIS planning needs to take these limits into account, especially when dealing with staffing.

The endowment level of public agricultural extension set by governmental policy and planning policy can impose limits on expenditures which constitute a major challenge. This can hamper extension efforts in basic ways. For example, a lack of money to buy vehicles and fuel undermines the mobility of extension personnel (Eponou, 2016). In addition, if salaries are too low, extension organization cannot attract or hold qualified staff therefore services will suffer.

However, careful planning, guided by a strategy and program of action, can improve the use of resources and the effectiveness of extension work within government funding limits (Sands, 2014). Fedale (2010) also noted that Policies on consumer and producer commodity prices, subsidies for inputs, credit availability, import substitution, export earnings, food self-sufficiency and natural resource management also inhibits services. These send direct and indirect signals to AEIS and farmers and influence their services, production and decisions. High prices for example, cause farmers to use less of input. Extension organizations should be aware

of market signals to ensure that they are recommending technologies that meet farmers current needs. They also require feed backs from farmers to ensure the continued relevance.

Commodity prices, influenced by government policy, act as incentive or disincentive for farmer production. If there is no profit incentive for production of a specific crop for example, there is a little point in developing or transferring improved technology related to that crop (Adams 2015). Policies that favour the import of cereal grains at concessionary prices on the international market discourage in-country production of these crops. Also, technology generation and transfer outputs that focus on such crops are not likely to interest farmers. The examination of the policy context is important and allows organizations to avoid wasted effort and resources between AEIS and farmers (Oladele and Sakagami, 2012). Communication infrastructure can impose additional constraint for AEIS organizations and farmers. Farmer's access to mass media such as publications, radio or television may be limited, thus reducing the options available to extension for communicating its messages. At the same time, extension itself may have little or no access to telephone and radio services for long range communications. This can severely hamper its ability to organize and carry out field operations.

An understanding of AEIS's challenges is an important step in planning extension activities and coordinating them with research. Poor linkages between research and extension are major constraints in technology flow in many countries (kaimowitz, Syder and Engel 2014; Eponou 2016). The linkage problems are of two types: those affecting feedback from farmers to research and extension and those relating to coordination and cooperation between research and extension. In both cases, extension managers can improve the situation by developing a linkage strategy and allocating responsibilities and adequate resources to curb these challenges.

2.9 Review of Empirical studies on Agricultural Extension Information Services

Progress towards modern science and its application to agriculture has been on since the mid-eighteenth century through much of Europe. According to Russell, (2006), there has always been the need to radically change the traditional modes of farming by initiating experiments, demonstration, advocating the adoption of innovations and most especially disseminating agricultural information through publishing.

Smith, (2012) noted that in modern days, it has been through extension. Extension has come to mean extending knowledge from a centre of learning to those presumed to be in need of that knowledge. Extension work as seen by True (2005) could be through building better linkages or other means between the various actors and to increase the learning from each other. The exchange of knowledge and experiences with farmers on what is most needed at a time is towards making great change in practice especially using agricultural information and technologies embedded in it (Society for the Diffusion of useful knowledge 2012). As a result, all the parties will come closer and farmers become more confident that professionals can help them without imposing solutions on them.

Agricultural Technology system, agricultural information provision and the place of extension have stressed the importance of understanding the dynamic context in which extension-farmer operates through planning and strategies. Systematic planning by extension workers allows for effective and efficient use of resources, approaches, methods and linkages in ways that are responsive to farmer needs (Roling 2011).

Experiences from various applications of this agricultural information have proven to generate some important and useful lessons for increasing the effectiveness of agricultural extension systems and programs (Smith 2012). According to True, (2005) these are to enhancing

the agricultural extension planning process, helping to improve extension linkage with research, helping to improve extension linkage with training, reducing extension systems workload and increases coverage while helping to revitalize extension workers professionalism towards better information provision to the clienteles. The above can only be achieved in a process approach to program construction that is opened and dynamic. Objectives should be opened to negotiation, flexible, changeable and adjustable. As the capacities of the partners grow, experience acquired, confidence is gained, and continual programme evaluation and success can be achieved (True 2005).

Roling, (2011) noted that lessons from the past can serve as a guide to the future in formulating relevant and useful extension policies for developing countries. Extension policies aiming for impact on the society should take cognizance of the following; name of the extension system, mission and goals, intended clienteles, geographic coverage, approach to be followed, general subject matter coverage, institutional and organizational framework, how extension will be financed and provision for review and accountability within the extension system (Alexandratos 2015).

Alexandratos, (2015) further posited that the ultimate test of extension is the impact that extension is having on the productivity of all major groups of farmers including their income and quality of life. It should also be evaluated by its contribution to sustainable agricultural development. Conclusively, the key factor in success of extension organizations is seen to be improving their human capacities. The proper planning and the implementation of the human resource system will result in overall development of extension personnel and their general public. It will also enable extension organizations adopt and adapt to the rapid changes occurring in the extension environment aimed at helping the developing countries (society for the diffusion of useful knowledge 1872).

2.10 Summary of the Review

Chapter two reviewed various researches and findings on fundamental issues in agricultural information services as it concerns self reliance and development. Many of the findings have agreed to the fact that knowledge on the types of agricultural information to be practiced is a prerequisite to any success that can be achieved in the utilization of agricultural information services for self reliance. Others also held the view that adequate knowledge of clients on types of available agricultural information is seen to form a bulk of issues bordering around clients' adoption of agricultural practices. More reviewed the pertinence of the ability to put such information types to use for self development as hinged on proper awareness of the existence of such typologies available, whereas effective utilization is said to be unachievable without the information being channelled through user friendly platforms. Most of the reviews dwelt and harped on the positive sides of AEIS for possible reliance to the neglect of how the all round processes can culminate in knowledge, awareness and utilization as means that could deliver needed information to the finger tips of clients. Also agricultural service tends to be well researched as opposed to agricultural information services. This study however, has established that agricultural information, if well harnessed, is certainly a path to students' reliance.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discussed the methodology adopted in carrying out the research. Research methodology is a systematic process that encapsulates the various steps used by the researcher in studying and subsequently providing or suggesting solution to the problem at hand. This chapter is outlined under the following sub headings:

3.2 Research Method Adopted for the Study

3.3 Population of the Study

3.4 Sample Size and Sampling Techniques

3.5 Instrument for Data Collection

3.6 Validity of the Instrument

3.7 Reliability of the Instrument

3.8 Procedure for Data Collection

3.9 Procedure for Data Analysis

3.2 Research Method Adopted for the Study

Research method is a particular procedure used to collect information and data for the purpose of a study. The method adopted for this study is the quantitative research method. Quantitative research method wholly entails numerical processes of data collection, analyses and interpretation (Meriwether 2013). Its choice was based on the nature of question the research set out to ask and the fact that the research relied primarily on the collection of quantitative data.

3.2.1 Research Design

A research design is the set of methods and procedures used in collecting, analyzing and measuring of the variables specified in the research problem. For this study, descriptive survey research design was adopted. The rationale of survey research design for a study like this

according to Bryman (2012) is for its suitability in gathering quantitative data and describing trends, attitudes or opinions of a population by studying a sample of that population. Survey was also a design deemed fit for studying a spread population like the population of agricultural science students across different levels. From the sample results, the researcher can generalize on the population. Best & Khan (2013) also noted survey design as most suitable as it allows the researcher select sample from large population and generalise. This will enable drawing inferences about characteristics and other attributes of the population. It also allows for easy collection and analysis of quantitative data using questionnaire.

3.3 Population of the Study

The population of a study is a unit of entity with characteristics of interest that a researcher wants to study through data collection and analysis (Olayiwola, 2010). The target population was 995 comprising 100 to 500 levels of agricultural science students of the Faculty of Agriculture, Ahmadu Bello University, Zaria, Kaduna State. The total number of registered students in the faculty as at 2017/2018 session as stated earlier is 995 as tabulated below:

Table 3.1 Population of the Study

Agricultural Science Students		
S/N	**Levels**	**Number**
1	100	235
2	200	321
3	300	150
4	400	149
5	500	140
Total		**995**

MIS, ABU Zaria, 2017/2018

3.4 Sample Size and Sampling Technique

A sample is a segmental representative of a population to be studied, while sampling is a systematic process of selecting units or subsets from a population of interest (Bryman, 2012). By studying the sample, generalization can be made (Mbachu, 2011). Being a large population in

different strata of 5 levels at 995 respondents, the researcher adopted a proposed table of sample determination by Cohen, Manion & Morrison (2011) and that of Research Advisors (2013). They proposed that if the population of a study spans between 900 and 1,000, a sample of 278 can be drawn conveniently with a confidence level of 95% and a margin error of 5%. To this effect and to minimize error, a sample size of 320 respondents was drawn for the study.

Proportionate stratified random sampling techniques were used to select the sample size since they are in different levels. This is so for the different levels to be adequately represented. Hence, strata number divided by total population multiplied by total questionnaire to arrive at copies of the questionnaires distributed to a strata. While the copies of the questionnaires per strata divided by total questionnaire multiplied by hundred to arrive at percentage distributed per strata (Research Advisors, 2013).

Table 3.2 Sample Size of the Study

	Level	**Population**	**Sample**	**%**
1	100	235	76	23.7
2	200	321	103	32.1
3	300	150	48	15
4	400	149	48	15
5	500	140	45	14.0
TOTAL		**995**	**320**	**99.8 (100)**

Source: Field Study, 2018

3.5 Instrument for Data Collection

An instrument in research is whatever valid technicality generally acceptable and deems suitable for collecting data for a study. For this study, the appropriate instrument was the questionnaire. Olayiwola, (2010) and Ujo, (2014) argued for the use of questionnaire in quantitative data collection for its noted economy in both time and convenience in gathering data and the ability to generate consistent question to all the respondents.

Therefore, a self developed questionnaire, vetted by supervisors and in line with the research topic and the contents discussed under the variables was used for data collection. The

questionnaire was close ended to guide the respondents and in 7 sections (A-G). Section 'A' contains questions on the demographic information of the respondents, Section`B' contains questions on types of agricultural extension information services, Section 'C' elicited questions on level of awareness of students on agricultural extension information services, Section 'D' obtained questions on preferred channels of accessing agricultural extension information services by students, Section 'E' includes question on extent of utility of agricultural extension information services for students, Section 'F' asked questions on level of satisfaction on agricultural extension information services to students while Section 'G' was on challenges in agricultural information provision. Questions on level of awareness, preference of channels, extent of utilization and level of satisfaction was measured using Likert-like 5-point scale of measurement on 5, 4, 3, 2 and 1 respectively. Likert 5-scale was chosen because it is a multiple indicator or multiple item measure that is deemed to measure the intensity with which the respondents feel about an issue.

3.6 Validity of the Instrument

Validity of instrument is the degree to which the instrument measures what it is expected to measure. It required that an instrument is validated and found reliable. Face and content validity method were used to measure the validity and reliability of the instrument. The initial drafts of the questionnaire was given to experts in the field of Library and Information Science, agricultural information service providers and members of the supervisory teams for comments and inputs on the structuring and content before producing the final copy used for the study.

3.7 Reliability of the Instrument

Reliability of instrument in research has to do with the extent of consistency and dependability of the instrument. The reliability was established by conducting a pilot study within one week at the University of Jos using final year agricultural science students. Pilot study deals with carrying out a small but similar research to test the logistics and gather information on

the study prior to a larger study under the same conditions (Meriwether, 2013). Pilot study can reveal hidden deficiencies in the design of a proposed instrument which could be addressed before hand. The reliability of the instrument was determined using Cronbach's Alpha reliability scale. This was found to be 0.833. This means that the instrument is reliable since the index is above 0.5.

3.8 Procedure for Data collection

Copies of the questionnaire were directly administered to the students. This was done with the researcher and four research assistants from the Faculty of Agriculture to enhance effectiveness and efficiency. The distribution of the questionnaire was face to face to agricultural science students in their faculty and lecture rooms in Samaru, campus. This exercise spanned across 6 weeks because the different levels were taken one at a time to ensure optimal return.

3.9 Procedure for Data Analysis

Data analysis refers to attempts to categorize, summarize, seek patterns and make meanings from the relevant data gathered for a study. Descriptive statistics of mean and standard deviation, frequency and percentages were used in analysing the data generated from the questionnaire. This was employed in order to facilitate statistical manipulation and interpretation into a common base and understanding. Therefore, descriptive statistics which deals with mean and standard deviation was employed in analysing the data generated from the study.

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CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents the analysis of the data collected, results and discussions of the findings of the study according to the research questions and the objectives raised for the study.

4.2 Response Rate

A total of three hundred and twenty (320) copies of questionnaire were distributed to the sampled Agricultural Science Students of the various levels in the Faculty of Agriculture, Ahmadu Bello University, Zaria. Two hundred and ninety eight (298) copies were duly completed, collected and found useful for analysis. This represents 93% response rate.

Table 4.1: Response Rate

S/N	Levels	Copies of Questionnaires Administered	Copies of Questionnaires Returned	Percentages of copies of Questionnaires Returned
1	100	76	70	23.4
2	200	103	96	32.2
3	300	48	45	15.1
4	400	48	45	15.1
5	500	45	42	14.0
TOTAL		**320**	**298**	**100**

Source: Field Study, 2018

The response rate in Table 4.1 could not be dissociated from pre information by the researcher to the Research Assistants and their persuasion on the respondents. It is also in administering the questionnaire personally at the time the researcher feel will be positive to different levels at a time and on different occasions. It is also due to the fact that the students lecture rooms are within reach with minimal stress.

4.3 DATA ANALYSIS

4.3.1 Types of Agricultural Information Services for Required by Agricultural Students

In this section the opinion of respondents on required types of agricultural information services were sought. Table 4.2 show the distribution of types of agricultural information services, in the study area, its preference and as may be required by the students.

Table 4.2: Types of Agricultural Information Services required from NAERLS

S/N	The Types of AIS Required from NAERLS	Frequency	Percentages
1	I require Technical/Scientific AIS	261	87.5
2	I require Commercial AIS	260	87.2
3	I require Legal AIS	250	83.8
4	I require Social/cultural AIS	250	83.8
5	I require Short Message Services	200	67.1
6	I require Price information services	250	83.8
7	I require Dissemination of Technical AIS	230	77.1
8	I require Awareness services	150	50.3
9	I require Public Relation Services	150	50.3
10	I require Designing, media Production/ Advertising Services	168	56.3
11	I require Agricultural teaching aids	200	67.1
12	I require Agricultural production services	250	83.8
13	I require Illustrations/translations services	248	83.2
14	I require Audio recording services	247	82.8
15	I require Agricultural Radio, Airspace/Broadcasts Services	249	83.5
16	I require Specialised AIS	148	49.6
17	I require Interactive Voice Response	198	66.4
18	I require Imagery Monitoring Services	170	57.0

Field Study, 2018

Table 4.2 detailed the response of agricultural science students on the type of agricultural information services they required from NAERLS. The result showed that the types of agricultural information services required by agricultural science students from NAERLS varies and revolves around most of the items on the list. However, findings revealed that Technical/scientific agricultural information services is shown to be the most acquainted with and required by the respondents as indicated by 261 (87.5%) closely followed by commercial agricultural information services 260 (87.2%) as being required. Legal agricultural information

services, socio-cultural agricultural information services, and price information services all at the same frequency 250 (83.8%). This is immediately followed by agricultural radio, airspace and broadcast services 249 (83.5%) and illustration and translation services 248 (83.2%). Dissemination of technical agricultural information services follows with 230 (77.1) while short messages and agricultural teaching aids is at 200 (67.1). Interactive voice response with 198 (66.4%) and imagery monitoring with 170 (57.0). Awareness services and public relations both at 150 (50.3) and lastly Specialised agricultural information services response at 148 (49.6%).

The implication and correlation of this is that contemporary agricultural activities are technologically carried out and mostly, products are eventually directed to the market either for immediate consumption or for onward processing. It is therefore not surprising that technical/scientific agricultural information service and commercial agricultural information service top the list. On the other hand, the low response of specialised agricultural information service and public relation service is not far from the fact that the few available extension agents are inadequate to cater for the large clients due to their special needs.

Alfred & Odefadehan (2007); and Farooq, Ishaq, Karim & Issah (2010) conducted studies to determine the types of agricultural information services for reliance as may be required by the public from agricultural extension workers. Alfred and Odefadehan (2007) particularly identified various agricultural information types by extension workers required for reliance to centre around technical/scientific information since present day farming activities are mechanised. These types of agricultural information, according to them emanate from organizations, individual associates, local, national and international seminars, in the form of trainings through print and electronic media, telecommunication, and Internet service.

4.3.2 Level of Awareness of Agricultural Information Services from NAERLS

The second objective of the study was to find out the level of students' awareness on agricultural information services. Responses of students were summarized in mean and Standard Deviation. The data collected from respondents using Likerts five items scale of measurement were collapsed under three headings/items for analytical convenience and clarity. Highly aware and aware as aware, unaware and highly unaware as unaware, while undecided remained retained.

Table 4.3 Level of Awareness of Agricultural Information Services

N	Level Awareness of AEIS	Respondents			Total	Mean	SD
		A	UA	UD			
1	I am aware of Price Information Services	258(86.5%)	35(11.7%)	5(1.6%)	298	1.77	2.16
2	I am aware of Short Message Services	240(80.5%)	56(18.7%)	2(0.6%)	298	1.01	1.01
3	I am aware of Social/Cultural Agricultural Information	250(83.8%)	41(13.7%)	7(2.3%)	298	0.98	0.84
4	I am aware of Audio Recording Services	200(67.1%)	70(23.4%)	28(9.3%)	298	2.1	0.83
5	I am aware of Public Relation Services	200(67.1%)	93(31.2%)	5(1.6%)	298	1.68	0.94
6	I am aware of Agricultural Teaching Aids Services	178(59.7%)	118(39.5%)	2(0.6%)	298	1.99	0.9
7	I am aware of Agricultural Production Services	205(68.7%)	66(22.1%)	27(9.0%)	298	1.5	1.06
8	I am aware of Awareness Services	215(72.1%)	76(2.5%)	7(2.3%)	298	1.97	0.9
9	I am aware of Interactive Voice Response Services	200(67.1%)	80(26.8%)	18(6.0%)	298	1.66	0.66
10	I am aware of Technical Agricultural Information Services (DTAIS)	250(83.8%)	40(13.4%)	8(2.6%)	298	1.91	0.81
11	I am aware of Illustrations and Translations Services	198(66.4%)	100(33.5%)	0(0%)	298	1.29	0.86
12	I am aware of Agricultural Radio, Airspace and Broadcasts Services	222(74.4%)	63(21.1%)	13(4.3%)	298	2.03	0.61
13	I am aware of Specialized Information Services	204(68.4%)	75(25.1%)	19(6.3%)	298	1.22	0.92
14	I am aware of Technical and	249(83.5%)	40(13.4%)	9(3.0%)	298	2.02	1.22

	Scientific Agricultural Information Services						
15	I am aware of Designing, Media Production and Advertising Services	227(76.1%)	60(20.1%)	11(3.6%)	298	1.31	0.75
16	I am aware of Imagery Monitoring Services	236(79.1%)	50(16.7%)	12(4.0%)	298	1.69	0.71
17	I am aware of Commercial Agricultural Information Services	215(72.1%)	74(24.8%)	9(3.0%)	298	1.11	1.12
18	I am aware of Legal Agricultural Information Services	245(82.2%)	40(13.4%)	13(4.3%)	298	1.23	1.14

Field Study, 2018

Key: A=Aware; UA=Unaware; UD=Undecided; SD=Standard Deviation

From Table 4.3, all the items stated for the respondents in order to assess their level of awareness of agricultural information services in NAERLS have the following mean scores on 5 point Likert scale. Item 1: I am aware of Price Information Services ($\bar{x}$ =1.77;SD=2.16), Item 2: I am aware of Short Message Services ($\bar{x}$=1.01;SD1.01), Item 3: I am aware of Socio/cultural agricultural information ($\bar{x}$ =0.98;SD0.84), Item 4: I am aware of Audio Recording Services ($\bar{x}$ =2.1;SD0.83), Item 5: I am aware of Public relation Services ($\bar{x}$=1.68;SD 0.94), Item 6: I am aware of Agricultural Teaching Aids Services ($\bar{x}$=1.99;SD0.9), Item 7: I am aware of Agricultural Production Services ($\bar{x}$=1.5;SD1.06), Item 8: I am aware of Awareness Services ($\bar{x}$=1.97;SD0.9), Item 9: I am aware of Interactive Voice Response Services ($\bar{x}$=1.66;SD0.66), Item 10: I am aware of Technical Agricultural Information Services ($\bar{x}$=1.91;SD0.81), Item 11: I am aware of Illustration/Translation Services ($\bar{x}$=1.29;SD0.86), Item 12: I am aware of Agricultural Radio, Airspace and Broadcasting Services ($\bar{x}$=2.03;SD0.61), Item 13: I am aware of Specialized Information Services ($\bar{x}$=1.22;SD0.92), Item 14: I am aware of Technical/Scientific Agricultural Information Services ($\bar{x}$=2.02SD1.22), Item 15: I am aware of Designing, Media Production and Advertising Services ($\bar{x}$=1.31; SD0.75), Item 16: I am aware of Imagery Monitoring Services ($\bar{x}$=1.69;SD0.71), Item 17: I am aware of Commercial Agricultural Information Services ($\bar{x}$=1.11;SD1.12), Item 18: I am aware of Legal Information Services ($\bar{x}$=1.23;SD1.14).

From the Table, the summary of findings revealed that the level of awareness of respondents on agricultural services is high. This could be based on students' background. Table 4.3 further specifically shows the mean for price information services to be 258 (86.5%) and that of socio cultural agricultural information services to be 250 (83.8%) being the highest on the

list, while awareness on agricultural teaching aids and illustration/translation services ranks lowest with 178 (59.7%) and 198 (66.4%) respectively.

The finding further revealed that awareness of agricultural information services needed by students is moderately high in the study area. This is not just in the sense of available data and facts around agricultural extension information services but the form of representations that provide meaning and the context for purposive action. The implication of this is that awareness of information services do not necessarily turn out to satisfaction as the study later found out that satisfaction was moderately low. Information stored without reaching the end users is equivalent to worthlessness as lack of information acts as barrier to development as it is seen around communities in both urban and rural areas. This finding agreed with Ajuwon & Odeku (2012) and Mugwisi & Mostert (2012) who identified that awareness on any information service is always the basis for its full utilization or utilization of such services. On the other hand, they suggested that the most effective way of creating more awareness and disseminating agricultural information services is by making it part of the academic curriculum of the student. Through this process, more awareness is created formally and informally to the public.

4.3.3 Preferred channel of Agricultural Information Services access by agricultural science Students

This study was also interested in finding out the preferred channel of agricultural information services access by students. The data collected from respondents using Likerts five items scale of measurement were also collapsed under three headings/items for analytical convenience and clarity. ‘Most preferred’ and ‘preferred’ as preferred, ‘rarely preferred’ and ‘not preferred’ as not preferred, while undecided stands. The result of the responses is therefore presented as follows.

Table 4.4: Preferred channels of Access to Agricultural Information Services

N	Preferred Channels	Respondents			Total	Mean	SD
		P	NP	UD			
1	I prefer Recommended Practices	238(80%)	60(20%)	0(0%)	298	3.65	1.03
2	I prefer Newsletter	217(72.8%)	79(26.5%)	2(0.6%)	298	3.15	1.12
3	I prefer Extension Bulletins	203(68.1%)	95(31.8%)	0(0%)	298	3.89	0.98
4	I prefer Extension Agents	195(65.4%)	103(34.5%)	0(0%)	298	2.92	0.88
5	I prefer Reports	199(66.7%)	92(30.8%)	7(2.3%)	298	2.89	0.83
6	I prefer Extension Publications	205(68.7%)	83(27.8%)	10(3.3%)	298	3.89	0.82
7	I prefer Leaflets	200(67.1%)	97(32.5%)	1(0.3%)	298	2.95	0.88
8	I prefer Pamphlets	197(66.1%)	101(33.8%)	0(0%)	298	2.73	0.90
9	I prefer Television Sets	215(72.1%)	78(26.1%)	5(1.6%)	298	3.88	1.61
10	I prefer Newspaper Articles	212(71.1%)	84(28.1%)	2(0.6%)	298	2.65	0.81
11	I prefer Researches	235(78.8%)	63(21.1%)	0(0%)	298	3.47	0.81
12	I prefer Mails	215(72.1%)	83(27.8%)	0(0%)	298	2.58	0.94
13	I prefer Agricultural Shows	184(61.7%)	114(38.2%)	0(0%)	298	3.58	0.82
14	I prefer Guides	184(61.7%)	105(35.2%)	9(3.0%)	298	2.58	0.97
15	I prefer Field Days	215(72.1%)	83(27.8%)	0(0%)	298	2.55	0.67
16	I prefer Telephones	190(63.7%)	102(34.2%)	6(2.0%)	298	3.45	1.49
17	I prefer Training and Visits	220(73.8%)	77(25.8%)	1(0.3%)	298	2.39	0.64
18	I prefer Workshop and symposium	212(71.1%)	85(28.5%)	1(0.3%)	298	3.21	0.54
19	I prefer Personal Contacts	191(64.0%)	82(27.5%)	25(8.3%)	298	3.19	0.66
20	I prefer Reviews	102(34.2%)	171(57.3%)	25(8.3%)	298	3.19	0.64
21	I prefer Radio Sets	180(60.4%)	100(33.5%)	18(6.0%)	298	3.17	0.40

Source: Field Study, 2018
Key: P=Preferred; NP=Not Preferred; UD=Undecided; SD=Standard Deviation

From Table 4.4, all the items stated for the respondents in order to assess their preferred channels of access of agricultural information services in NAERLS are of the following mean values. These items are Item 1: I prefer Recommended Practices ($\bar{x}$=3.65; SD1.03), Item 2: I prefer Newsletter($\bar{x}$=3.15;SD1.12), Item 3: I prefer Extension Bulletin ($\bar{x}$=3.89;SD0.98), Item 4: I prefer Extension Agents ($\bar{x}$=2.92;SD0.88), Item 5: I prefer Reports ($\bar{x}$=2.89;SD0.83), Item 6: I

prefer Extension Publications ($\bar{x}$=3.89;SD0.82), Item 7: I prefer Leaflets ($\bar{x}$=2.95;SD0.88), Item 8: I prefer Pamphlets ($\bar{x}$=2.73;SD0.90), Item 9: I prefer Television Sets ($\bar{x}$= 3.88;SD1.61), Item 10: I prefer Newspaper Articles ($\bar{x}$=2.65;SD0.81), Item 11: I prefer Researches ($\bar{x}$=3.47;SD0.81), Item 12: I prefer Mails ($\bar{x}$=2.58;SD0.98), Item 13: I prefer Agricultural Shows ($\bar{x}$=3.58;SD0.82), Item 14: I prefer Guides ($\bar{x}$=2.58;SD0.97), Item 15: I prefer Field Days ($\bar{x}$=2.55;SD0.67), Item 16: I prefer Telephones ($\bar{x}$=3.45;SD1.49), Item 17: I prefer Training and Visits ($\bar{x}$=2.39;SD0.64), Item 18: I prefer Workshop/Symposium ($\bar{x}$=3.21;SD0.54), Item 19: I prefer Personal Contacts ($\bar{x}$=3.19;SD0.66), Item 20: I prefer Reviews ($\bar{x}$=3.19;SD0.64), Item 21: I prefer Radio Sets ($\bar{x}$=3.17SD0.40).

Table 4.4 further summarise the responses on the preferred channel for accessing agricultural information services by students. The table revealed that in general, respondents preferred most of the channels of disseminating agricultural information service to agricultural student as long as it will reach end users. However, it is obvious that 238 (80%) is observed for recommended practices and, 235 (78.8%) for researches are most preferred. The result also revealed the mean value of 220 (73.8%) for training and visits, while 217 (72.8%) for newsletter. Also, reviews ad radio sets at 102 (34.2), 180 (60.4) respectively. This indicated that the most preferred channel of agricultural information services dissemination to agricultural science students is mainly through recommended practices, researches and training and visits. This could be adduced to the fact that most information communication channels to reach the vast majority of the populace is through recent research publications via trainings.

The findings therefore established that the choice of channel of information communication or dissemination is critical to the utilization of information and creation of knowledge especially when it comes to reliance and development of the society.

4.3.4 Extent of Utilization of Agricultural Information Services

To assess the extent to which agricultural information services are useful in the study area, the summary of the responses on utilization of agricultural information services is made on Table 4.5. The students' responses were presented in mean and standard deviation. The data collected from respondents using Likerts five items scale of measurement were likewise collapsed under three headings/items for analytical convenience and clarity. 'Highly utilized' and 'utilized' as utilized, 'rarely utilized' and 'not utilized' as not utilized. Undecided remained as constructed.

Table 4.5: Extent to which agricultural information is utilized by students

N	Extent Of Utilization	Respondents			Total	Mean	SD
		U	NU	UD			
1	I utilize Public Relation Services	251(84.2%)	42(14.0%)	5(2%)	298	3.02	0.01
2	I utilize Designing, Media Production and Advertising Services	228(76.5%)	63(21.1%)	7(2.3%)	298	3.27	0.85
3	I utilize Illustrations and Translations Services	231(77.5%)	63(21.1%)	4(1.3%)	298	3.21	1.01
4	I utilize Imagery Monitoring Services	250(83.8%)	48(16.1%)	0(0%)	298	2.79	0.81
5	I utilize Agricultural Teaching Aids Services	267(89.5%)	31(10.4%)	0(0%)	298	3.08	0.84
6	I utilize Agricultural Radio, Airspace and Broadcasts Services	246(82.5%)	51(17.1%)	1(0.3%)	298	3.05	0.96
7	I utilize Technical Agricultural Information Services (DTAIS)	216(72.4%)	72(24.1%)	10(3.3%)	298	3.02	0.98
8	I utilize Agricultural Production Services	236(79.1%)	56(18.7%)	6(2.0%)	298	2.99	0.80
9	I utilize Interactive Voice Response Services	251(84.2%)	47(15.7%)	0(0%)	298	3.99	0.99
10	I utilize Commercial Agricultural Information Services	231(77.5%)	58(19.4%)	9(3.0%)	298	2.98	0.61
11	I utilize Specialised	217(72.8%)	70(23.4%)	11(3.6%)	298	2.86	0.61

	Information Services						
12	I utilize Legal Agricultural Information Services	245(82.2%)	51(17.1%)	2(0.6%)	298	3.83	0.92
13	I utilize Short Message Services	242(81.2%)	55(18.4%)	1(0.3%)	298	2.95	0.98
14	I utilize Price Information Services	267(89.5%)	30(10.0%)	1(0.3%)	298	3.81	0.84
15	I utilize Audio Recording Services	265(88.9%)	30(10.0%)	3(1.0%)	298	2.88	0.75
16	I utilize Social/Cultural Agricultural Information	258(86.5%)	40(13.4%)	0(0%)	298	3.12	0.85
17	I utilize Technical and Scientific Agricultural Information	239(80.2%)	48(16.1%)	11(3.6%)	298	3.69	0.71
18	I utilize Awareness Services	231(77.5%)	48(16.1%)	19(6.3%)	298	3.57	0.06

Source: Field Study, 2018

Key: U=Utilized; NU=Not Utilized; UD=Undecided; SD=Standard Deviation

From Table 4.5, all the items stated for the respondents in order to assess their extent of utilization of agricultural information services in NAERLS are summarised below using Likert 5 point scale. Item 1: I utilize Public Relation Services ($\bar{x}$=3.02; SD0.01), Item 2: I utilize designing, media and advertising services ($\bar{x}$=3.27;SD0.85), Item 3: I utilize illustration/translation services ($\bar{x}$=3.21;SD1.01), Item 4: I utilize imagery monitoring services ($\bar{x}$=2.79;SD0.81), Item 5: I utilize agricultural teaching aids services ($\bar{x}$=3.08;SD0.84), Item 6: I utilize agricultural radio, airspace and broadcast services ($\bar{x}$=3.05;SD0.96), Item 7: I utilize technical agricultural information services ($\bar{x}$=3.02;SD0.98), Item 8: I utilize agricultural production services ($\bar{x}$=2.99;SD0.80), Item 9: I utilize interactive voice response services ($\bar{x}$=3.99;SD0.99), Item 10: I utilize commercial agricultural information services ($\bar{x}$=2.98;SD0.61), Item 11: I utilize specialised information services ($\bar{x}$=2.86;SD0.61), Item 12: I utilize legal agricultural information services ($\bar{x}$=3.83;SD0.92), Item 13: I utilize short message services ($\bar{x}$=2.95;SD0.98), Item 14: I utilize price information services ($\bar{x}$=3.81;SD0.84), Item 15: I utilize audio recording services ($\bar{x}$=2.88;SD0.75), Item 16: I utilize socio/cultural agricultural information services ($\bar{x}$=3.12;SD0.85), Item 17: I utilize technical scientific agricultural information services ($\bar{x}$=3.69;SD0.71), Item 18: I utilize awareness services ($\bar{x}$=3.57;SD0.06).

Table 4.5 further summarizes the level of utilization of agricultural information services. The findings revealed that most services are utilized but more of price information services and agricultural teaching aids both at 267 (89.5%) followed by audio recording services 265(88.9%).

This finding agreed with Marthur & Sinha (2013); Mugwisi & Mostert (2012) who reported that for effective utilization of any information service, necessary awareness is needed. Without adequate knowledge of the existence of a service provider on any consumable in the line of information provision, such services will not be fully utilized. Marthur & Sinha (2013); Mugwisi

& Mostert (2012) therefore affirmed that utilization will be high on any information and information services that people are aware of its existence. The main aim of any stored information is for utilization sake. Adeola (2010) posited that the most significant use for agricultural information is for advancement of primary production of agriculture both for subsistence and economic development. All these are based on utilization which is hinged on awareness of the existence of such services. Mcnamara (2009) stated that the public needed agricultural information for the use of understanding how and when to apply fertilizers, insecticides for pests and disease control, planting materials, and credits and loans. This indicates that if types of agricultural information are well harnessed through adequate awareness, there will be high utilization of agricultural information service in the study area as indicated by the respondents.

4.3.5 Level of Satisfaction with Agricultural Information Services

To assess the extent of students' satisfaction on agricultural information services in the study, Table 4.6 presents the students' responses in mean and standard deviation. The data collected from respondents using Likert's five items scale of measurement were collapsed under three headings/items for analytical convenience and clarity. 'Highly satisfied' and 'satisfied' as satisfied, 'rarely satisfied' and 'not satisfied' as not satisfied and undecided unchanged. This is presented on table 4.6.

Table 4.6: Level of satisfaction with agricultural information services

N	Satisfaction Level	Respondents			Total	Mean	SD
		S	NS	UD			
1	I am satisfied with Price Information Services	72(24.1%)	221(74.1%)	5(1.6%)	298	3.35	1.16
2	I am satisfied with Agricultural Radio, Airspace/ Broadcasts Services	39(13.0%)	249(83.5%)	10(3.3%)	298	2.96	0.92
3	I am satisfied with Specialised Information Services	72(24.1%)	215(72.1%)	11(3.6%)	298	3.15	1.32
4	I am satisfied with Illustrations/Translations Services	61(20.4%)	224(75.1%)	13(4.3%)	298	3.64	0.84
5	I am satisfied with Technical Agricultural Information Services	29(9.7%)	260(87.2%)	9(3.0%)	298	3.59	1.17
6	I am satisfied with Imagery Monitoring Services	58(19.4%)	240(80.5%)	0(0%)	298	2.81	0.80
7	I am satisfied with Agric Teaching Aids Services	83(27.8%)	215(72.1%)	0(0%)	298	2.88	0.94
8	I am satisfied with Short Message Services	85(28.5%)	207(69.4%)	6(2.0%)	298		
9	I am satisfied with Commercial Agricultural Information Services	94(31.5%)	191(64.0%)	13(4.3%)	298	2.67	0.77
10	I am satisfied with Awareness Services	46(15.4%)	240(80.5%)	12(4.0%)	298	2.75	0.94
11	I am satisfied with Public Relation Services	66(22.1%)	218(73.1%)	14(4.6%)	298	2.55	0.85
12	I am satisfied with Interactive Voice Response Services	37(12.4%)	245(82.2%)	16(5.3%)	298	2.82	0.91
13	I am satisfied with Technical/Scientific Agricultural Information	69(23.1%)	221(74.1%)	8(2.6%)	298	2.81	0.95
14	I am satisfied with Designing, Media Production and Advertising Services	75(25.1%)	223(74.8%)	0(0%)	298	3.18	0.99
15	I am satisfied with Legal Agric Information Services	62(20.8%)	222(74.4%)	14(4.6%)	298	2.99	0.94
16	I am satisfied with Audio Recording Services	97(32.5%)	201(64.4%)	0(0%)	298	3.01	1.01
17	I am satisfied with Social/Cultural AIS	79(26.5%)	217(72.8%)	2(0.6%)	298	2.41	1.03
18	I am satisfied with Agric Production Services	92(30.8%)	205(68.7%)	1(0.3%)	298	2.56	1.00

Source: Field Study: 2018

Key: S=Satisfied; NS=Not Satisfied; UD=Undecided; SD=Standard Deviation

From Table 4.6, all the items stated for the respondents in order to determine their level of satisfaction with agricultural information services from NAERLS have the following mean scores: Item 1: I am satisfied with price information services ($\bar{x}$=3.35;SD1.16),Item 2: I am satisfied with Agricultural Radio, Airspace/ Broadcasts Services ($\bar{x}$=2.96;SD0.92), Item 3: I am satisfied with Specialised Information Services ($\bar{x}$=3.15;SD1.32), Item 4: I am satisfied with Illustrations/Translations Services ($\bar{x}$=3.64;SD0.84), Item 5: I am satisfied with Technical Agricultural Information Services ($\bar{x}$=3.59;SD1.17), Item 6: I am satisfied with Imagery Monitoring Services ($\bar{x}$=2.81;0.80), Item 7: I am satisfied with Agricultural Teaching Aids Services ($\bar{x}$=2.88;SD0.94), Item 8: I am satisfied with Short Message Services ($\bar{x}$= 2.87;SD0.94), Item 9: I am satisfied with Commercial Agricultural Information Services ($\bar{x}$=2.67;SD0.77), Item10: I am satisfied with Awareness Services ($\bar{x}$=2.75;SD0.94), Item 11: I am satisfied with Public Relation Services ($\bar{x}$=2.55;SD0.85), Item 12: I am satisfied with Interactive Voice Response Services ($\bar{x}$=2.82;SD0.91), Item 13: I am satisfied with Technical/Scientific Agricultural Information services ($\bar{x}$=2.81;SD0.95), Item 14: I am satisfied with Designing, Media Production and Advertising Services ($\bar{x}$=3.18;SD0.99), Item 15: I am satisfied with Legal Agric Information Services ($\bar{x}$=2.99;SD0.94), Item 16: I am satisfied with Audio Recording Services ($\bar{x}$=3.01;SD1.01), Item 17: I am satisfied with Social/Cultural Agricultural Information Services ($\bar{x}$=2.41;SD1.03), Item 18: I am satisfied with Agricultural Production Services ($\bar{x}$=2.56;SD1.00).

Table 4.6 further summarized the responses of students on the level of satisfaction with agricultural information services. Dissemination of technical agricultural information services ranks 260 (87.2%) while agricultural radio services at 249 (83.5%) as been satisfactory. On the other hand, responses on commercial agricultural information services have 191 (64.0%) while

audio recording services ranked 201 (64.4%). This implies that majority of the respondents are generally dissatisfied with the agricultural information services in the in the study area. The unsatisfactory responses cannot be set apart from the preceding outcomes of the poor extension service delivery even though the services are recorded to be highly utilized. It is therefore logical that though there might be awareness, and utilization, it does not guarantee satisfaction. (Singh & Mariathem 2010), (Margono & Sugimoto 2011).

4.3.6 Challenges faced in utilizing Agricultural Information Services

The response on the challenges faced in utilizing agricultural information services are presented here. Table 4.7 shows the challenges of utilizing agricultural information services.

Table 4.7: Challenges Faced in utilizing Agricultural Information Services

S/N	Challenges	Frequency	Percentage(s)
1	My challenge is Fear of Technology (Technophobia)	250	83.9
2	My challenge is Publicity Problems	200	67.1
3	My challenge is Government Policies	220	73.8
4	My challenge is improper Orientation	270	90.6
5	My challenge is Translations Problems	152	51.0
6	My challenge is Language Barrier	160	53.7
7	My challenge is Distortions in Flow of Information	30	10.1
8	My challenge is Lack of Mobility of Extension Workers	170	57.0
9	My challenge is Delay on Information Delivery	220	73.8
10	My challenge is Lack of Feedback Mechanism	178	59.7
11	My challenge is Inefficient Extension Services	150	50.3
12	My challenge is Weak Linkages	140	47.0
13	My challenge is Limited Current Trends Information	200	67.1
14	My challenge is Political Instability	210	70.5
15	My challenge is Socio/Cultural Factors	100	33.6

Source:FieldStudy2018

The findings in Table 4.7 revealed that there are challenges faced in the utilization of agricultural information services. Lack of proper orientation topped with 270 (90.6%) followed by fear of technology adoption 250 (83.9 %). Delay in information delivery and Government policy ties with 220 (73.8%) followed by political instability 210 (70.5). Publicity problem and limited current trends on information also tied with 200 (67.1%). Others are lack of feedback mechanism 178 (59.7), lack of mobility of extension workers 170 (57.0), language barrier 160 (53.7%), translation problems 152 (51.0%), inefficient extension workers 150 (50.3%), socio/cultural factors 100 (33.6%) and distortion in flow of information 30 (10.1%) Table 4.7 further indicates distortion in flow of information 30 (10.1%) and socio cultural factors 100 (33.6%) as lower ratings among the challenges.

From the responses, it is evident that utilization of agricultural extension information service by agricultural science students is hindered by several challenges. Illiteracy among the smallholder farmers makes it difficult comprehending instructions and it is further compounded by poor extension agents who are not properly equipped (Centre for Technical Agriculture, 1996). Furthermore, lack of appropriate institutional framework and inappropriate technology is another factor in the process of utilization of agricultural information services (Kolawale, 1990). He argued that most of the technologies were designed without taking into consideration the realities of most developing countries that grapples with power and unfavourable government policies. Also, that most technologies are expensive. Land possession, income, lack of linkages between the government agencies charged with the responsibility for implementing the scheme and research institute in terms of management are also among factors that hinder full utilization of agricultural information services by students (Centre for Technical Agriculture, 1996).

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CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provided the summary of the findings of the study. Conclusions were drawn. Steps to follow to ensure that agricultural information services essential for students which are generated by NAERLS in Ahmadu Bello University, Zaria, Nigeria is able to reach the immediate environment. From there it is expected to extend to the larger population.

5.2 Summary of the Study

This study was carried out to investigate Information Services Provision for Access and Utilization of Agricultural Science Students by National Agricultural Extension Research and Liaison Services, Ahmadu Bello University, Zaria, Nigeria. In order to achieve this, six research questions were formulated. Review of related literature was done on concept of agricultural extension information services, types of agricultural information services, awareness of agricultural information services, preferred channels of access to agricultural information services, utilization of agricultural information services, satisfaction and challenges in accessing these services. Descriptive survey research method was adopted for the study. The population of the study was made up of students of ABU Zaria while the subjects of the study were specifically the entire undergraduate students of the Faculty of Agriculture, Ahmadu Bello University Zaria. Proportionate stratified random sampling technique was used to select the respondents from different levels. This was in order to make room for the different strata of the subjects involved in the study. The instrument used to generate the needed data for the study and to answer the research questions was the questionnaire. The analysis was done using descriptive statistics of tables, frequency distributions, simple percentages, mean and standard deviation where

applicable. The Questionnaire used for collecting the data was distributed to the agricultural science students that made up the sample of the study. The students' lecture halls were the points of distribution and collection of the questionnaire. Considerable copies of the questionnaire were able to be recovered with the help of the research assistants and for the fact that agricultural science student's lecture halls are designated at a particular place.

5.3 Summary of the Major Findings

The data collected were analyzed and the following were the major findings:

1. NAERLS generates and make available different types of agricultural related information through research activities. The types of agricultural information services as required by the public for reliance includes but not limited to Technical and Scientific Agricultural Information service, Commercial Agricultural Information Service, Legal Agricultural Information Service, Socio Cultural Agricultural Information Service, Teaching Aid Services, Translation Services among others.

2. The study revealed that majority of the respondents are mostly aware of agricultural information services related to price information agricultural services, and socio cultural agricultural information services as provided by the NAERLS.

3. The study also revealed that a large number of the agricultural science students were noted to prefer channels of agricultural information services through recommended practices, researches and training and visits (workshops, conference and symposium).

4. The study firther revealed that agricultural teaching aids, audio recording information services, socio cultural agricultural information services and price agricultural information services are of high utilization for students' from NAERLS.

5. The study found out that agricultural science students are dissatisfied with agricultural information services being provided by NAERLS. This could not be far from being extension personnel problem as the challenges further confirmed.

6. Topmost of the challenges in accessing agricultural information services as revealed by the research is fear of adoption of technology (technophobia) as most farming activities are mechanized and discoveries are communicated through the latest technologies, lack of proper orientation and delay in information delivery among others.

5.4 Limitation of the Study

The study was to generally find solution to the problem of students' non utilization of agricultural information services for reliance in Nigeria. It focused mainly on agricultural science students of the Faculty of Agriculture, Ahmadu Bello University Zaria. This is in the view of the provision of agricultural information services through the National Agricultural Extension Research and Liaison Services, Ahmadu Bello University, Zaria. Due to the fact that the entire Nigerian students could not be covered, the study was limited to agricultural science students of Ahmadu Bello University, Samaru, Zaria believing that the findings and recommendations of the research can be generalised to cover the entire students.

5.5 Contribution to Knowledge

1. The main contribution to knowledge of this research is that it has been able to establish through its findings the level of agricultural science students' knowledge and interest in AEIS in NAERLS, ABU, Zaria.

2. Most studies have looked at student's employment focusing on provisions form the government, but this study has shifted the focus on not just agriculture but agricultural information access, provision and utilization and self reliance.

3. Also, the fact that unemployment among students persists amidst frantic efforts by different bodies and successive governments to alleviate the menace, it has also shed light on the students coming to terms with the relevance of agricultural information service for reliance.

4. Through this study, blueprints on curbing unemployment can be established. Though many have researched on the problems, the research in its recommendation suggests newer approaches to reaching students concerning access to agricultural information services for reliance.

5.6 Conclusion

From the analysis and the summary of the findings, it could be concluded that different types of Agricultural Information Services are available in NAERLS and it is no doubt that these services are of great importance to agricultural science students of Ahmadu Bello University Zaria. It is also concluded that the students are interested in agricultural information services for reliance after graduation. It was noted that agricultural science students have come to terms with the relevance and usefulness of these agricultural information service. However, many of the students from the findings have agreed in this study that though there is awareness of these services, access and utilization of technological-based agricultural information services for satisfactory agricultural practices need to be the focus. This is associated with the fact that the 21st century agricultural production/practices are highly mechanized and technology based which most public dreads. If well oriented and harnessed, these services will go a long way in helping students in their quest for reliance on agriculture.

5.7 Recommendations

Based on the findings of this study and the conclusion arrived at, the following recommendations were made:

1. Like the general university entrepreneurial courses, the different types of agricultural information services by NAERLS, ABU Zaria on specialized agricultural information services, public relations and production services should be added to the syllabus of the university, taught as one of the general courses for general students' population.
2. NAERLS in ABU Zaria is part of an institution found in the six geo political zones of the country with foreign affiliations. The university and international bodies should liaise with NAERLS in all zones to reach students on agricultural teaching aids Services, illustration and translation Services.
3. ABU electronic bill boards and its Frequency Modulation Station (FM) should be increased both in size and number respectively and be used as channels of agricultural information communication to students on deficient channels to keep them abreast of latest trends.
4. Outcome of recently utilized/useful technologies from NAERLS nationwide on agricultural services or production that have proved efficient and effective should be made known for public consumption and not left at administrative boundaries through specialized information services, DTAIS and others.
5. Concerted and deliberate effort should be made by NAERLS, on commercial agricultural information services, audio recording services and other essential and necessary information services in all her six geo political zones by engaging popular media of communication in showcasing their services to the public in order to boost/heighten satisfaction.

6. Agricultural information generation, flow and linkages by NAERLS zones should be enhanced, overhauled in all ramifications. Socio cultural factors should be supported by both local and international agencies to curtail challenges of practices thereby providing better agricultural information services and technological diffusion to the public.

5.8 Suggestions for Further Research

1. The study has thrown light on what prospects and hopes agriculture hold for students. This is not just for the students of agriculture in Ahmadu Bello University Zaria but applicable to the entire youths. For efficient, effective practice and embrace, there is need to investigating the availability of natural, mechanical and human resources for success in agricultural practice.

2. Generally, there is the prevalence of unemployment among Nigerian youths which has affected both economic and national development. Investigating the possibility of job generation through creating more awareness of agricultural prospects is paramount. It would therefore be worth investigating causes of unemployment among students and how agriculture can mitigate it.

3. The study was able to establish that there are different types of agricultural information services provided by NAERLS. It would be worth investigating the possibility of dissecting how the different types of agricultural information could aid different practices with the different climatic and weather condition for increased production.

4. Since most agricultural practices are mechanized and technologically inclined, it will be beneficial to study how access to innovations on technological and scientific agricultural information can be easily be made available for the stakeholders.

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APPENDIX 1

Department of Library and Information Science,
Faculty of Education,
Ahmadu Bello University, Zaria,
10th February, 2018.

Dear Respondents,

REQUEST FOR PARTICIPATION IN QUESTIONNAIRE

I am a Master student from the above Department carrying out a research on the topic: ***INFORMATION SERVICES PROVISION FOR ACCESS AND UTILIZATION OF AGRICULTURAL SCIENCE STUDENTS BY NATIONAL AGRICULTURAL EXTENSION RESEARCH AND LIAISON SERVICES, AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA*.** The research is for academic purpose and the identity of the respondent is not required. Your honest and sincere response to the questions will be highly appreciated. All information will be treated with utmost confidentiality.

Thanks in anticipation for your cooperation.

Yours faithfully,

OGBONYOMI, ABEL ADEGOKE
STUDENT
(08036064049)

Section A

Demographic Information of Respondents

Instruction: Please tick as appropriate

1. Level A) 100 [ ] B) 200 [ ] C) 300 [ ] D) 400 [ ] E) 500 [ ]

Section B

Types of Agricultural Information Services Required by Agricultural Science Students

This section is designed to identify the types of agricultural information students require.

2. What types of Agricultural Information Service do you require?

1. Knowledge on Technical/scientific agricultural information	[ ]
2. Knowledge on Commercial agricultural information	[ ]
3. Knowledge on Legal agricultural information	[ ]
4. Knowledge on Social/cultural agricultural information	[ ]
5. Short Message Services	[ ]
6. Price information services	[ ]
7. Dissemination of Technical Agricultural Information Services (DTAIS)	[ ]
8. Awareness services	[ ]
9. Public Relation Services	[ ]
10. Designing, media production and advertising services	[ ]
11. Agricultural Teaching aids services	[ ]
12. Agricultural Production services	[ ]
13. Illustrations/Translations services	[ ]
14. Audio recording services	[ ]
15. Agricultural radio, airspace and broadcasts services	[ ]
16. Specialised Agricultural Information Services	[ ]
17. Interactive Voice Response Services	[ ]
18. Imagery Monitoring Services	[ ]

Section C

Level of Awareness of Agricultural Information Services from NAERLS

This section is designed to determine the level of awareness of Agricultural Information services by NAERLS to agricultural science students

3. What is the level of awareness of agricultural science students on the following agricultural information services by NAERLS?

S/N	Agricultural Information Services	Highly Aware	Aware	Unaware	Highly Unaware	Undecided
1	Price Information Services					
2	Short Message Services					
3	Social/Cultural Agricultural Information					
4	Audio Recording Services					
5	Public Relation Services					
6	Agricultural Teaching Aids Services,					
7	Agricultural Production Services,					
8	Awareness Services					
9	Interactive Voice Response Services					
10	Dissemination of Technical Agricultural Information Services DTAIS					
11	Illustrations/Translations Services					
12	Agricultural Radio, Airspace and Broadcasts Services					
13	Specialised Agricultural Information Services					
14	Technical/Scientific Agricultural Information Services					
15	Designing, Media Production and Advertising Services					
16	Imagery Monitoring Services					
17	Commercial Agricultural Information Services					
18	Legal Agricultural Information Services					

Section D

Preferred channel of Access of Agricultural Information Services by Agricultural Science Students

This section is meant to identify preferred channels of agricultural information provision to agricultural science students

4. What are the channels preferred in receiving agricultural information services?

S/N	Channels of AEIS	Most Preferred	Preferred	Rarely preferred	Not Preferred	Undecided
1	Recommended Practices					
2	Newsletter					
3	Extension Bulletins					
4	Extension Agents					
5	Reports					
6	Extension Publications					
7	Leaflets					
8	Pamphlets					
9	Television Sets					
10	Newspaper Articles					
11	Researches					
12	Mails					
13	Agricultural Shows					
14	Guides					
15	Field Days					
16	Telephones					
17	Training and Visits					
18	Workshop/Symposium					
19	Personal Contacts					
20	Reviews					
21	Radio Sets					

Section E

Extent of Utilization of Agricultural Information Services

This section is on the extent agricultural science students utilize agricultural information Services

5. To What Extent do agricultural science Students Utilize Agricultural Information services?

S/N	Utilization of AEIS Services	Highly Utilized	Utilized	Rarely Utilized	Not Utilized	Undecided
1	Public Relation Services					
2	Designing, media Production and Advertising Services					
3	Illustrations/Translations Services					
4	Imagery Monitoring Services					
5	Agricultural Teaching Aids Services,					
6	Agricultural Radio, Airspace and Broadcasts Services					
7	Dissemination of Technical Agricultural Information Services (DTAIS)					
8	Agricultural Production Services,					
9	Interactive Voice Response Services					
10	Commercial Agricultural Information					
11	Specialised Agricultural Information Services					
12	Legal Agricultural Information					
13	Short Message Services					
14	Price Information Services					
15	Audio Recording Services					
16	Social/cultural Agricultural Information					
17	Technical/scientific Agricultural Information					
18	Awareness services					

Section F

Level of Satisfaction with Agricultural Information Services by Agricultural Science Students

This section is designed to determine agricultural science students' satisfaction on agricultural information services

6 To what extent are agricultural science students satisfied with agricultural information services by NAERLS?

S/N	Satisfaction with AEIS Services	Highly Satisfied	Satisfied	Rarely Satisfied	Not Satisfied	Undecided
1	Price information services					
2	Agricultural Radio, Airspace and Broadcasts Services					
3	Specialised Agricultural Information Services					
4	Illustrations/Translations Services					
5	Agricultural Information Services (DTAIS)					
6	Imagery Monitoring Services					
7	Agricultural Teaching Aids Services,					
8	Short Message Services Technical					
9	Commercial Agricultural Information					
10	Awareness Services					
11	Public Relation Services					
12	Interactive Voice Response Services					
13	Technical/Scientific Agricultural Information					
14	Designing, Media Production and Advertising Services					
15	Legal Agricultural Information					
16	Audio Recording Services					
17	Social/Cultural Agricultural Information					
18	Agricultural Production Services,					

Section G

Challenges Faced in Utilizing Agricultural Information Services

Section F is to determine the challenges faced by agricultural science students in utilizing agricultural information services.

7. What are the Challenges Faced in Utilizing of Agricultural Information?

Note: ***Tick as many as applicable***

1. Fear of technology adoption (Technophobia) [ ]
2. Publicity problems [ ]
3. Government policies [ ]
4. Lack of proper orientation [ ]
5. Translations problems [ ]
6. Language barrier [ ]
7. Distortions in flow of information [ ]
8. Lack of mobility of extension [ ]
9. Delay on information delivery [ ]
10. Lack of feedback mechanism [ ]
11. Inefficient extension services [ ]
12. Weak linkages [ ]
13. Limited current trends/information [ ]
14 Political instability [ ]
15. Socio/cultural factors [ ]

Thank you for your time

Appendix 2 CRONBACH'S VALIDITY TEST

Scale: ALL VARIABLES

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.833	25

Item Statistics

	Mean	Std. Deviation	N
Q1	2.93	1.929	30
Q2	3.57	1.431	30
Q3	4.07	1.230	30
Q4	3.80	.997	30
Q5	4.37	.999	30
Q6	4.47	1.224	30
Q7	4.47	.900	30
Q8	4.53	.819	30
Q9	3.73	1.202	30
Q10	4.50	.509	30

Q11	4.60	.563	30
Q12	4.57	.504	30
Q13	4.60	.814	30
Q14	4.67	.479	30
Q15	4.60	.814	30
Q16	4.37	.809	30
Q17	4.43	.679	30
Q18	4.50	.509	30
Q19	4.67	.479	30
Q20	4.07	.944	30
Q21	4.63	.556	30
Q22	4.47	.900	30
Q23	4.43	.774	30
Q24	3.93	1.048	30
Q25	4.20	.761	30

Item-Total Statistics

	Scale Mean of Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha of Item Deleted
Q1	104.23	104.392	.034	.861
Q2	103.60	109.145	-.058	.853
Q3	103.10	98.231	.398	.826
Q4	103.37	105.206	.159	.835
Q5	102.80	100.510	.396	.826
Q6	102.70	91.528	.701	.810
Q7	102.70	101.252	.408	.825
Q8	102.63	95.413	.835	.811
Q9	103.43	102.116	.243	.834
Q10	102.67	101.954	.705	.821

Q11	102.57	99.771	.832	.817
Q12	102.60	101.972	.710	.821
Q13	102.57	96.668	.758	.813
Q14	102.50	104.397	.493	.826
Q15	102.57	96.668	.758	.813
Q16	102.80	99.269	.591	.819
Q17	102.73	101.651	.536	.823
Q18	102.67	101.954	.705	.821
Q19	102.50	104.397	.493	.826
Q20	103.10	103.334	.272	.831
Q21	102.53	104.533	.406	.827
Q22	102.70	98.079	.593	.818
Q23	102.73	109.237	-.024	.839
Q24	103.23	103.289	.238	.833
Q25	102.97	104.447	.285	.830

Appendix 3: Letter of Introduction

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA

Vice Chancellor: Professor Ibrahim Garba, B.Sc. (Hons) Geology, M.Sc. (Mineral Exploration) ABU, Ph.D Geology (London), D.I.C., FNMGS
Ag. Head of Department: Dr. Mohammed Habibu, NCE (Niger), BLIS, MLIS, Ph.D (ABU), CLN, TRC
e-Mail: lis@abu.edu.ng Tel: 08174568401/09033706447

P15EDLS8019

25th April, 2018

The Director,
MIS Unit,
Ahmadu Bello University,
Zaria.

Dear Sir,

INTRODUCTORY LETTER: OGBONYOMI, ABEL ADEGOKE

This is to certify that OGBONYOMI, ABEL ADEGOKE with Registration **Number P15EDLS8019** is a Postgraduate Student in this Department. He is currently engaged in a research titled **"Awareness and Utilization of Agricultural Information for graduate Empowerment by the National Agricultural Extension Research and Liaison Services, Zaria Nigeria"**. We would be grateful if you could kindly give him the assistance he requires for conducting the research work successfully.

Thanks for your cooperation.

Yours sincerely,

Dr. Habibu Mohammed
Head of Department

Appendix 4: students' Data