ASSESSMENT OF TRAINING NEEEDS AND CHALLENGES OF MAINSTREAMING ELECTRONIC MEDIA PRODUCTION FOR EXTENSION SERVICES IN IMO STATE

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CERTIFICATION

This is to certify that this work entitled "**Training Needs and Challenges of Mainstreaming Electronic Media Production for Extension Services in Imo State, Nigeria,**" was carried out by **Okoroma Emmanuel Odinaka** in the Department of Agricultural Extension, Federal University Owerri, Imo State, Nigeria.

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DEDICATION

While appreciating His grace of wisdom and knowledge, this work is dedicated to all who tirelessly strive to add value to the study and practice of agriculture extension in Nigeria.

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Abstract

The advancement in electronic media is increasingly liberalizing the dissemination of agricultural information, such that farmers can now on their own access information before ever they are communicated to them by extension agents. Therefore, for extension to maintain its relevance and functions, extensionists must acquire the skills/abilities necessary to maintain/control what (contents) farmers are sourcing from the media. In the light of this, the study was designed to assess the training needs and challenges of mainstreaming electronic media production for extension services in Imo State, Nigeria. It examined among other specifics, the electronic media production capabilities of extensionists; the level of electronic media production skills taught in extension training; training needs and challenges of mainstreaming electronic media production for extension services in Imo State. Data were collected using validated questionnaire from 120 extensionists selected through multi-stage sampling technique. Descriptive and inferential statistical tools, such as frequency counts, percentages, mean scores, Ordinary Least Square (OLS) regression model, Pearson's Product Moment Correlation (PPMC), Z-test and Analysis of Variance (ANOVA) test were used to analyze the data. Results showed among others that the extensionists had technical capabilities in 1 (script writing, $\bar{X}$=2.2) out of 16 electronic media production skill areas. Only audio recording ($\bar{X}$=2.7), script writing ($\bar{X}$=2.5), voicing/commentary ($\bar{X}$=3.2)) and electronic reporting ($\bar{X}$=3.0) representing (4, 25%) were the areas of electronic media production skills taught and covered in extension training out of 16 listed skill areas. The training needs of the extension personnel were in the areas of video production ($\bar{X}$=2.6), computer multimedia production ($\bar{X}$=2.7), web-based electronic media production ($\bar{X}$=2.1). Result also showed that the training needs of the extensionists increased with a rise in their socio-economic background (R^2 = 0.650). Male and female extensionists did not differ (Z-cal =1.95; Z-tab =1.96) in their training needs. The capabilities of the extensionists to create electronic media and their training needs were inversely correlated (r=-0.636; P = 0.05). Extension personnel sampled in the 3 agricultural zones of Imo State differed (F-cal =1.277, F-tab = 0.75) in their training needs. Inadequate access to ICT ($\bar{X}$=4.9) and poor extension training curriculum ($\bar{X}$=4.9) were identified as most pressing challenges of producing electronic media production for extension purposes in Imo State. Hence, it was recommended among others, that access to ICTs and extension training should be enhanced through interventionists' empowerment schemes as well as a review of extension training curriculum in line with prevailing performance gaps.

Keywords: training needs, electronic media production, extension, ICTs, communication, Imo State,

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Nigeria is abundantly blessed with agricultural resources – rich arable land, water bodies, vegetation and active human population that support high productivity. With 30.9 percent Gross Domestic Product contribution to the economy in 2012, agriculture remains a significant player in Nigerian economy (Mundi, 2013). In terms of employment generation, about 70 percent of the Nigerian total labour force is employed within the agricultural sector (Oladele and Oladele, 2011). The sector has been noted as an important food source and foreign exchange earner in the non-oil sector of the economy, as it supplies the bulk of the food consumed in the country as well as the export crops (Okuneye, 2010 in Banmeke and Balogun, 2011).

However, it is important to note that the contributions of agriculture to the economy of Nigeria cannot be isolated from the active role of agricultural extension as it is among the prime movers of agriculture since access to extension services enhances farmers' productivity and earnings from agriculture (Akinbile and Ndaghu, 2005). Extension is the "activity that disseminates research findings and advice to farmers on agricultural practices and improves farmers' analytical capability and communication so as to help them in their decision making related to farming" (Bruin *et al,* 2001; Nwachukwu 2013). Agricultural extension according to Asiabaka (2002), aims to achieve the following:

i. provision of rural and urban clientele the capability to maintain efficient and sustainable farms;
ii. improving the standard of living of the clientele through higher and increased productivity;

iii. improving the knowledge, skills and attitudes of the clientele; and

iv. improving the leadership potentials of rural and urban clientele

The considerable amount of knowledge and research information resulting from the activities of agricultural research facilities as well as the need to narrow the gap between what research findings suggest to be possible and feasible and what obtains, as noted by Nwachukwu (2003) require that extension eminently employs the act of communication towards realizing its objectives. This it does by ensuring that agricultural information flows from the producers to consumers and from facilitators to users of agricultural information, technologies and knowledge. That is, ensuring that agricultural information and technologies get to the end users in the appropriate form and language, using the appropriate channels and media. After all, the full potentials of any agricultural research product is realized only when it is brought to the knowledge of the ultimate users (Nwachukwu, 2003).

The success of extension, therefore, depends on how effectively communication tools and channels are integrated and used by the change agents in disseminating research information to extension stakeholders who ultimately make use of them. Unfortunately, majority of the agents are not sufficiently trained as the training programs are mostly technical and the outcome is usually an extension agent who has a general knowledge on a variety of subjects. Extension agents with relevant training are specialists in extension methodology and human behaviour as well as being technically knowledgeable (Tladi, 2004). That is to say, in addition to adequate knowledge of the subject matter, extension must also acquire the skill and capacity of communicating same to the clientele.

Training is inclined to develop the competence of the extension worker for a definite purpose through organized procedures in order to meet the challenges of new realities (Beach

1970 in Asiabaka, 2002).The emerging issues of mainstreaming gender, e-agriculture and entertainment in extension as well as other challenging realities of the extension organization makes training more inevitable as to equip the change agent with the flexibility, adaptability and durability required for effective performance.

To ensure that training achieves the required outcome, it is essential to determine in specific terms the training needs of the extension workers. According to Boydell, 1976 in Ali (2009) "training need" is a lack that can be supplied by systematic training. A training need therefore exists when the application of systematic training will serve to overcome a particular weakness. Anderson 2000 in Ali (2009) called it the starting point in the training process; the phase in which an organization's needs are identified, forming the foundation of an effective training effort. The training needs tell where and what kind of training programs are needed, who needs to be included, conditions under which training will occur, and criteria to guide program evaluation. The formal arrangement designed to provide extension practitioners with the technical capacity to do extension work constitutes extension curriculum.

Curriculum as conceived by Anyanwu & Mbakwem (1999) is a mapped out plan of all activities deliberately chosen and directed by the school which learners must follow to reach pre-determined goals; the intended outcomes of classroom learning such as skills to be acquired, knowledge to be gained and attitudinal changes expected of the learner. It is a decision-making process involving such decisions as:

a. what learning experiences learners are to develop and why?
b. how these learning experiences are to be organized and taught?
c. the materials and equipment to be used
d. the qualities required of the teachers, among other necessary considerations (Amadi & Obiefuna, 2005).

Extension curriculum, thus, provides the framework that arms the change agents with principles, knowledge, skills and acceptable dispositions required to perform the extension function of diagnosis, feedback, message transfer, linkage, assisting rural farmers improve their management abilities and decision making, monitoring and evaluation (Hayward, 1989; Asiabaka ,2002) through education and training. In view of the complex and ever changing roles of change agents, extension curriculum development must therefore:

a. deal with the needs of extension staff, knowledge and skills in communication, problem solving, critical thinking and how to learn from others;
b. closely relate to the actual work environment, as well as
c. provide a dynamic interplay between theoretical and practical components

Anyanwu & Mbakwem (1999) added that a curriculum enjoys effective and feasible framework if the objectives and contents possess the attributes of validity, utility, prospects, learnability, significance, interest and variety.

To develop such extension curriculum that is highly inclusive in content and reflective of new realities, the participation of stakeholders with diverse backgrounds in order to generate multifaceted ideas and information capable of managing emerging issues in extension, such as e-agriculture, gender mainstreaming, entertainment, demand-driven extension service, commercialization of agricultural information, among other subjects shaping the future of extension is necessary. These recent developments according to Omotayo (2011) have continued to extensively set the stage for the adoption of Information Communication Technologies (ICTs).

As the revolution in ICTs continues to extend the boundaries of extension and the rural communities towards opportunities of greater productivity and improved livelihood through access to information and knowledge, building extension capacity to deploy e-Agriculture for

information delivery to farmers as posited by Banmeke & Balogun (2011), becomes increasing necessary. Basically, the capacity required here, entails acquiring the knowledge and skill to produce and use the electronic media in communicating researched information to its large audience scattered across different locations.

The electronic media according to Agba (2001) refers to any form of production or distribution of information to a mass audience using electronics as opposed to hardcopy forms. Wikipedia (n.d) puts it as information or data created, distributed and accessed using a form of electronics. They are devices and channels with electrical, audio and visual capabilities, such as the computer multimedia, television, radio, video, internet feeds/online content, teletext, videotext, audio tapes, audio books, films, interactive video, teleconferencing, among other electronic creations. It is said to be offline based on when it involves computer based services, or net-based when it is online and mobile based services.

In an attempt to give a distinct understanding of what the electronic media is as well as discountenance what it is not, Oduh (1997) and Wikipedia (n.d) noted that the print media can be electronically created, but they do not require electronics to be accessed by the users. This assertion classifies online newspapers, bulletins, newsletters, among other online contents which are traditionally accessed on hardcopy as electronic media. Electronic media production therefore refers to the creation of electronic media contents such as videos, audios, graphics, pictures, online contents, data or information in accessible forms using appropriate communication channels. It is what Agba (2001) views as a process of creating, treating and delivering visuals and audio, data or information electronically to the mass audience.

In extension, the meaning of electronic media production is similar to the significant roles the electronic media play in extension – creates instructional aids with video, audio and graphic capabilities, thereby collapsing the earlier barriers of innovation dissemination characterized by

limited distribution, costly individual and group face-to-face contacts, among other relative limitations of the hardcopy and spoken word. After all, when a lesson is told and shown, a significant 65% is remembered 3 days later (Asiabaka, 2002). Electronic media production in agriculture involves media skills necessary for electronic media content creation, treatment and delivery for farmers' related programmes.

The form in which the electronic media content is packaged or produced is a crucial factor that determines the level to which the media content is accessible. The form referred here involves the packaging and the language used. The language includes the data codes, sound, symbol, signals and dialect used in communicating the media content, while the packaging takes any of the following forms:

a. Compact Disc (CDs), Double Compact Disc (DVDs) for video productions;

b. Audio tapes, audio books, advertisements, drama, discussion panel for audio/radio broadcasting, and

c. Internet/online feeds, CD-ROM, interactive video, teleconferencing for graphics and animated contents.

Considering that most extension clienteles are resource-poor and illiterate farmers who reside in rural areas where the dearth of infrastructural facilities and electricity increases the challenges of accessing and utilizing electronic media, great attention must therefore, be paid in selecting language, the type of medium and packaging when producing electronic media for farmers. For instance, videos could be recorded in local dialect with local farmers acting in the videos thereby making it easier for farmers to understand them on their own as well as identify the practices as authentic, reliable and replicable in their context. In addition to the dynamic

advantage it offers to extension, the use of media with video capability in extension teaching costs less per adoption to convince a group of farmers to adopt new agricultural innovation as well as enables those constrained by literacy to communicate (Vishy, 2011).

Therefore, the idea of mainstreaming electronic media production in extension curriculum seeks to harness the derivable benefits of the electronic media by taking the production and use of electronic media in extension to the expected level. That is, producing and using electronic media like video, internet feeds/online contents, TV, radio, Teletext, computer multimedia, videotext, audio tapes, audio books, films, interactive video and teleconferencing, to the point that extension workers become highly acquainted with the making and use of electronic media. The implication of mainstreaming electronic in extension, thus, is that extension practitioners need to develop the ability to operate in an electronic media environment, acquiring the knowledge and skills necessary to be productive.

1.2 Problem Statement

The Radio and TV broadcast media, particularly, the radio had remained the traditional electronic channel of extension communication because many farmers did not own or have access to other electronic media. However, this situation is tremendously changing and improving as the revolution in ICTs continues to collapse the earlier barriers of electronic media utilization in extension. For instance, access to handheld electronic devices like mobile phones, prerecorded multimedia devices like CD/DVD ROMs, MP3/MP4 audio devices, etc, by farmers has almost exceeded that of radio and television. Also, the revolution has shifted internet access from being exclusive to computer owners to being inclusive of poor resource mobile phone owners, such that with mobile phone internet enabled access, farmers can receive agricultural information everywhere – in their homes; farm shops; barn and utility rooms; on the tractor; in

the feed mill, etc. Farmers can listen to instructional audio media while performing their works; farmers can repair machinery, clean barns – all within the sound of instructions or guide from their audio media. They can repeatedly play and watch video instructional materials recorded in CD/DVDs or video downloads at their convenience.

It is unfortunate however to note that most electronic media used for extension teaching are created or produced for extension agencies and organizations by mainstream media professionals who neither have formal training in agriculture or extension nor understand the goal of extension communication. Thus , this study observes that though electronic media have been utilized in extension communication, the requisite technical knowledge, skills, abilities and attitude for the production of these electronic media for extension services in Imo State are lacking among extension practitioners. Thus, a performance gap exists in that area of extension communication, and to overcome the problem, the performance gap must be identified and filled through systematic means. Determining what training to give; who needs to be trained; performance gap where training is needed and conditions under which training should occur to develop the ability and capacity of extension personnel to produce electronic media for extension teaching hence become a problem. The above realization must be made to avoid training for the wrong reason as well as repeating the same undermining flaws that characterize most extension training programmes {Woods, 1988 cited in Tladi, 2004). According to Woods, training programmes for extension workers in developing countries have not been effective because:

a. training is done for the wrong reason;
b. the training content is not related to the jobs of extension workers, and
c. the development and design of the programmes are usually not based on any specific needs.

Part of the problems attendant from the foregoing is that it makes periodic review of extension curriculum rarely necessary as well as skips to emphasize needful skill area. The situation has come with several attendant problems. There is the dearth of extension personnel skilled in the production of electronic media for extension teaching and which has a major challenge of incorporating e-agriculture in Nigeria (Banmeke & Balogun, 2011). The skill gaps are more pronounced in the area of computer multi-media production, photo journalism, cyber journalism, non-linear video editing, digital photographic production, audio editing and production, as well as performance gaps on ways of incorporating electronic media messages into ongoing extension programmes. While the skill gaps in electronic media production may be viewed as common problems of developing countries like Nigeria, the negative effects on agricultural extension service delivery in Imo State have been huge. It has affected the quality of packaged agricultural message disseminated electronically as well as the utilization of available resources for electronic media production in the State. Most electronic media documentary/programming on agriculture have low interactivity as they are usually produced for extension agencies and organizations like state's Agricultural Development Programme (ADP) by media professionals who have no formal training background in agriculture or extension. The resulting message or documentary is usually distorted to suit the media producer or presenter's sense of appeal rather than the information needs of the target clientele. To ensure that the right agricultural information is communicated to farmers electronically, Pur and Gwary (2008) recommended that more competent presenters knowledgeable in the area of agriculture for both radio and television be engaged. Statutory government agencies are expected to take responsibility of producing their own messages using their media outfit, unfortunately this has not happened. The price to pay has been the underutilization and abandonment of electronic media equipment of such agencies. The recent auctioning of the media equipment of Imo ADP

which was donated by the World Bank on the grounds of nonuse is just an instance. Poor reportage of agricultural programmes, policies and reforms of the Federal Government by broadcast media in the state is also part of the price, as the area of coverage and airtime for agricultural programmes by the electronic media are sparingly inadequate.

There is limited access to current readable database on agricultural information as agricultural research information service centres remain the custodian of CD-ROM database, multi-media knowledge base, in-house database, regional database, national and in-house publications (Omotayo, 2011). This situation is inadequate as it centralizes agricultural information access which does not support the much solicited client-focused, commercialized, private and pluralistic extension delivery. Local extension agents, individuals, farmer groups and organizations are expected to participate in creating and maintaining adequate database in the areas of crop and animal production, disease control, soil management, fertilizer application, rural development, product market outlets and statistics.

Extension services in Imo State are mostly funded and operated by government agencies for free to farmers thereby making them hugely demand-driven. The state is yet to see entrepreneurial extension agents who could produce customized agricultural information/materials recorded in DVD/CD-ROM for onward distribution to farmers through various market outlets. Besides the returns customized agricultural message generates for the entrepreneurial extension practitioner, it has the potential to address context related needs of the farmer, such as the creation of agricultural messages in local dialects to enable those constrained by literacy to communicate and the production of demonstration videos with local farmers acting in the videos to enable the farmers understand the message as being authentic and replicable in their context. The role of customized message production in realizing effective and privatized extension services in Imo State is integral. In fact, Okon (2013) blamed the poor communication

of agricultural research information through the electronic media on lack of access to ICTs like DVD/CD-ROM libraries of agricultural programming, as access to such media enable electronic media like television/radio stations to be more responsive to farmers' information needs.

It is also disappointing to note that the dearth of skilled extension manpower accounts for the conspicuous absence of extension professionals in broadcast media houses, telecommunication and other electronic media organizations where they are needed to assist in identifying new value-added use of ICTs in agricultural information communication. The skill areas which must be addressed to bring electronic media production to the level of significance it deserves include inter alia:

i. Photo journalism
ii. E-journalism
iii. Cyber/online journalism
iv. Computer Multimedia production
v. Video and audio editing and production

Needless to say, therefore, that the inherent challenges for extension towards ensuring that the production of electronic media attains the level of significance it deserves is huge, ranging from the provision of facilities/equipment, power supply, effective policy framework to building the capacity of extension workers to become productive using electronic media. Unfortunately, where training is given on electronic media production in extension, the knowledge provided is usually shallow and inadequate. The shallow attention and omission given to the subject of electronic media production by authors and experts when discussing extension audio-visual is just a buttressing instance.

Similarly, previous studies and existing literature in extension have not helped in

providing adequate insight and knowledge on electronic media production nor information on the training needs of mainstreaming electronic media production for extension services in Imo State. Consequently, this study is designed to investigate the needed skills and the associated challenges for mainstreaming electronic media production in extension curriculum through the following research questions:

1. What are the socio-economic characteristics of the extension personnel?
2. What are the job operations and tasks of the respondents?
3. What are the electronic media production capabilities of the respondents for carrying out extension job operations and tasks?
4. Which electronic media production skills are taught in extension training?
5. What is the level of mastery of the skills by the extension personnel?
6. What are the training needs of the extensionists in mainstreaming electronic media production for extension services in Imo State?
7. What are the training needs of mainstreaming electronic media production for extension services in Imo State as perceived by male and female respondents?
8. What difference exists in the training needs of male and female extensionists?
9. What are the conditions under which training will take place?
10. What challenges confront the mainstreaming of electronic media production for extension services in Imo State as perceived by male and female respondents?

1.3 Objectives of the Study

The broad objective of the study is to assess the training needs and challenges of mainstreaming electronic media productions for extension services in Imo State. The specific objectives include to:

1. determine the socio-economic characteristics of the extension personnel;
2, ascertain the job operations and tasks of the extension respondents;
3. examine electronic media production capabilities of the respondents for carrying out extension job operations and tasks;
4. assess the level to which electronic media production skills are taught in extension training;
5. determine the level of mastery of the skills by the extension personnel;
6. assess the training needs of the extensionists in mainstreaming electronic media production for extension services in Imo State;
7. evaluate the difference in training needs of mainstreaming electronic media production for extension services in the State as perceived by male and female respondents;
8. determine the conditions under which training will take place;
9. ascertain the extent to which the process of mainstreaming electronic media production for extension services in Imo State constitute significant challenges as perceived by male and female respondents.

1.4 Hypotheses of the Study

1. **H_o:** The socio-economic characteristics of the respondents have no significant relationship with their training needs of mainstreaming electronic media production for extension services in Imo State.
2. **H_o:** The capabilities of the extensionists to produce electronic media has no significant relationship with the training needs of mainstreaming electronic media production for extension services in Imo State.
3. **H_o:** There is no significant difference between the training needs of extension personnel in the 3 agricultural zones of Imo State towards mainstreaming electronic media production for extension services in Imo State.
4. **H_o:** The male extension personnel did not differ significantly from their female counterparts in the perceived training needs of mainstreaming electronic media production for extension services in Imo State.

1.5 Significance of the Study

The full potential of electronic media in extension communication can be realized if those who carry out extension work have the capacity (knowledge, skill and attitude) to produce, distribute as well as manage electronic media meant for extension services (Okon, 2013). Hence, there is need to ensure effective training of extension practitioners in the area of electronic media production as it helps in scaling up (mainstreaming) the knowledge, skill, the ability and attitude of making electronic media for extension work. Incidentally, effective training results from proper understanding of the training needs (that is, where training is needed; the specific skills and knowledge to be acquired; conditions under which training will occur; and who needs to be trained). By assessing different training programmes on electronic media production given to

extension workers, the study provides insight into the level of job skill given to extension workers in training as well as the level of mastery of the job skill in order to establish a baseline for comparing between the training given to extension workers and the training that should be given to them to become more productive as well as cope with the changing work demand (Tladi, 2004).

The survey in addition to identifying where training is needed, explains why training programmes for extension workers in electronic media production have not been effective by examining the training contents given to the extension respondents and their mastery of the media skills taught. Also the much desired answers as to what job skills are required of an extension agent to perform the job operations and tasks of administration, teaching, researching, training, linkage and information disseminating in extension in a more efficient way using the electronic media will be empirically generated by this study. That is, at the end of this study what an extension worker needs to be taught or learn as to develop capacity in using electronic media to carry out specific extension services as outlined by Madukwe (2011) would be made known by the findings of this study.

The findings of the study are useful in developing and maintaining robust extension curriculum that will in addition to teaching the conventional issues in extension address skill needs in Computer Multimedia production, Video and audio editing and production, Tele, Video and Photo-texing, Photo journalism, E-journalism, Cyber journalism, Digital cable and satellite communication in institutions and organizations where extension practice is taught. Thus, the study reinforces the standpoint of Banmeke & Balogun (2011) which advocates capacity building for e-agriculture.

By ascertaining the requisite skills needed to be productive in an electronic media production environment, the findings will guide the extension practitioners identify specific areas of electronic media skills required of them to work with media outfits as TV/Radio broadcasters, agricultural news reporters, agricultural news editors, movie makers, TV/Radio program producers, as well as effectively use traditional and modern communication tools like the broadcast Radio and Television, CD/DVD ROM, video tape, interactive phone, satellite, cable or Integrated Service Digital Network (ISDN) line to disseminate innovation. With the use of virtual library spreading across all corners of professions, proficiency in the production and use of the electronic media as chiefly promoted by this study will enable the extension service and practitioners tap into the virtual library technology for documenting information on agricultural innovations, Indigenous Knowledge Systems, cultural practices as well as meeting other database management needs towards overcoming the constraints of centralized agricultural information database system which limits access to readable agricultural information (Okon, 2013) .

Furthermore, the findings of the study will add to the existing facts and literatures of other advocates of extension commercialization and privatization by highlighting the requisite skills and conditions necessary for an entrepreneurial extension practitioner to produce and disseminate customized agricultural information to farmers in different forms, using different electronic channels that are convenient in time and place for the farmer. For instance, the study provides insight into what skill area or knowledge are needed by the extension agent to exploit the wide access of Nigerians to CD/DVD ROM players, radio, television, mobile internet services and other computer multi-media by recording, editing, uploading, streaming, packaging and distributing their own messages in corroboration with the opinion of Okon (2013).

Finally, the recommendations of the study will enable extension organizations,

institutions, administrators, educators, supervisors, policy makers, training programme planners and extension practitioners identify effective ways of addressing the skill needs and challenges of mainstreaming electronic media production in extension curriculum.

1.6 Limitations of the Study

The study was majorly constrained by the following:

1. Inadequate funding which limited the scope of the study.
2. Scarcity of readable database on extension personnel e-activities and e-training in Imo State.
3. Indifference/hoarding of data by extension personnel which made data collection difficult
4. Poor training/knowledge level of extension personnel on electronic media production which hampered speedy supply of information elicited by the questionnaire.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Conceptually, this study attempts to highlight how a number of issues/themes interplay to influence the production and utilization of electronic media for extension purposes. Thus, this study assumes that the success of the extensionist in making electronic audio-visual materials for extension teaching depends on a number of conditions. Viz: knowledge of extension as an act of agricultural communication, the prescribed functions of extension, the approaches with which to perform extension functions, the potentials of integrating electronic media in performing these extension functions, the requisite technical capabilities for producing the electronic media and deficient technical areas (training needs); also that gender dimension to the training needs and the challenges thereof is also a key factor. This chapter therefore reviews related literature on the foregoing under the following subthemes:

i. Agricultural extension: concept, personnel and functions
ii. Extension service organization and delivery in Nigeria
iii. Extension communication: components and process
iv. Electronic media production: concept, techniques and process
v. Training needs of mainstreaming electronic media production for extension services
vi. Challenges of mainstreaming electronic media production in extension
vii. Theoretical and conceptual framework for explaining the training needs and challenges of mainstreaming electronic media production for extension services in Imo State

2.2.0 Agricultural Extension: Concept, Personnel and Functions

2.2.1 Concept of Agricultural Extension

It is necessary to begin this literature review by exploring the concept and principles of extension in order to provide background knowledge to the functions of extension personnel as well as the "dos" and "don'ts" guiding the performance of extension work. This will help in identifying specific areas of extension work where electronic media are needed or can be deployed to achieve efficiency. Two, it will provide a conceptual support for explaining the relationship between extension practice and mass communication as to lay the groundwork for validating and advancing argument that since mass communication and extension perform similar task of information dissemination, electronic media potentials which account for the success in mass communication industry should likewise be exploited for extension services.

Asiabaka (2002) therefore conceives the meaning of extension along the aims it is designed to accomplish, which include:

a. the provision of the capability of the rural and urban clientele to maintain efficient and sustainable farms;
b. improving the standard of living of the clientele through higher and increased productivity;
c. improving the knowledge, the skills and attitudes of the client;
d. improving the leadership potentials of rural and urban clientele.

Other experts in the field of extension and rural development have also defined extension in different ways and forms. For example, Ladele (2004) defined it as an educational process that is applicable to diverse areas of human endeavour. Swanson & Claar (1984) saw it as an on-going process of getting useful information to people (the communication dimension) and

assisting those people to acquire the necessary knowledge, skill and attitude to utilize effectively information /technology(educational component). According to Christoplos (2010), extension is no longer just about men from public sector agricultural agencies riding around on motorcycles talking to farmers, even though this stereotype still describes a significant proportion of extension agents. In other words, the term extension conjures up images from the past to some persons and leads to inaccurate assumptions about what extension is all about.

Christoplos (2010) further used extension as an admittedly amorphous umbrella term for all the different activities that provide the information and advisory services that are needed and demanded by farmers and other actors in agri-food system and rural development. Extension could be conceived as involving technical knowledge and facilitation, brokering and coaching of different actors to improve market access, dealing with changing patterns of risk and protecting the environment. And this takes place within complex systems involving old and new service providers and even information and communication technologies (Nnadi & Anaeto, 2013).

Maunder (1973) gave a more pragmatic view of agricultural extension when he defined it as a service or system which assists farm people through educational procedures in improving farming methods and techniques, increasing production efficiency and income, improving their standard of living, and lifting the social and educational standard or rural life. This definition, emphasizes two primary issues, viz:

a. education or technology developed from research institutes/universities which must be applied to/for change in specific skills;
b. bringing the benefits of the technologies to improve life styles of the people (Akinyemiju & Torimiro, 2008; Nnadi & Anaeto 2013).

Thus, extension is a programme designed to meet the information, inputs, services and skill requirements of farmers in a way to empowering them to be able to continuously provide food for the people (Qamar, 2002). In other words, extension is a type of farmer-centered programme of services for building agriculture through building of the farmers' capacity to increase productivity; that is changing people's way of doing things in a specific predetermined way believed to be desirable for individuals and the entire society. The objective is to initiate actions that might lead to improvements in the farms, in the homes and within community institution (Nnadi & Anaeto 2013).

A more commonly applied meaning of agricultural extension to the agricultural/rural sector, is that which describes extension as a voluntary, informal, out-of-school educational process which aims to facilitate the (rural) people on how to improve their standard of living by their own efforts through making wise use of the resources at their disposal in better system of farming and home making for the benefit of the individual, the family, the community and the nation as a whole. In the light of this, Obibuaku (1983) defined extension as an informal out-of-school system of education designed to help rural people satisfy their needs interest and desire. The implication of this definition is that agricultural extension is informal and involves teaching adults (androgogy) in contrast to formal education which involves teaching young children (pedagogy).

2.2.2 Philosophy and principles of extension

The philosophy and principles of extension constitute the foundation upon which extension work is carried out. The two are intertwined such that extension philosophy houses a body of value/ideologies held by extensionists, while the principles provide the "code of

conducts," "dos" and "don'ts" which guide functions performed by extension agencies and agents.

Extension Philosophy

Extension Philosophy is therefore the set of beliefs, and values which extension uses in reaching their clientele. They include:

- The belief that there is always something new and better than what the farmers have been doing which needs be brought to their knowledge and use.
- The farmers are intelligent and capable of making integral choices and decisions.
- Every individual is unique and therefore must be treated in ways and manners that appeal to his/her peculiarities.
- Individuals are capable of accepting new ideas irrespective of his age though with varied speed/rate.
- Extension as an adult type of education is democratic and voluntary and requires the use of andragogy methodology of education (Asiabaka, 2002).

Principles of Extension

It is one thing to have a philosophy and yet another to operationalize them. Attempt to develop a framework that will assist in operationalizing the philosophy of extension is the brainchild of the principles of extension, which is, a set of what must be done or not in carrying out extension work. Asiabaka (2002) identified these principles as:

a. ***Situation specificity*** – (beginning from where the people are in terms of knowledge level, competency, attitudes, trends of people in a given situation).

b. ***Focus on peoples' needs and Interest*** – the needs of extension clientele must be paramount in an extension programme; it must be a reflection of peoples needs as opposed to the top-down approach which sees the clientele as ignorant people who are incapable of taking wise decisions.

c. ***Extension programme must be sustainable*** – that is designed in ways that promotes the use of indigenous resources and knowledge systems in implementation of agricultural development programmes, such that the continuity of such programmes will depend not on external intervention and support. Rather should be people driven.

d. ***Flexibility of extension systems and programmes*** - extension systems and program must be flexible in such a way that modifications can be introduced in the course of its execution. Extension deals with human beings whose needs are ever changing.

e. ***Extension programmes must be participatory*** - participation of extension stakeholders in programme development should be the focus of extension. Research and extension must work closely together to identify farmers needs and problems as farmers are more inclined to accepting recommendations that are developed through the participation of development stakeholders.

f. ***Extension should use local leadership*** – this is pertinent since local leaders have a multiplier effect to extension efforts and make possible a two way flow of information (Igodan 1989; Asabaka 2002). However, extension should rather work for the common group goal than for the individual local leader.

g. ***The use of trained specialists in extension should be encouraged*** - extension deals with multi-facet issues and therefore requires that people who are acknowledgeable in different subject matters be used since the exclusionist cannot have in-depth knowledge of all subject matters.

h. ***Extension should use variety of teaching methods –*** in teaching the farmers, extension should endeavour to use variety of teaching methods since no particular method can work in every condition, there is therefore need for variation.

The implication of this is that the capabilities of extension workforce (those who plan extension programme and those who implement extension programme) to perform their prescribed roles effectively depend to a greater extent on how much they know about extension principles and are willing to apply. The functions of extension personnel are subsumed in the functions performed by the extension service. Hence, the functions of the extension worker are discussed here vis-a-vis the functions of extension.

2.2.3 Functions of agricultural extension

In pursuit of its mandate of teaching rural and urban clientele (learners) how to determine their problems and be able to rise above such problems using their own resources, extension accomplishes the following:

i. provides and convinces farmers about the value of change;
ii. transmits the result of research to farmers;
iii. bridges the gap in communication between researchers and farmers;
iv. helps farmers make wise decisions in farm and farm managements;
v. develops leadership roles in adults and enhance youths to develop the society;
vi. assists farmers make efficient and judicious use of resource for increased productivity; and
vii. promotes socio-cultural, recreational, intellectual and spiritual growth of the rural people.

Thus, extension covers a wide spectrum of activities. Namely:

1. Improvement in production
2. Erosion control
3. Marketing
4. Land management
5. Storage
6. Farm mechanization
7. Processing
8. Livestock Management
9. Fish Farming
10. Human resources and development
11. Agro-forestry
12. Input supply and distribution
13. Youth development
14. Man-power development
15. Programme planning and evaluation
16. Home economics and women in agriculture
17. Irrigation
18. Climate change and gender issues
19. Biodivrsity and biotechnology
20. Technology generation, development and transfer (Anaeto, 2007).

Hayward (1989) added that extension is designed to carry out diagnosis, feedback, message transfer, linkage, writing and evaluation. Corroborating this, Asiabaka (2002) classified the functions performed by extension into:

1. motivation of farmers towards the acceptance of extension message for a change in behaviour.

2. dissemination of useful and practical information on agriculture to farmers.

3. sending the feedback of farmers' problems to research.

4. assisting the rural farmers to improve their management abilities and make appropriate decisions concerning farming and home living.

2.2.4 Qualifications of extension workers

The qualifications of extension workers to a large extent affect the quality of extension service delivery. Deficiencies in knowledge, skills and ability among extension personnel are remarkable both at global scale and local level (Ali & Halim, 1997). In terms of educational qualification, about 39% of extension personnel worldwide have a secondary-level education and 33% as intermediate-level education (Bahal et al, 1992 in Ali & Halim, 1997). Most frontline extension workers in Africa have only diploma according to them, though with significant regional differences. Agbamu (2011) stated that Nigeria's recommended standard specified that two or four year college/polytechnic diploma holders and Bachelor of Science in Agriculture graduates should be recruited as agricultural extension officers and deployed to work at the field level in towns and villages. In 1999, 37.4% of Nigerian agricultural extensionists had university degrees and Higher National Diploma, 54% had Ordinary National Diploma from colleges/polytechnics, and 8.6% had teachers' grade II certificate (Agbamu 2000 cited in Agbamu, 2011).

Okoroma & Anaeto (2013) in a study on the organizational efficiency of extension service in Agricultural Development Programme (ADP) in Imo State revealed that the minimum

education qualification possessed by the extension personnel was TTC/NCE/OND. Most of them had HND qualification, while B.Sc and Postgraduate degrees were least possessed educational qualifications. Gender like in other spheres remains a major issue in extension service as most of the extension functions were performed by male personnel who were within the average age of 30 years. The poor educational background of extension workers necessitates regular training, training given to extension workers are broadly classified into in-service training and pre-service training.

2.3.0 Understanding extension delivery approaches for deploying electronic media

Uwe, 1987 cited in Axinn (1988) posits that the success of an agricultural programme depends on the extent to which its approach fits to the goal of the programme. That is to say, extension organizations everywhere pursue the overall goals of technology transfer and human resource development with differing emphases. Hence, Uwe (1997) broadly classified the approaches of extension service delivery into two, based on the target beneficiaries. Viz: (a.) general clientele extension approach (b.) extension for selected clientele. The general clientele approach includes: *Ministry – Based general extension, Training and Visit Extension (*T & V), *Integrated approach and University based-extension,* while extension to selected clientele approach includes: *commodity based extension, commercialized extension services, client-based and client controlled extension (NGO – based extension).* Also, the stakeholders of extension service play important roles in the success or otherwise of these extension approaches. This section therefore discusses the above extension approaches as well as identifies extension stakeholders.

2.3.1 Ministry-based general extension

Here the general agricultural extension is typically located in the ministry of agriculture

with a variety of divisions (National Agricultural Extension and Research Liaison Services, 1997 in Nwachukwu 2013). These decisions are replicated at the states and local government levels. This approach is based on the assumption that technology is available and if they are communicated to farmers they would improve their production capacity and they are transferred to them 'top down' (Nwachukwu 2013). This approach is supply-driven; where technology is transferred from government to farmers free of charge.

2.3.2 Training and Visit extension (T&V)

The T&V is based on the assumption that the extension workers are exclusively engaged in educational activities and that a unified extension helps to achieve integrated development since agricultural development is said to occur only if other sectors are equally developing. Thus, the T&V is characterized by professionalization of the extension worker to increasing production, income and provide appropriate support for agricultural development; linkage between farmers, professional extension workers and researchers. The extension worker is allocated or responsible for a number of farmers; visit schedule of the extension worker to the farmer and scheduled dates for training.

Jibowo and Ajayi (2011) identified the features of T&V as:

i. Professionalism

ii. A single line of command in which extension must be under a single technical and administrative command.

iii. Concentration of effort by all extension staff on the task at hand.

iv. Time – bound work

v. Field and farmer orientation

vi. Regular and continuous training of Village Extension Workers

vii. Linkage with research

The Unified Agricultural Extension System was introduced to maximize the dwindling resources to support the extension system. In this arrangement, one extension agents is expected to teach farmers in all areas including crops, agro-poultry animal product, fishery and food processing using the T&V. However, Benor and Harrison (1977) found that the T&V is undermined by:

a. inadequate internal organizational structure;

b. inefficiency of extension personnel;

c. inappropriateness or irrelevance to extension content; and

d. dilution of extension impact

2.3.3 University Based Extension

In this type of extension, educational institutions (Universities) carry out extension work as well as educational functions. In most countries, the main contributions of educational institutions have been manned by qualified, dedicated, and responsible personnel, while the Cooperative Extension Service (CES) of the USA is still the only system in which the main extension function remains within the University (FAO, 1997). In Nigeria, some Universities adopted villages for the extension of specific technologies under special programmes. The Universities of Agriculture in Markurdi, Abeokuta and Umudike have operated village extension services. Poor funding and financial constraints have resulted in fizzling out of similar projects in

Nigeria, such as Zaria Rural Chaiye project by ABU, Isoya Rural Development Project by Obafemi Awolowo University, Badeku, Rural Development Project by University of Ibadan, Okpuje Rural Development Project of University of Nigeria Nsukka (Nwachukwu, 2013).

2.3.4 Commodity based extension

Here, extension is run by government, parastatals or private firms. The goals are production and profit oriented. All aspects of producing and marketing a particular crop are vertically integrated from research, advice and material support given to farmers, to organizing marketing and even exports (Uwe, 1997). Specialized production and performance of farmers and extension agents are enhanced as they focus on only one or two crops, facilitate training to become proficient and specialist in given areas of farmers' needs. Extension personnel and farmers are thus judged in terms of defined targets. Also in this system, particular commodity, usually a cash crop with export potential is identified and an extension package is developed for it.

2.3.5 Extension as a commercialized service

This method of extension requires that Clientele (farmers) pay for the services of extension they receive. The emergence of commercial extension has influenced the debate on who should bear the cost of extension. It is argued however that those who can afford it should pay for advisory services since the free public extension service is not sustainable due to dwindling and inadequate funding. The practicality of this type of extension service in Nigeria and in Africa is still being debated.

2.3.6 Clientele-based and client-controlled/NGO-based extension

This method of extension is based on the assumption that by localizing extension and utilizing the self-help potential of rural groups organized by outsiders, extension is in a better

position to serve the needs of specific target groups, especially those of disadvantaged status. Thus, the shortcoming of extension system is improved. Local personalities are identified to take over leadership functions once the external (Non-Governmental Organizations) withdraw. The principle of the NGOs include to achieve awareness, empowerment, participation, self-help.

2.3.7 Stakeholders of extension service

It is often misconceived that extension service delivery is the exclusive preserve of farmers. The extension system is composed of several elements of participants which perform one complementary role or the other towards achieving extension objectives irrespective of the approach involved. In other words, extension service delivery is typically value chain driven. The extension butterfly below adapted from Mgbada (2010) identifies the actors of extension service.

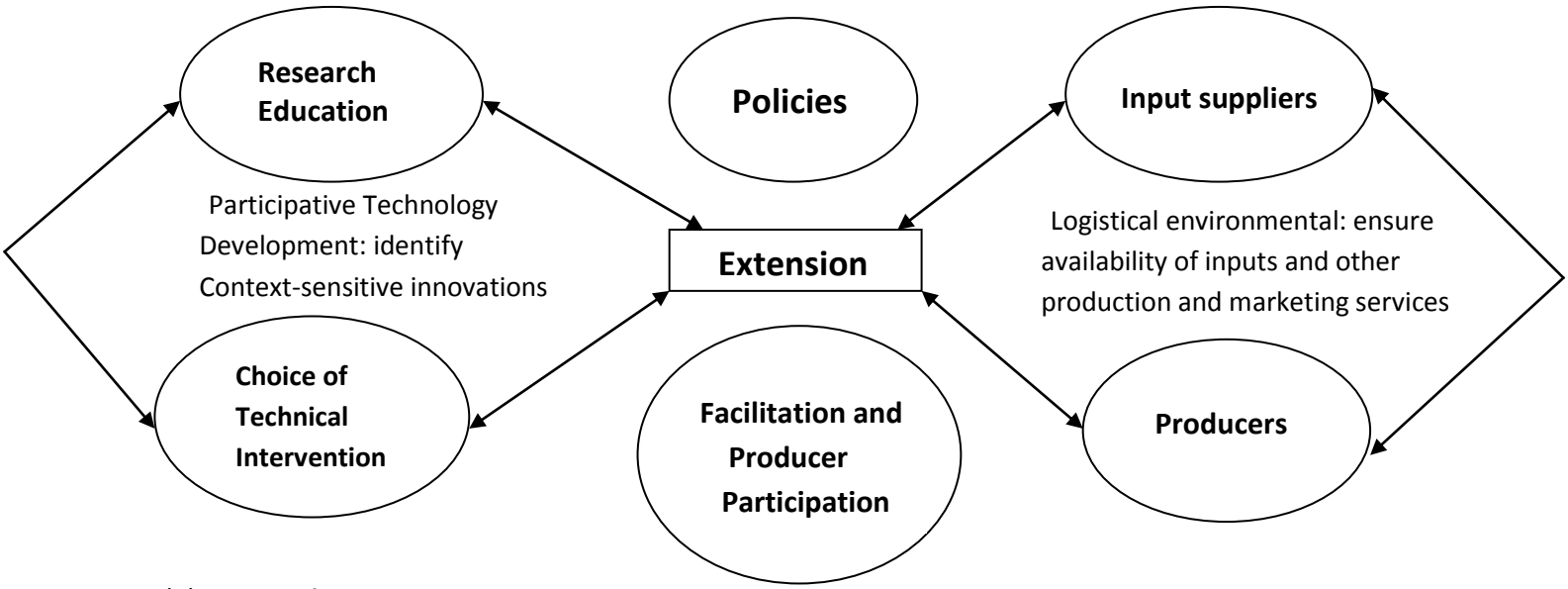

Fig 2.1 Extension Butterfly (Mgbada, 2010)

From figure 1.1 above the stakeholders and clients of extension include:

- Those who plan or choose areas of technical intervention
- Those who develop the technologies in line with identified need
- Those who utilize the technologies generated

Ability of the extension worker to maintain effective information flow within the extension system using electronic media remains a factor of his knowledge of the phenomenon of extension communication.

2.4.0 Extension communication: elements and process

For the existence and organization of every production system, communication is fundamental. The reason is because in every production system there is constant action of people talking, listening, seeing, feeling, reacting and relating to one another their experiences and

environment. A system of production such as agriculture requires information to flow from producers to consumers and from facilitators to utilizers of agricultural information. Communication everywhere is said to be the same, whether in the hospital, school, business, etc. To some extent this is right. However, as much as communication everywhere involves the same basic components of a sender, message, medium and receiver, extension communication posses several dynamics that make it worth analyzing for proper understanding of its similarities and contrasts with general communication process.

2.4.1 Concept of Communication

Communication could be explained considering the following:

a. elements involved,

a. purpose intended;

b. information transfer process;

c. human relations; and

d. medium utilized

Meaning of communication based on elements involved

Communication is an action process involving the sender (source), the message (information), the channel (media) and the receiver (reactor). This emphasizes the components that must exist for communication to take place. The sender here is the extension personnel with whom resides the research recommendations, new practices or methods which are transferred to the clientele. The message is the information which the extension agent wants the clientele to understand, receive and respond to. The message may be in the form of solutions to farmers' problems, demonstrations, practices or inputs needed to be adopted by the farmer depending on prevailing farmers' conditions. The form that a message takes varies in different ways. It could

be practical or not, oral or written form, visual or non-visual. The extension teaching methods used by the change agents to train the clientele constitute the channel of communication. A channel can be visual, spoken written or even an interplay of two or more of them (Onweagba, 2007). The receiver is the actual consumer of the message from the source. The farmer receives the message from the change agent. In another case, the extension worker may be the receiver of the message coming from the clientele, such as a sudden alert on farmers' problems. Where the message is not understandable to the farmer (receiver), communication appears in complete.

Meaning of communication based on purpose intended

Communication as conceived by Rogers and Shoe maker (1973) cited in Mgbada (2010) is the process by which message is transferred to a receiver with the "view" of modifying the behaviour of the receiver in the direction desired by the source. Onweagba (2007) added that "in communication we want to persuade the individual receiver to do something as desired". The ultimate aim/emphasis here is on the influence of communication, which is to modify the behaviour and idea of the receiver. Extension is an educational process aimed at bringing about desired changes in behaviour, attitude, values, beliefs and actions of farmers (Onweagba, 2007). From the purpose-based perspective, extension and communication have something in common. Communication using the electronic media in addition has appealing effects on the receiver.

Communication as an information transfer process

The understanding of communication here is based on the idea of "transfer" of information. For instance, the Oxford English Dictionary sixth edition, defines communication as the "imparting, conveying or exchange of ideas, knowledge, etc (whether by speech, writing or signs)". According to the Columbia Encyclopedia cited in Konkwo (2003), communication is the "transfer of thoughts and messages as contrasted with transportation, of goods and persons. They distinguish between the transfer of ideas, knowledge, thoughts and messages and the transfer of

more material things. Comparing the definition of communication and extension in this context, extension is concerned with the transfer of knowledge based on research to farmers (Onweagba, 2007).

Communication as an act of human relation

Cooley 1999 cited in Konkwo (2003) sees communication as the mechanism through which human relations exist and develop all the symbols of the mind, together with the means of conveying them through space and preserving them in the time. In the light of this, Mgbada (2010) posited that "communication is said to have taken place so long as the source and the receiver understand each other, irrespective of whether or not they agree on the point in question. The emphasis here is on the existence of "interaction" between the sender and the receiver whether or not a consensus is achieved. Extension, literally involves interaction between the extension worker and the clientele.

Meaning of communication based on the medium/form

Nwodu & Ukozor (2003), define communication as the transmission of information, ideas, emotions, skills, etc, by the use of symbols, words, pictures, graphs, figures, etc. This context is concerned with the understandable form in which message is passed. Defluer *et al* 1971 cited in Nwordu & Ukozor (2003) observed that the use of written symbols as vehicles of communication among humans has been in existence for many generations. They maintained that communication is the verbal or non-verbal process by which individuals or groups share ideas, express their opinion or feeling and disseminate information between one another. The use of agricultural exhibitions, farm visits, audio-visual aids, among other teaching aids and techniques are instances of vehicles through which extension agents communicate to clientele.

2.4.2 Types of Communication

Several levels or types of communication exist in literature. Adebayo & Adedoyin (2005) noted that the levels only provide convenient ways of appreciating the context and varying scenarios within which communication occurs. While some authors classified communication in terms of the number of actors involved and levels in which it takes place, such as: Intrapersonal, interpersonal, group, organizational and mass communication, some have broadly divided it into verbal and nonverbal. Others have further enlarged the list by articulating hierarchical flow of information. Thus, they divided communication into vertical and horizontal communication. It is important for emphasis to discuss some of them, as well as the controversies surrounding them.

Intrapersonal communication

Intrapersonal communication occurs when only one person is involved in the communication process. This is done when important decisions are to be made, such as the choice of appropriate teaching method to teach a group of farmers. The change agent thinks over the heterogeneous nature of the clientele. He determines what to say and how to say it without sounding too high or too literate among the group, nor boring the literates with over emphasis. On the part of the clientele, he considers whether to adopt or not to adopt an innovation, to expand or limit the scope of his business or to progress a course of action. This "forms the basis of 'evaluation stage' of the adoption process" (Rogers & Shoemaker 1973 in Mgbada, 2010). Some school of thought however argues whether this is actually communication since at least two persons are not involved.

Though two people are not involved in this process of communication, what has occurred within the extension agent or the clientele above is communication. He thinks within himself, talks to himself and listens to himself to generate a response. In analysis, intrapersonal

communication is justified as a type of communication by the presence of; a sender, a receiver who is also the sender, feedback which is immediate and the message which is personalized.

Interpersonal communication

As the name implies, this is the flow of information between two or more individuals usually in a face-to-face manner, etc. Thus, when there is interaction between a change agent and a farmer or group of farmers. When communication occurs between people it is still communication but not in a face-to-face situation. There is a controversy as to when interpersonal communication become mass communication.

Nwachukwu (2003) suggests that "interpersonal communication is limited to an interaction between one person and about 20 people. According to him, when the audience is up to 100, it is called group communication". In sharp contrast, Konkwo (2003) posited that "there is no arbitrary size limit at which interaction ceases to be interpersonal in nature, although there must be at least two participants".

Mass communication

Mass communication is the flow of information between a source (a person, a group of people, a system) and a very large number of receivers usually called mass audience. Mass media is used interchangeably with mass communication to refer to institutions and techniques by which specialized groups employ technological devices such as press, radio, films, etc, to disseminate information to large, heterogeneous and widely dispersed audiences.

2.4.3 Process of extension communication

Having taken expository tour through what constitutes communication and to which we established that a communication process is characterized by the features/elements of sender, message, channel, receiver; purpose of change the receiver, transmission phenomenon, interaction and form in which the message is packaged and distributed. Simply put, extension

communication process explains the integrated role of the various components of extension communication (the communicator, message, purpose, form, channel, language, response, presentation and audience of the message).

Extension communicator

In extension communication, the extent to which a change agent fails or succeeds in his role as a message originator depends on the following:

i. How much he knows and is able to impart on his audience

ii. His ability to communicate (skills)

iii. His attitude (degree of empathy)

iv. Position in the social system and

v. Culture (Onweagba, 2007)

High technical competence, clear understanding of extension work, confidence and trust of the clientele are required of an extension worker. To raise his technical competence, the change agent must strive to update his knowledge through training on the subject matter and communication methodologies. He must know whether the object is to inform, teach, please or persuade. A good knowledge of the audience will assist the communicator achieve effective communication. The extension communicator needs to understand his audience, their attitudes and disposition, their needs and aspirations (Asiabaka, 2002).

The ability of the change agent to use verbal and non-verbal communication means to transfer information or receive information from the farmer fosters effective communication; he must have good speaking and writing skills to be able to send message, good writing and reading skills to be able to receive information, as well as good analytical skills. He should be able to comprehend the emotional state and attitude of his audience from the voice level, body motion and other non verbal expressions.

A good extension worker develops a keen sense of empathy regarding his clientele, that is, ability to project themselves in the role of the clientele. He realizes that different system of personality, culture and social system of human relationships and social structure and organization in which the farmer exist affect his view of the world, his role and role of others, his reaction to messages. Like empathy, credibility is yet another key factor the sender must possesses to achieve a degree of faith and trust of the receiver. Farmers value messages presented by a extension personnel of high credibility than one of low credibility.

Communication is more effective between persons with similar cultural background. This is relatively independent of social positions. The communicator must therefore strive to be acquainted with the cultural obligations of his audience, and incorporate same or observe them while making electronic media for extension teaching.

Message content

Selecting the correct message is an essential step that enables the communicator achieve desired effects on the audience. In order to select correct messages, the sender must consider the purpose, the form and language with which to communicate the message. The purpose of the message must be clearly defined by the communicator, whether to teach a method, transfer information, demonstrate result, elicit answers, among other actions. The purpose of the message must appeal to at least one of the following five human notices as put forward by Maslow, the psychological/fundamental needs, security needs, love, self esteem and self actualization needs. Based on the purpose of a message, the extension worker should determine whether a message is best suited as a recommendation, technological package, sound or visual. The size, shape and texture of the message should also be taken into cognizance.

Communication problems are largely attributed to semantics (different meanings for the same word). The extension communicator must ensure that words mean the same thing to the

receiver that they do to the sender. In other words, it is important that the change agent says something in words he likes to use or hear, but he must know what those words mean to the clientele.

Harris 1994 cited in Konkwo (2003) also attempted to ascertain what must occupy the mind of the sender while dealing with the message by identifying the following key considerations for achieving effective message:

i. The message must reach the intended audience (aligned with local peculiarities).

ii. Agrees with the interest of the audience (informative, change in skill and attitude).

iii. Relate to common experience and meaning (must be specific to a given need).

iv. Be location, time and situation specific (agree with realities on ground).

Similarly, Adebayo *et al,* 2002 cited in Adebayo & Adedoyin (2003) recognized the following as characteristics which may enhance or hinder message acceptability:

i. Relative advantage

ii. Compatibility

iii. Complexity

iv. Trial ability/divisibility

v. Observability

vi. Risk level

According to him, the more these conditions are favoured by a message the more willingly and readily the receivers are inclined to accept the message. The message must be clear, simple, understandable as well as target the mental, social, educational, economic and physical abilities of the audience. Asiabaka (2002) posits that for the message to be appreciated by the farmer, it needs to be novel, beneficial scientifically tested and not a trial and error matter.

The Channel (relay mechanism)

The channel is the medium through which messages are transmitted to the receiver (media). The human sense of sight, hearing, touch, taste and feeling make up the most common means of exchanging ideas. The more the senses are employed in the communication process the greater the chance that it is understood, the channel is also used to bring about change in the cognition, affective and psychomotor domain of the audience. The channel used should have the ability to:

i. Motivate the learner

ii. Explain the subject matter

iii. Demonstrate when necessary;

iv. Guide the learner to practice;

v. Reward the learner; and

vi. Following the learner to ensure sustenance and forestall discountenance.

Message Presentation

Message presentation involves the handling of the message to ensure proper understanding. This implies the use of methods, media and aids to relay information to audience in a well articulated and organized manner. The success to which a message is grasped by the audience depends to large extent on the ability of the communicator to use effective methods, media and aids.

Audio visual aids help presenter increase the audience learning because they utilize the senses of sight and hearing. According to Asiabaka (2002), 83% of what is learnt is seeing, while hearing accounts for 11% of what is learnt. He highlighted the effects of audio-visual aids by explaining that when a lesson is **told** 70% is recalled 3 hours later, but after days only 10% is

remembered. Whereas, when a lesson is **shown** in combination, 85% is recalled 3 hours later and 65% is remembered 3 days later.

Audio visual aids can be categorized according to the medium they use. Viz; broadcast, projected materials, recorded, programmed materials, printed materials and display materials. Others include field study, laboratory studies, games puzzles, field trips, demonstration, field days. however, this study is concerned with electronic media.

Heinrich *et al* 1996 in Asiabaka (2002) in his procedural model for the effective use of instructional media suggested that the communicator takes the following steps.

i. Analyze the learner

ii. State objectives

iii. Select methods and materials\

iv. Utilize media and materials

v. Require learner participation

vi. Evaluate and revise

The use of computer as a teaching aid offers a grave challenge and prospect for extension communication. The extension worker needs to acquire the knowledge and skills necessary for the challenges.

Audience (Clientele)

The communicator must study the audience before deciding on what to do. This, he must do by defining and segregating the receivers into homogenous groups for effective communication to be achieved. For instance, clientele within youthful age bracket should be categorized as such, while those within age bracket of adults are separated as such. The reason is that different group of audience have different areas of interest, aspiration and attitude. Thus, grouping them will assist the change to achieve homophilous situation among the audience.

Mgbada (2010) called it "being at one with the audience", and goes ahead to suggest that this kind of oneness with the audience is achieved through the following strategies.

i. Be sensitive to the audience

ii. Pay attention to the audience

iii. Understand the audience

iv. Know what they understand

v Identify with the audience (empathy)

Schramm on the other hand, argued that it is most important to consider the audience in terms of the receiver's knowledge, communication skill, predisposition, and group membership

Opinion leaders play important role in extension communication because they are often respected by the people and have the ability to influence the attitude or overt behaviour of other people in a desired way with relative frequency. Some opinion leaders act in that capacity for only one topic (Monomorphism), while others act as opinion leaders for a variety of topics (Polymorphism). When the norms of a system is modern, that is, favours change, opinion leadership are monomorphic, but when the norms of a system are traditional, that is, close to nature, opinion leadership is polymorphic. Therefore, the change agent must look out for the right opinion leaders to work. That is, identifying who the opinion leaders in each group is considered important by the change agent.

The effect of extension communication should result in a change in the cognitive domain, affective domain and psychomotor domain of the clientele, which in turn result in a relative change in behaviour or performance. The production of elective media enables the extension practitioners isolate and address the peculiarities of the audience such that it is possible to communicate the same message to a highly literate and perhaps rich clientele as well as a highly poor resourced and perhaps illiterate farmers. With the increased scope of clientele to

communicate to, namely input distributors, research, famous, health workers, government agencies financial institutions, manufacturers, etc only electronic media can yield the economies of scale required in disseminating information to these group of stakeholders.

Response (Audience Reaction/Feedback)

This is the behaviour of the audience which result from the communication effort. The response might be cognitive, affective or psychomotive in nature; change in knowledge, skill or attitude. The adoption or rejection of innovation can be the response of farmers to extension communication. Thus, a response can be positive or negative.

"Sending a message is only one side of the communication exercise. Finding out the extent of its diffusion through the group and its impact in terms of the effect of the message in creating behavioural changes as a result of applying the new knowledge is another" (Adebayo & Adedoyin, 2005). The response forms the basis of assessing the success or failure of a communication directed to the audience.

Feedback: Feedback is another type of response that flow from the receiver to the source of the message. It is an important concept which indicates the success or failure of a Communication directed to the audience. By the concept of feedback; the sender is viewed as the receiver. Feedback provides a method of eliminating mis-communication (misconception, misinterpretation, semantics) especially, in face-to-face conversation where feedback is instantaneous. It enables the communicator determine how good or poorly he is communicating, and of course, review his methods.

***Barrier*:** Contrary to the common understanding of barriers as message blockers, barriers can sometimes allow some messages to go through. Barriers are the product of audience response. Where the response of the audience appears resistant to change or open to new idea and information, the individual at that point in time constitutes the status of a barrier, but if the

audience co-operate with the information flow, the individual moves from barrier to channel. Barriers can take the form of noise, feed forward information, complex bevahiour of the audience and unreliable information. Thus, constitute communication problem. Extension communication process can be illustrated as shown below:

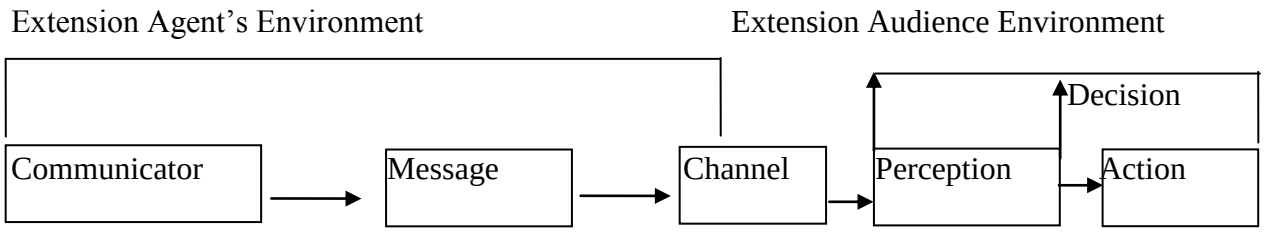

Fig 2.2 Schematic Illustration of Extension Communication Process (Adapted from Onweagba, 2007)

2.4.4 Coping with challenges of extension communication

Face-to-face communication has traditionally remained the most important form of information transfer; farmers have been poorly informed as most of them have relied on a patchy network of local middlemen, a handful of progressive farmers and local shop owners to receive information whose reliability, accuracy and timeliness are in doubt (Meera, 2002). The print and broadcast media which are used as supplementary channel are criticized because they frequently lacked target group or location specificity and information was not up-to-date. However, with the revolution in ICT the speed and quality of information transfer and role of extension workers have increased and changed. The advancement witnessed in communication technologies has improved the weaknesses previously associated with radio and television media in extension communication. Thus, the development has since brought home the use of other electronic media like computer multimedia, websites, video teleconferencing, audio recordings, etc, which can be utilized in packaging and disseminating agricultural information targeted at specific group or

location.

The implication of this emerging role include among others, that those who do extension work must acquire the knowledge, skill and attitude necessary to be productive in the new work situation where the use of electronic media in extension communication is as important and frequently used as the face-to-face communication methods. Bracing up to the challenges posed by the increasing number of extension clientele who access agricultural information using electronic channels. The only way to meet the information needs of such category of extension clientele rather than face-to-face is certainly by reaching them and placing the information they seek at points accessible to them which in this case could be online domains, computer multi-media like CD/DVD-ROM, broadcast media, etc.

With new government policies encapsulated in the agricultural transformation agenda which is aimed at achieving a "hunger-free Nigeria through an agricultural sector that drives income growth, accelerates achievement of food and nutritional security, generates employment and transforms Nigeria into a leading player in global food markets to grow wealth for millions of farmers", the usual approach to agriculture would change thereby changing the role of extension stakeholders as well as ways of meeting their information needs. Fertilizer procurement and distribution, marketing institutions, financial value chains and agricultural investment framework would have to change such that the fertilizer strategy stimulates a thriving private sector fertilizer industry and subsistence farmers would move from their high poverty level through market oriented/market surplus facilitated by Nigerian Incentive-based Risk Sharing for Agricultural Lending (NIRSAL) into a commercialized system that would facilitate trade and competitiveness (FMARD, 2011).

Extension system under the transformation agenda of the Federal government approaches extension service through a new value chain methodology that is "demand driven/market driven

approach" which is different from the traditional "supply push" approach whose emphasis is production oriented. Under the traditional approach, producers are encouraged and supported to improve productivity through the use of improved seeds and agronomic practices. While the institutional settings and basic trainings and knowledge of majority of the workforce are strategically structured to perform traditional function, the new arrangement requires massive re-orientation and capacity building of major actors, facilitators, supporters and promoters to have adequate understanding of the approach. That is to say, the value chain approach involves not only addressing major constraints and opportunities faced by farmers or producers, but also those of processors, traders and other businesses at multiple levels and points along a given value chain. The process also include facilitating a wide range of activities like: access to inputs, strengthening the delivery of business and financial services, enabling the flow of information, facilitating improved linkages between actors and to higher-value markets. All these activities are potential sources of income generation and employment creation for both skilled and unskilled labour (FMARD, 2011). These can be enhanced using electronic media.

2.5.0 Electronic media production: concept, techniques and processes

Extension communication is targeted at a mass audience (farmers, input distributors, financial institutions, research institutes, government agencies, produce groups, cooperatives, among other extension stakeholders). However, for mass communication to take place, we need an intermediate transmitter of information. The transmitter referred here comprises the medium through which message contents are relayed to the intended audience. Hence, the concept of communication media will provide key knowledge for understanding and predicting outcomes of communication process. Before exploring electronic media, this section shall highlight the meaning of communication media.

2.5.1 What is meant by the Term "Media?"

"Medium" means one channel or a means of communication while "Media" are many channels or several means of communication. The use of many channels, "the media" in mass communication marked what Guteberg called the beginning of modern communication. It was when man finally made a machine he interposed in the communication process to see and listen for him (Uchem 1991). Nwosu 1996 in Okwu & Obinne (2009) regarded the media as the devices employed by anyone involved in a mass communication across distance or time. Nwosu (2005) conceives the media from the role they perform which include functions of informing, entertaining and educating the people in a given society about the happenings around and outside their environment. According to him it is used to communicate from a single source to a large (mass) number of persons. Shinger *et al* 1978 in Nwachukwu (2003) see the communication media as pathways over which message travel in reaching their destinations. They affect the messages transmitted either positively or negatively since the "medium" is the "message" according to MCLhan. Thus, the message contents are relatively less important than the ways they are received. Communication media have audio-visual capabilities in transmitting information or signals from the source to the receiver.

From the foregoing, mass communication media can be classified under devices and message content. The device classification emphasizes the type of tool utilized in transmitting the message while the classification by content highlights the form taken by the messages or in which they are packaged. It is on this basis that the mass media are broadly classified into electronic media and print media.

Wikipedia (undated) traced the history of media through the following stages.

- **Tribal Age:** Which emphasized oral communication; oral cultism, storytelling – multisensory involvement – holistic, initiative thinking.

- **Print Age:** Here emphasis is on visual print – the eye becomes the dominate sense; age of linear thinking; states to science and individualism.

- **Electronic Age:** Saw the emergence of the "Global Village", cool medium of TV encourages spontaneity and defined involvement, passive spectator effect, linear thinking becomes useless in the electronic culture.

The print media had long been known and utilized unlike the electronic media which utilization in extension has been constrained by the problem of logistics and dearth of manpower. Though, the problem of logistics can easily be addressed by supplying or providing the necessary tools, that of manpower seems rather more primary and difficult to meet, such as witnessed in many public extension agencies and institutions where equipment in the media department are usually under-utilized or not used at all; where media practitioners outside the field of agriculture are patronized.In Other words, it is not enough to have access to media equipment or facilities but rather more important to develop the capacity to make and utilize electronic media. It should also be noted, that solving the problem of utilization of the communication media in extension is not as essential as addressing the demands of production of the media. This is based on the thinking that while it may not be possible to produce what one uses, it is certain that one can use what one produces, thus, extension agents' dependence on using media created for them is not as adequate as developing their capacity to create the media and using same. Consequently, the focus of this work has been pitched on electronic media production in preference to the print media in view of the following:

i. The electronic media relative advantage in reducing the cost of extension work.

ii. The speed and coverage potentiality of the electronic media.

iii. The need to develop capacity of extension practitioners in electronic media creation.

iv. The increasing number of extension stakeholders who utilize electronic media in meeting their information needs.

v. The craving to decentralize agricultural information data-base management to accommodate the demands of pluralistic-demand driven extension communication system.

2.5.2 Electronic media

Electronic media are media that use electronics or electromechanical energy for the end user (audience) to access the content. Static media (mainly print media) which are often created electronically are said to be electronic media when they require electronics to be accessed by the end user in soft copy form. Odiaka (2011) identified electronic media as:

i. Any medium that records information (magnetic disk/tape, optical disks (CD/DVD), flash memory, etc

ii. Technology for broadcasting information – radio, television.

iii. Technology for communicating through voice and sound or images-macrophone, camera, loudspeaker telephone to cellular phones.

iv. Personal hardware (PC, Servers, Mainframes, Networked storage).

v. The internet

History/classification of electronic media development

Wikipedia (undated) traced the history of electronic media development through the following:

1 **Transmission media**: which include channels like wire and transmission lines (telegraph 1795-1832, telephone 1849-1877, coaxial cable 1880 fibre optics 1956-1970.

a. Wireless channels (Radio 1897-1920, satellite (1958-1972, free space optics 1960s.

b. Internet (downloading 1969 (protocols for transferring (files), live streaming 1996 (RTP protocol).

ii. **Display and Output Media** – information 1940s, Telephone receiver 1879-1879, radio/TV tuner 1894-1927, speaker/headphone 1879-1928/1930s, LED/LCD 1955-1962/1968, computer monitor 1950s/1976, Large Electronic Display 1985, HDTV 1936, HMD 1968-current.

iii. **Electrical Signal Processing**

a Capture 1945

b. Analog 1830s

c. Electronic modulating 1832-1927

d. Electronic Encryption 1935-1945

e Online Routing 1969

f. Electronic Programming 1943 – current

iv. **Electronic Information Storage**

a. Recording medium (punched card and paper Tape 1725/1846, film 1876-1889, magnetic storage 1898-2003, RAM 1941-current, Laser Disc 1969-1978, Compact Disc/DVD 1982/1993.

b. Content formats (content media 1877 – current, audio recording 1877 – current, video recording 1952-current, Digital file formats, Database contents and formats 1963-current

iv. **Interactivity**

a. Control panel

b. Input device

c. Game controller

d Handheld

e. Brain Computer Interface (BCI)

The classification given is necessary in understanding the directions and essence of this work. Clearly it has classified a number of conceptual issues in that what may be generally regarded as an electronic medium or classified as one form of electronic media has been discountenanced or redefined in the classification framework. Consequently, what is meant by electronic media production is the creation of electronic information storage (recording media and content formats media) which are transmitted through wire, wireless and internet channels.

As new media and new forms of electronic media delivery such as listed under types of electronic media, the platforms and frontiers of agricultural information delivery system continue to expand. With the system of Direct Broadcasting by Satellite (DBS), it is possible for people equipped with small, rooftop dishes such as DSTV, multichoice, strong, etc, to receive original agricultural video documentaries and programmes from satellite orbiting above (Dominick 1990 in Agba, 2001). The presence of low power TV, cable systems with numerous channels, video and audio recorders have opened market outlets for film and agric film makers as well as electronic publishing, which supplements the traditional print media are all point of the gains of the revolution.

The use of electronic devices has impacted enormously on the production process of extension instructional media. The computer has brought tremendous speed on agricultural information communication (information gathering and editing) by making the process more efficient. This lays a strong emphasis on accuracy as computer in today's cyberspace, high-tech age has reduced if not completely removed the difficulties in the production of electronic media. This advancement eliminates the need for the NAERL Zaria to wait to collate hardcopies of agric information across the country because reporters would have done the key-stroking for prints or done the nonlinear editing for audios and videos. Also much of the art work needed to get extension publications or electronic media which hitherto were commissioned to the art studio are today realizable using computer graphic capabilities and software. The computer application allows editors to have complete control of the media content – changing makeup, digital photograph, cropping of photos, animation of graphics, etc. With the deployment of electronic media in communicating agricultural information it is possible to close the information gap often referred to as "**digital divide"** between rich countries and poor countries; the "haves" and the "have nots"; rural and urban areas.

2.5.3.0 Electronic media production techniques and process

Electronic media production as earlier maintained involves steps and actions taken in performing the following:

a. Creation of electronic media or digital material
b. Animation of electronic media files
c. Packaging of created digital files in accessible formats.

Consequently, this section will review processes involved in accomplishing the above electronic media production tasks with the ultimate aim of highlighting the requisite skills, knowledge, abilities, attitude and logistics for producing electronic media. This will provide a helpful basis for assessing the implications of implementing same in extension, that is, it will give insight into what skills, knowledge, abilities, attitude and logistic support that must be possessed and provided by extension workers and extension agencies.

2.5.3.1 Electronic media/digital file production

The process of creating or making digital media comprises of three major stages. Namely: Pre-production stage, production stage and post production stage.

Pre-Production Stage: This stage entails that prior to the production proper, message to be produced must be conceived, outlined, scripted and the message generated or collected is recorded before it is sent to the studio for onward production. The actions taken in this stage include among others: conception, site selection, casting. Ogunbameru (2001) noted that this stage involves meeting the demands of the editor (content validity); what the media community wants (standard practice), that is complying with writing rules and adopting writing style.

- ***Content Validity*:** As a professional extension worker you must have a study or message with real news value. A common development or something that happens regularly is not news unless it has some special feature. For instance, an old farming practice or technology may not interest the farmer unless it has new modifications. The message planting on ridge is an old practice to the farmer unless it has new features like length, shape, height, width of the ridge. Take such facts and arrange them so interestingly that the public will like to listen or watch. The ingredients of a good message include: "who", "what", "where" "when" and sometimes "why" (Ogunbameru, 2001).

- ***Complying with standard practice*:** What constitute acceptable attitude and ways of communicating through the media and to which an extension worker planning to produce electronic media must comply with in order to measure up include:

1. Timeless/promptness – fresh and recent messages

2. Follow up-steady stream of message before, during and after messages.

3. Content validity – the message must have at least one of this characteristics (1) newness (2) importance (3) location specificity (4) farmers interest (5) uniqueness.

4. Message style – most important fact should always fixture at the opening or beginning or lead before covering the less important messages. Usually, this is done following the inverted pyramid style. For instance, farmers TV or radio program/show should begin by alerting the farmers on impending crop or livestock disease epidemy before proceeding with information on less issues like dates and venue for agricultural show, excursion, etc.

5. Location specificity- message must emphasize what affects farmers in a given location. Documentaries are better done targeting a given location with the view to emphasize

what problem affects the people and how it affects. A generalize message communication is ideal in prompting massive increase in productivity. Rather, the projection of comparative advantage of a people is important.

6. Contacts – extension worker who makes electronic media for extension work should maintain contact with various media professionals and organizations as this provides the platform for cross fertilization of ideas, exchange of working tools and materials like computer application softwares, production instruments, cameras, studio equipment, etc. It is equally advisable to register with the mainstream media professional bodies as well as enroll into certificate programmes for media production.

7. Regularity and dependability – passion and commitment are two ingredients that inspire and sustain the production of electronic media regularly and on time. Hence, the extension worker should identify areas of agricultural production where his or her interest is more and concentrate on making videos, audio recording, computer multi media messages, outline media contents, etc.

- ***Complying with writing rules***: Though electronic media deals with softcopy materials, yet a good softcopy creation depends on a well scripted material. This is necessary as most of those who script the material may not be the one to use the material for voicing, commentary, graphics design, tele -texting, photo texting, hence, the need to ensure that the scripted material comply with acceptable practice. Usually, the rules of writing especially in the broadcast focus on maximizing time, eliminating clumsiness, promoting clarity, fluency, speech sending avoiding grammatical errors, etc. In the case of scripting for local dialect production, it is ideal to write with the aid of local language expert.

- **Adopting Writing Styles:** Writing for the media takes different styles and patterns, but basically provoked either by other peoples' works, personal experience or those of others, missing links, quest to prove or disprove, rediscover the truth, narrate event, react to event etc. writing style may be determined by the social milieu and time from which one writes. According to Okere (2012), a milieu means each and all of the following: setting, environment, locale, background, vista, situation, mood, atmosphere and time. That is to say, effective writing predicates on some fundamental aspects of life or problem one is aware of. Examples, the problem of protein intake, poverty, environmental degradation, low productivity, healthcare, etc, which remedy needs to be brought to limelight using the media.

Production Stage: at the production stage, what is conceptualized and outlined in the paper is Operationalized. For the video production, shooting/recording is carried out at the location with all the cast acting in the videos. For digital files production, such as creating files in digital formats like JPEG, MPEG, AVI, VTS, HD, SD Filmstrip, etc, the files are processed into digital files to make room for subsequent editing/modification. While for audio production, the recording is done in the studio or suing necessary tools. Editing is done after recording is completed. The advent of computer has brought home nonlinear kind of editing in which clips, audios, graphics, files are cut out, modified, replaced and enhanced with effects, sounds and graphics. Already created media are packaged or stored in retrievable devices or channels.

Post Production Stage: Produced media are transmitted or distributed through a number of channels and platforms, usually through device players, online networks like the web, social media, blogs, U-tube, wire and wireless communication media, among other channels.

2.5.3.2 Status of electronic media production for extension services in Nigeria

On daily basis knowledge and researched agricultural information emanate across agricultural research facilities and institutes on many stable food crops in Africa and farming methods. Nwachukwu (2003) noted that though these developed agricultural technologies emanating from research facilities not perishable, their existence could become somewhat overtaken by event over time if not distributed to the end users. Hence, coping with the never ending generation of innovations and the constant need to disseminate them immediately to the end-users requires speed and dynamism in gathering, processing and delivering to the farmers who make ultimate use of them. At the heart of this revolution is electronic media technology.

At one time, extension teaching in Nigeria was largely through apprenticeship. Teaching was disseminated by family members through generations in the observation and participation of the learners in crop production, animal husbandry and soil management (Jibowo & Ajayi 2011). The birth of some agricultural development initiatives during the colonial government which saw the establishment of Department of Botanical Research in 1893 at Olokemeji, Moore Plantation, Ibadan in 1910 among other trailing developments and the need to disseminate results of research activities at the centres set the stage for the adoption of ICTs in extension (Williams 1978; Jibowo & Ajayi, 2011). The post colonial period did not just witness outstanding studies in the organization and conduct of extension programmes funded and sponsored by public and private organization but up-scaled the use of ICTs in extension. The integration of ICTs in extension brought home the radio and TV farmer programming, establishment of media units across the state ADPs, etc.

Across developing countries the issue of user demand-driven extension service, dwindling government budgets, advances in telecommunication technology worldwide,

globalization, enhancement of electronic, information storage system, among other developments that are shaping the future of extension work, the need to deploy electronic media in extension is on the rise. Meanwhile, in between the traditional period and the arrival of ICTs in extension service delivery in Nigeria, printing has intervened to give both permanence and enlargement of knowledge, ideas, skills and attitude through fliers, posters, magazines, newsletters, newspaper and various periodicals. The deployment of electronic media in relation to their handling of ideas, knowledge and skills emphasizes the point that extension can overcome the challenge of distance by linking its clientele scattered across different locations with an integrated system of communication. For instance, by using radio, telephone videos, audio recording, digital files and database contents which can carry endless streams of messages through wire transmission lines, wireless channels and internet.

Arguably, electronic media deployment in extension which was given impetus by the increasing advances in Information Communication technologies (ICTs) is about the most striking characteristic of mass media development in relation to the print media (electronic mass media). The success of the value chain promoter process depends on the amount and speed of generation and dissemination of appropriate information and knowledge on challenges, problems and opportunities facing major actors and service providers in the value chain since it is knowledge based and demanding. Hence, the role of electronic media as a complementary extension tool to the conventional face-to-face and group contacts remains integral. With the potential of electronic distribution of text "we are approaching a paperless society, where it is faster and less expensive to communicate through electronic channels. It is becoming cheaper to handle words electronically than to handle them physically. Now it is both easier and faster to adopt an electronic media for information dissemination. For instance, it is possible for agricultural news and information to be reported and delivered from the scene of event through

Electronic News Gathering (ENG) and Satellite News Gathering (SNG) as seen in the mainstream broadcast media. Thus, events like crop and livestock diseases outbreak like in the case of Bird Flu, agricultural shows, food exhibition, field day, etc can be reported live to farmers at the comfort of their homes. Though, the information delivered live might not be as complete as it might be carried in subsequent packages, but it is much more immediate and seeks to alert the farmer.

In recognition of the usefulness of the electronic media, especially in contemporary extension service delivery, the National Agricultural Extension Research and Liaison Services (NAERLS) recommended to the Federal Government to deploy the use of radio and TV broadcast, Information Communication Technologies as well as farmers' Helpline to meet the information needs of the different actors in the implementation of the Agricultural Transformation Agenda (ATA). The broadcast packages recommended by the NAERLS include:

a. sensitization and mobilization jingles
b. Radio & TV support
c. Broadcasting in English, Pidgin, Yoruba, Igbo, Hausa, Fufulde & Efik (FMARD, 2011).

The use of ICTs will enhance faster, cheaper and sustainable communication –the hall mark of a good extension system. A value chain agricultural development approach, powered by a market-oriented agricultural extension and advisory services must be driven by ICTs especially the Web-based and phone-based ICTs. Specifically, these include:

Phone-based

a. Phone to phone SMS (both voiced and text)\

b. Computer to phone SMS (both voiced and text)

c. Phone to phone voice mail

Wed-based

a. E-learning
b. Online Radio
c. Podcast
d. Social media (blog, face book, twitter, and other Google applications).
e. Live online text chat
f. Electronic newsletter and other publications in PDF, MS word, etc) (FMARD, 2011).

The question therefore is "who would perform these ICTs driven functions?" Considering the crop of extension practitioners and their level of proficiency in electronic media production, the question is not only apt but one which concerted efforts must be made towards providing a practically satisfactory answer. To achieve that, capacity of extension practitioners must be developed and enhanced in that direction. That is considering what they already know regarding electronic media production, what they ought to know with the difference serving as the gap in the production and utilization capacity of extension practitioners with respect to electronic media. The next section will therefore look at capacity building of extension practitioners towards electronic media production.

2.6.0 Meeting the training needs and challenges of mainstreaming electronic media production for extension services

Capacity building in extension essentially focus on three basic need areas, namely: the extension worker related needs, the farmer related needs and organizational related needs.

Extension functions and tasks are very dynamic because farmers are daily confronted with different challenges and changing needs that need to be solved. The ability and capacity of extension workers to cope with these challenges is a function of knowledge derived through field experience and consistent training over time. Capacity building is concerned with improving or upgrading the ability of the person, team and institutions to implement their functions and achieve goals over time. Capacity building also alludes to building the organizational capacities of communities, and supports the formation of non-profit organizations.

Building the capacity of the extension service in the context of this study therefore entails increasing the abilities and resources of extension workers and extension organizations to achieve the goal of extension through the creation of relevant electronic media. It focuses on increasing an individual and organization's abilities to perform core functions, solve problems, and objectively deal with developmental needs of the clientele using electronic media resources. Capacity building is not defined through the instrument used, but through its goals to enhance the capacity of people and institutions sustainably to improve their competence and problem solving capacities. Training or technology transfer constitutes one of the major channels of enhancing capacity in electronic media production.

2.6.1 Training

Effective creation of digital files, videos, photographs, audio recordings, online media contents, etc, for extension teaching predicates on the level to which extension practitioners have acquired the requisite skills to perform through training. Training is therefore the process of acquiring specific skill and ability to perform a given task (Ali & Halim, 1997). Through training, extension personnel become qualified and proficient in producing or customizing electronic media for extension teaching; they can acquire the capacity and ability to implement

the farmer helpline initiative of the Federal Government capsulated in the transformation agenda. Through training, the extension service can facilitate the change agents' learning so that their modified behaviour contributes to the attainment of the goals and objectives of the extension organization. It is the process of teaching, informing, or educating people so that they may become as well qualified as possible to do their job as well as become qualified to perform in positions of greater difficulty and responsibility.

Notably, while training in electronic media production is concerned with those activities which are designed to improve the change agents' skill in making videos, photographs, audio recordings, graphics, photo-texting, computer multi-media, internet feeds, phone media, etc, for extension work they are at present doing or hired to do, the educational component seeks to increase their general knowledge and understanding of the total work environment. Education increases their powers of observation, analysis, integration understanding, decision making and adjustment to new situations. From the definitions given by Van Dersal 1962 in Ali & Halim (1997), the elements of training include:

a. Capacity building
b. Teaching/learning
c. Information giving
d. Achievement of goal

Implicitly, training employs the principles of teaching-learning and information giving, to achieve the goal of enhanced performance through increase in knowledge and skill base of the trainee. To effectively develop the skills of extension personnel in electronic media production requires an approach that will bring about improved ways and methods of utilizing and managing electronic media tools, renewed belief and faith of overcoming the earlier barriers of information

dissemination using electronic media as well as advancement in their knowledge. Thus, effective understanding of "how' and "where" teaching and learning of electronic media production occur depends on how the theories of learning are applied.

2.6.2 Learning theories

These involve the "how' and "where" teaching- learning occurs. The behaviourists, the cognitionists and the humanists theorists emphasize different aspects of the teach-learning process in their approaches. While the behaviourists focus on influencing the environment situation (external conditions) to bring about observable changes in the learners behaviour,the cognitionists are more concerned with how the mind could facilitate extension workers' learning (mental processes like coding, categorizing, and presenting information in memory). The humanists, on the other hand, emphasize the affective aspects like (emotions, attitudes towards electronic media) of human behaviour that influence learning (IRRI, 1990 in Ali & Halim, 1997).

2.7.3 Training approaches

According to Rama, Etling & Bowen, 1993 cited in Ali & Halim (1997) there are 3 approaches to training. Namely:

a. traditional approach

b. experiential approach

c. performance-based approach

***Traditional approach*:** The training staff design the objectives, contents, teaching techniques, assignments, lesson plans, motivation, tests and evaluation. The focus is intervention by training

staff which is typical of the academic type of training.

***Experiential approach*:** Here the trainer incorporates experiences wherein the learner becomes active and influences the training process. It emphasizes real or simulated situation in which the trainees will eventually operate. Here, the objectives and other elements of training are jointly determined by the trainers and trainees. Trainees primarily serve as facilitations, catalysts or resource persons.

***Performance-based approach*:** Goals are measured through attainment of a given level of proficiency instead of passing grades of the trainees. Emphasis here lies in acquiring, specific observable skills for a task. This approach is mostly task or skill centered and is also applicable to non-formal educational organizations like extension as well as is best suited for the topic of this research. Consequently, this approach will be explored further with a view to understanding the intricacies.

Other capacity building methods include:

Workshops

On-the-job Learning

On-the-job on-site-training

Study tour

Cross visit

Mentoring

2.6.4 Challenges of capacity building in agricultural extension in Nigeria

Pre-service and in-service training are needed in producing capable extension workers. It is recommended in Nigeria that two or four year college/polytechnic diploma holders and Bachelor of Science in Agriculture/Bachelor of Agriculture graduates should be recruited as

extension personnel. However, the educational level of majority of extension workers in Nigeria according to Agbamu 2000 in Agbamu (2011) is still low with 54% of Nigerian extension workers having Ordinary National Diploma, 34.4% University degrees and 8.6% Teachers' Grade ii Certificate in 1999. He called them "insufficiently qualified, inexperienced and poorly trained personnel." The dearth of training facilities like teaching farm laboratories, workshops and studios for grooming agricultural graduates in institutions of higher learning where agriculture taught further compounds the problem resulting in the deficiency of advanced knowledge and skills in technical agriculture and communication techniques among extension workers. Corroborating this, Agbamu (2011) noted that most extension staff that constitute the contact points between the extension service and farmers lack the knowledge, skills and attitude necessary to achieve the much desired rural and agricultural development in Nigeria. Extension capacity building is often ignored in the rush to get the results of research and development products out to farmers. The United Nations Development Programme (UNDP) report blamed Nigeria's stunted growth in the Human Development Index on lack Human Resources Development culture.

2.7.0 Conceptual framework

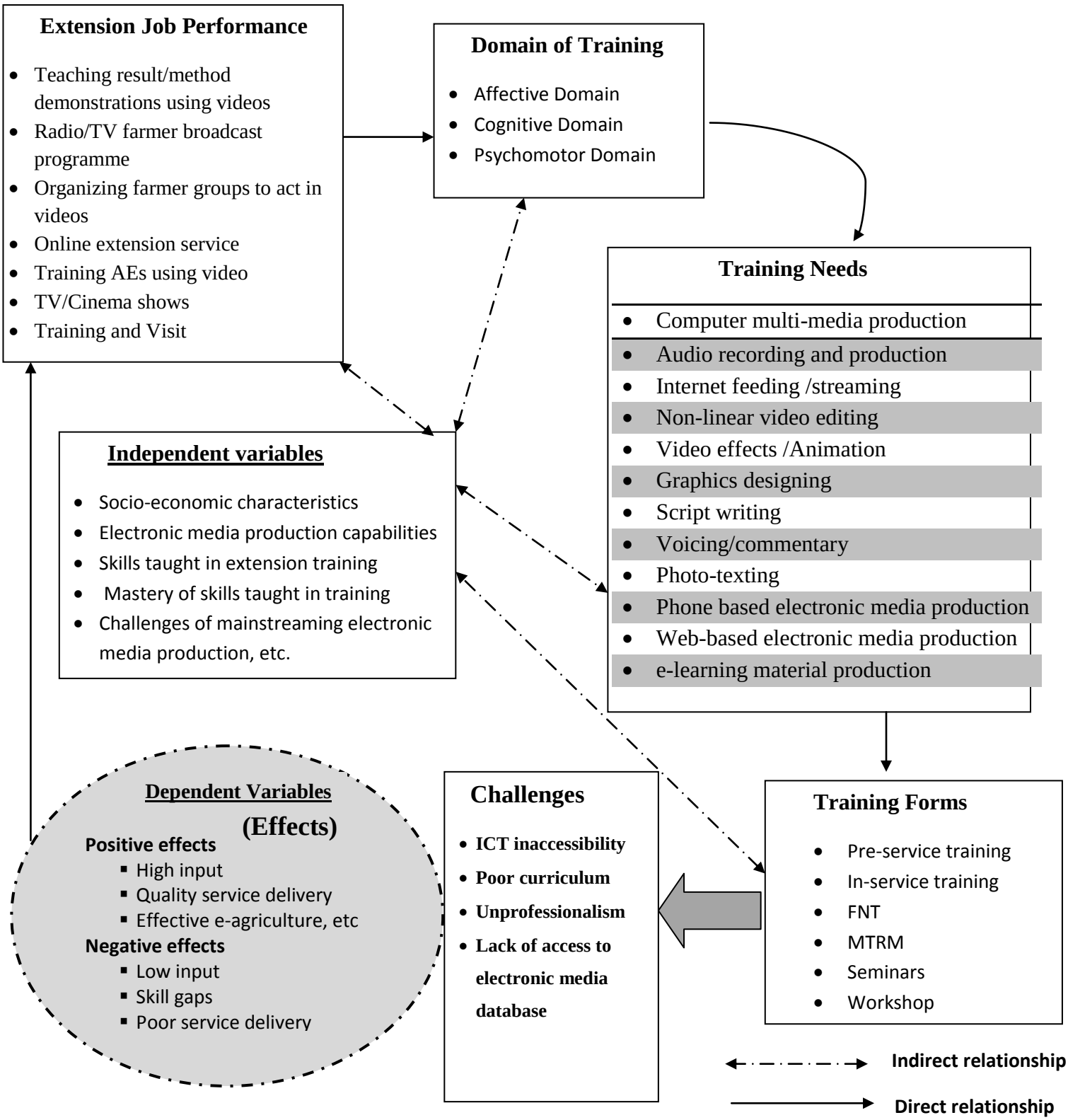

Figure 2.3: **A Schema Illustrating the Training Needs and Challenges of Mainstreaming Electronic Media Production for Extension Services in Imo State**

The basic function of extension in the agricultural production system and rural development is to ensure that information flows from producers to consumers, facilitators to users of agricultural information, technologies and knowledge (Adebayo & Adedoyin, 2011). The revolution in ICTs is increasingly influencing how extension performs its functions, especially, with respect to content selection, context consideration, channel deployment, technique adoption, tasks and purpose intended, perceived emerging challenges, etc. Hence, extension personnel require competencies and skills necessary to be productive in a time increasingly driven by ICTs.

The conceptual framework in fig. 2.3 describes the cause-effect relationship for understanding the training needs and challenges of mainstreaming electronic media production for extension service delivery. It consists of six component variables set in electronic media production context. The components include: extension job performance, domain of training given to extensionists, training needs, forms of training, training outcome and the independent variables.

Extension job performance for which electronic media are deployed gear towards improving farmers' cognitive domain (analytical capability in decision making), farmers' affective domain (social dispositions) and farmers' psychomotor domain (vocational skills for productivity). The shortfall in the capabilities of extensionists to produce electronic media towards improving the cognitive, affective and psychomotor domains of the farmer result to underperformance of extension job. To fill the gaps, extensionists are subjected to different forms of training such as seminars, workshops, FNT, MTRM, etc. The form of training given to the extensionists is highly influenced by several independent variables, such as the extensionists' demographic characteristics (age, sex, level of education, membership of professional organization, level of income, etc); their capabilities; extension training contents; mastery of

what is taught. Further, the training is often confronted by challenges like poor access to ICTs, poor curriculum planning, inadequate funding, poor knowledge-base of electronic media production, etc. Thus, the outcome of the training is shaped by these challenges. Success over the challenges translates into positive outcome (effect) such as high input of extensionists, quality service delivery, effective deployment of e-agriculture, and vice versa. This invariably affects extension job performance.

2.8 Theoretical Framework

This study was based on the theoretical concept of electronic media as devices, tools, creations and channels that transmit audio or visual or audio-visual communication signals through electrical means. It assumed that the study of the training needs for mainstreaming electronic media production in extension revolved around two communication theories. Viz: technology determinism theory which sees the "medium as the message" and development media theory which sees the mass media as the "pivot of informing people, mobilizing people, harnessing their resources and championing the cause of development."

The theories provide a set of inter-related construct, definitions, and propositions that represent a justification or phenomena of electronic media production and utilization by specifying relationships among variables. They explained a set of coordinated occurrences or relationships. For instance, the theories justified how the following below relate to building the capacity of extension practitioners in electronic media production:

I. the growing number of extension clientele who access and meet their agricultural information needs through the electronic media;
II. increased awareness of extension practitioners on the utilization of different electronic media for information distribution;

III. Relative improvement in infrastructure-base especially in the rural areas is increasing the use of electronic media. For instance, the rural electrification project of the Federal government of Nigeria which has connected most rural areas to the National grid has increased rural communities' use of electronic media. This is also boosted by improved access to telecommunication network and satellite communications in rural areas.

The theoretical framework thus provides the structure that holds or supports the theory of the study; it introduces and describes the theory which explains why the research problem under study exists. For instance, the theoretical framework of this study conceived that capacity must be developed in the area of computer multimedia productions, video recording/editing/productions, internet feeds/online contents development, audio recording/productions, interactive video connectivity/teleconferencing, graphics design/production, digital photographic production and photo journalism, script writing and voicing, presentation, e-journalism, etc, in order to mainstream electronic media production for extension services in the study area. By mainstreaming, the study implied promoting, emphasizing and bringing the knowledge, skill and attitude of electronic media production to the required level of importance and utilization among extension practitioners. It supposed that effort to upgrade the performance skill of extension workers in producing electronic media should begin with the systematic understanding of their training needs (determining what to teach, who to involve in the training and conditions under which training can occur); that an understanding of the type of learning theories involved will help in understanding how the training can result in a change in knowledge, skill and attitude of the extension trainee; predicting the outcome of the training as well as leveraging the training result in a desired way.

2.8.1 Technology Determinism Theory

Technology determinism theory was put forward by Marshall Mcluhan who lived from 1911-1980. The theory was based on the assumption that technological development determines social and cultural change. “The medium is message”. It sees the media as technologies through which we relate to the world around us. Dominant media determine our “ratio of the senses”- how we experience the world (Todok, 2013).

Hot and Cool Media: This theory sees hot medium as high definition channel of communication such as medium that focuses on a single sensory receptor (audio or visual). Example radio movies, print, sharp photographs, while low definition channel of communication like television (audio-visual) which stimulates several different senses and requires high sensory involvement are seen as cool medium. Examples, telephone, carton face to face talk, television.

2.8.2 Development Media Theory

This theory sees the mass media as the pivot in informing the people, mobilizing the people, harnessing their resources and championing the cause of development. This theory stipulates economic development, structured development and patriotism. It supposes that every need should be subordinated to development needs and therefore sees the media as instrumental in this quest. According to Nwosu (2005), it has helped in enforcing the concept of development communication as well as the role of the media in this enterprise.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Description of the Study Area

The study was carried out in Imo State of Nigeria. Imo State is located in the South Eastern zone of Nigeria and lies between latitudes 4^0 45´N and 7^0 15´N and longitude 6^0 50´E with land area of 5,530 Km^2. It is bordered by Abia State on the East, by River Niger and Delta State on the West, by Anambra State to the North and Rivers State to the South (Wikipedia, undated). Imo State is divided into three political and agricultural zones of Owerri, Orlu and Okigwe and has 27 Local Government Areas. It has an estimated population of about 4.8 million people and an annual growth rate of 3.35 percent (NPC, 2010). With a high population density which exceeds that of the annual average of 166 persons per Kilometer square as estimated by the National Bureau of Statistics (2009), Imo State varies from 230 persons per Kilometer square in Oguta/Egbema areas to about 1400 persons per Kilometer square in Mbaise, Mbano, Orlu and Mbaitoli areas (Federal Republic of Nigeria Official Gazette, 2007).

Imo State which lies within the rainforest zone of Nigeria is home to large forest vegetation containing woods and tree crops like Mahogany, Iroko, Obeche, Palm trees, Oil bean trees, fruit trees, among other tree crops that complement farmers' income sources. Imo State belongs to the Benin formation of the coastal plain sands which is of tertiary age, deep, porous, fertile and highly leached. Drained by Imo river, Otamiri river, Nworie river, Njaba and Urashi rivers; the annual rainfall of Imo State varies from 1990mm-2200mm, with about 20^oC annual temperature and 75 percent relative humidity (www.imostate.gov.ng), which requires in the wake of climate change that information on effective conservation practices are made accessible in a variety of ways and forms to all classes of farmers to enable them exploit the resources

available for greater productivity.

The people are predominantly Igbos and Christians. The major economic activities of the people include: farming, trading, agro-processing, among other livelihood activities. Cassava, yam, cocoyam, maize, rice, leafy vegetables, cashew, melon, mango, palm oil, etc, constitute the major crops grown by the people. Endowed with vast mineral resources like crude oil, natural gas. lead, zinc, aluminium, etc (www.imostate.gov,ng). Imo State is undoubtedly an investor's place.

The agricultural technology dissemination activities in the State are undertaken by the State Agricultural Development programme. The Imo State Agricultural Development Programme (ADP) took off in 1987 following the advent of Multi-state ADP-1 with the aim of establishing a reorganized, disciplined and well supported Training and Visit (T&V) and to mobilize small-scale farmers for increased productivity and income. With its tentacles spread across the state, the Imo ADP agricultural zonal setup in Owerri, Orlu and Okigwe are demarcated into 39 blocks and 326 circles for effective extension activity. It draws its pool of personnel from graduates of Universities, Polytechnics and Colleges of Agriculture (Imo ADP Annual Report, 2002).

3.2 Sample and Sampling

The population of the study consisted of all extension technical officers, extension supervisors and extension field agents of Imo State ADP as shown below in Table 3.1.

Table 3.1: ***Distribution of Imo ADP Extension Personnel***

Category	Owerri	Orlu	Okigwe	Total
Technical officers	9	4	5	18
Supervisors	20	8	12	40
Field agents	56	25	32	113
Total	**84**	**37**	**48**	**169**

Source: Reconnaissance Survey, 2015

Multi-stage sampling technique was used for selecting the extensionists. The first stage involved the purposive selection of the three agricultural zones of Imo state, viz: Owerri zone, Orlu zone and Okigwe zones. The second stage involved the stratification of the extension personnel in the zones into three categories, namely: Technical Officers (ZEOs & SMSs), Block Extension Supervisors (BES) and Extension Agents (EAs): In the third stage, 100% of ZEOs/SMSs, 75% of BES and 57% of EAs were proportionately sampled across the zones as shown in Table 3.2 due to their uneven distribution.

Table 3.2 ***Proportionate Sampling of Imo ADP Extension Personnel***

Personnel	Proportion	Owerri	Orlu	Okigwe	Total
ZEOs/SMSs	100%	9	4	5	18
BES	75%	15	6	9	30
EAs	57%	33	21	18	72
Sum		**56**	**30**	**34**	**120**

In stage five, all the ZEOs/SMSs in the zones were purposively selected (Owerri zone = 9, Orlu zone = 4, Okigwe zone = 5) to achieve all representative sample considering their small population; while 80% of the BES and EAs in each zone were randomly selected as shown in table 3.2, to give a total sample size of 120.

3.3 Method of Data Collection

Data were collected from primary and secondary sources. The primary data were obtained from field survey using a structured and standardized questionnaire. This was complemented with an interview schedule to obtain further details on some issues. The questionnaire contained questions addressing the objectives and hypotheses of the study. On the other hand, the secondary data were collected from literature like textbooks, newsletters, internet materials, books of proceedings, journals, training guides and annual reports of relevant government agencies, ministries and departments.

3.4.0 Standardization of the Data Collection Instrument

The research instruments; structured questionnaire and interview schedule were standardized to ensure that the items were valid and reliable.

3.4.1 Estimating Validity

To ensure that the research instruments measured what they were designed to measure, the questionnaire was validated. To achieve that, the Jury method of face and content validity were employed to ascertain how well the content samples the subject under investigation (Akinbile, 2004). A sample of the questions were given to the supervisor and other experts in Agricultural Extension and Rural Sociology to critically and independently review the items and

questions for relevance, clarity and adequacy in eliciting the needed information. Complex and ambiguous questions were determined from their responses and restructured.

3.4.2 Estimating Reliability

The ability of the research instrument to give consistent results was established using the test-re-test method. Here, the research questionnaire was administered to a group of 20 extensionists of Abia State ADP who did not constitute part of the study sample. After one month the same questionnaire was re-administered again to the same 20 extensionists. The two scores were later collated and correlated using Pearson's Product Moment Correlation (PPMC) model to determine the coefficient of correlation between the two responses. The value of the correlation coefficient (R) was 0.94 indicating a very high correlation between the first and second responses of the interviews using the same instrument. This result showed high reliability of the questionnaire.

3.5 Measurement of Variables

The variables that were investigated in this study included the following:

Objective one – to determine the socioeconomic characteristics of the respondents. The variables measured under this objective include: age, sex, marital status, educational level, household size, membership of professional organizations, number of income sources, income level, value of household electronic gadgets, access to infrastructure and ICT facilities, number of years spent on the job and agricultural zone of operation. These variables were measured as follows:

I. Age – the respondents were asked to indicate their actual ages in years.

II. Sex – the respondents were asked to indicate whether they were male or female, and their responses were recorded in a dummy, male = 1, female = 2

III. Marital Status – the respondents were asked to indicate whether they were single, married, widowed or separated. The responses were recorded and assigned values thus: single = 1, married = 2, separated = 3 and widowed = 4

IV. Educational level – the respondents were asked to indicate their levels of educational attainment, thus: No Formal Education = 1, Primary Sch. Attempted = 2, Completed Primary Sch. = 3, Secondary Sch. Attempted = 4, Completed sch. = 5, Attempted Institution = 6, Completed Education = 7

V. Membership of Professional Organizations – the respondents were asked to indicate whether they were Ordinary members = 1, Regular members = 2, Financial members = 3, Committed members = 4, Executive members = 5.

VI. Household size – the respondents were asked to indicate the number of people living with them under one roof and feeding from the same pot.

VII. Income level – they were asked to state their average monthly income in naira.

VIII. Value of Household Electronic Gadgets – they were asked to state the current value of their household electronic gadgets in naira.

IX. Access to ICT Facilities – they were asked to indicate if ICT facilities are Available = 1 or Not Available = 2 to them.

X. Working experience – the respondents were asked to state the number of years they had spent as extension personnel in Imo State ADP.

XI. Zone of Operation – the respondents were asked to indicate the agricultural zone of the State where they work.

Objective two – to ascertain the job operations and tasks of the respondents. To achieve this, the respondents were asked to indicate their job operations from a list of job items grouped into administrative, supervisory and field functions.

Objective three – to examine the electronic media production capabilities of the respondents for carrying out extension job operations and tasks. To realize this, the respondents were asked to indicate their capabilities from the list of electronic media production skills measured in Highly Capable = 4, Capable = 3, Fairly Capable = 2, Not Capable =1.

Objective four – to assess the level to which electronic media production skills are taught in extension training, the respondents were asked using a five point Likert-type scale of Very Highly Taught = 5, Highly Taught = 4, Lowly Taught = 3, Very Lowly Taught = 2, Not Taught = 1 to indicate the scale that agreed with their opinion.

Objective five – to determine the level of mastery of the skills by the respondents. The respondents were asked to indicate their agreement with the scaling statements given on a three point Likert-type scale of Highly Mastered = 3, Moderately Mastered = 2, Not Mastered = 1.

Objective six – to assess the training needs of the respondents in mainstreaming electronic media production for extension services, the respondents were asked to indicate from the list electronic media production skills whether their training needs were High = 3, Moderate = 2, Low= 1.

Objective seven – to evaluate the relative training needs between male and female extensionists in mainstreaming electronic media production for extension services in Imo State, the responses of the male and female extensionists were segregated, and thereafter the perceived difference in training needs was determined using the mean scores of the male and female extensionitst.

Objective eight - to ascertain the extent to which the process of mainstreaming of electronic media production for extension services in Imo State constituted challenges. The respondents were asked to indicate their agreement with the listed of possible constraints options measured on a five point Likert scale of Strongly Agreed = 5, Agreed = 4, Disagree = 3, Strongly Disagree = 2, Undecided = 1. The responses were thereafter grouped into technical, financial, infrastructural, institutional and organizational challenges using factor analysis.

3.6 Method of Data Collection

The researcher with the assistance of some Imo ADP enumerators who were properly trained and guided on the objectives of the study carried out the data collection across the State and zonal headquarters, Block and Circles of Imo ADP extension organization.

3.7 Method of Data Analysis

Descriptive and inferential statistical tools were used to analyze data collected for the study. The descriptive statistical tools such as mean, frequency table and percentages were used to achieve objectives one, two and three, while mean were used to analyze the data in objectives four, five, six, seven and eight.

For objective three (3), the mean computation were achieved with the formula:

$$\overline{X} = \frac{\sum fx}{N}$$

Where:

$\overline{X}$ = The value by which the level of electronic media capabilities of the respondents for carrying out extension job operations and tasks were adjudged

f = frequency

$\sum x$ = Sum of the various electronic media production skills/abilities

N = Sample size

A discriminating index were arrived at by dividing the sum of the value of the rating scales by the number of scales , thus: $\frac{HC+FC+C+NC+}{N} = \frac{4+3+2+1}{4} = 2.5$

All items with $M \geq 2.5$ would be considered to be "Capable" while $M \leq 2.5$ were considered "Not Capable."

For objective four (4), the mean computation were achieved with the formula:

$$\overline{\mathbf{X}} = \frac{\sum \mathbf{fx}}{\mathbf{N}}$$

Where:

$\overline{X}$ = The value by which the level of the job skills/mastery of the skills/training needs were judged

f = frequency

$\sum x$ = Sum of the various job skills/mastery of the skills/training needs

N = Sample size

A discriminating index were arrived at by dividing the sum of the value of the rating scales by the number of scales , thus:

$\frac{VHT+HT+LT+VLT+NT}{N} = \frac{5+4+3+2+1}{5} = 3.0$

All items with $M \geq 3.0$ were considered to have been "Adequately Taught," while $M \leq 3.0$ were considered "Not Adequately Taught."

For objective five (5), the mean computation on the level of mastery of the skills were computed with the formular:

$$\bar{X} = \frac{\sum fx}{N}$$ as in objective four (4).

However, the rating scale were summed up and divided by the number of scales. Thus:

$$\frac{HM + M + NM}{3} = \frac{3 + 2 + 1}{3} = 2.0 \text{ (Discriminating index)}$$

Items with mean value greater than or equals to 2.0 were adjudged as "Mastered", while Mean value less than or equal to 2.0 were considered as Not mastered.

For objective six (6), the three point Likert-type scaling statement of High, Moderate and Low of the training needs were subjected to mean analysis using the formula:

$$\bar{X} = \frac{\sum fx}{N}$$

The discriminating index was also arrived at by dividing the sum of the rating scales by the number of scales:

$$\frac{H+M+L}{3} = \frac{3 + 2 + 1}{3} = 2.0 \text{ (Discriminating index)}$$

Items with $M \geq 2.0$ were considered as "Training Needs" of mainstream electronic media production for extension services, while $M \leq 2.0$ were taken as "Training is sufficient."

For objective seven (7), Items as captured in objective 6 with $M \geq 2.0$ were considered as "training needs as perceived by male or female extensionists," while $M \leq 2.0$ were taken as "training is sufficient as perceived by male or female respondents."

For objective eight (8), the five point Likert –type scale of Strongly Agree = 4, Agree = 3, Undecided = 2, Disagree = 1, Strongly Disagree = 0, were subjected to mean analysis using the formular:

$$\overline{X} = \frac{\sum fx}{N}$$

The discriminating index were also derived by dividing the sum of the rating scales by the number of scales: $\frac{SA+A+U+D+SD}{5} = \frac{5+4+3+2+1}{5} = 3.0$

Items with M $\geq$ 3.0 were considered as "Challenges of mainstreaming electronic media production for extension services," while items with M $\leq$ 2.0 will be taken as "No challenge."

The hypothesized relationships would be established as follows:

Hypothesis 1:

The relationship between the socioeconomic characteristics of the respondents and their perceived training needs of mainstreaming electronic media production for extension services in Imo State was established using Ordinary Least Square (OLS) multiple regression model. This test is represented implicitly as:

$Y = f(x_1, x_{2,} \ldots x_{10}.e)$

Where:

Y = training needs (High = 3, Medium = 2, Low = 1)

X_1 = Sex (dummy; Male =1, Female =2)

X_2 = Age (Years)

X_3 = Marital status (dummy; single = 1, married = 2, separated = 3 and widowed = 4)

X_4 = Educational attainment (dummy; No Formal Education = 1, Primary Sch. Attempted = 2, Completed Primary Sch. = 3, Secondary Sch. Attempted = 4, Completed sch. = 5, Attempted Institution = 6, Completed Education = 7)

X_5= Membership of Professional Organizations (dummy; Ordinary members = 1, Regular members = 2, Financial members = 3, Committed members = 4, Executive members = 5)

X_6 = Household size (Number of persons)

X_7 = Income level (Amount in Naira)

$\lesssim$ X_8 = Value of Household Electronic Gadgets in Naira

X_9 = Working experience (Years)

e = error term

A Priori Expectation

The coefficient of $X_1, X_2, X_3, X_4, X_5, X_6, X_7, < 0$

The regression coefficients of Sex(X_1), age (X_2), marital status (X_3), educational level (X_4), household size (X_5), membership of professional organizations (X_6), membership status (X_7), income level (X_8), value of household electronic Gadgets in naira(X_{10}), Working experience (X_{10}) are expected to be negative.

Hypotheses 2:

The bivariate relationship between the capability of extensionists to produce electronic media and the electronic media production skills taught them in extension training was established using Pearson's correlation, mathematically expressed:

$$R = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}}$$ (Ajayi,2004)

Where:

R = The value by which the statistical relationship between the capability of extensionists to produce electronic media and the training needs of mainstreaming electronic media production for extension services in Imo State would be judged.

$\sum X$ = Sum of the capability of the extensionists to produce electronic media

Y = Sum of the training needs of mainstreaming electronic media production for extension services in Imo State.

Hypothesis 3: The significant difference between the perceived training needs of the male and female extension respondents was tested using the Z-test. The Z-ratio is expressed mathematically:

$$Z = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\sigma_1^2 + \sigma_2^2}}$$

n_1 n_2 (Pedhazur, 1999).

Where:

Z = The value by which the statistical mean difference of the training needs between the male and female respondents in mainstreaming electronic media production for extension services in Imo State would be judged.

X_1 = Mean score of the training needs of the male respondents in mainstreaming electronic media production for extension services in Imo State

X_2 = Mean score of the training needs of the female respondents in mainstreaming electronic media production for extension services in Imo State

σ_1 = Variance of the training needs of the male respondents in mainstreaming electronic media production for extension services in Imo State

σ_2 = Variance of the training needs of the female respondents in mainstreaming electronic media production for extension services in Imo State

n_1 = Number of opinion on the training needs of the male respondents

n_2 = Number of opinion on the training needs of the female respondents

Hypotheses 4:

The differences in training needs for mainstreaming electronic media production for extension services in the 3 agricultural zones of Imo State will be analyzed using Analysis of Variance (ANOVA).

The ANOVA is mathematically expressed thus:

$$F = \frac{MSSB}{MSSW} = \frac{SSB(n-K)}{SSW(K-!)}$$

$$SSB = \sum nj\,[(\bar{X} - \bar{X})]^2$$

$$SSW = \sum_{i=1}^{Nj} \sum_{j=1}^{k} \left(\bar{X}_{ij} - \bar{X}_j\right)^2$$

Where:

F = The value by which the statistical mean will be judged

SSB = Sum of squared deviations between the mean perception of the training needs of respondents in the 3 agricultural zones of Imo State.

SSW = Sum of squared deviations within the mean perception of the training needs of respondents in the 3 agricultural zones of Imo State.

X = grand mean of the training needs of respondents in the 3 agricultural zones.

X_{ij} = nth level of the perceived training needs of the respondents from agricultural zone j

n_j = sample size of respondents from agricultural zone j

n = number of observations from the 3 agricultural zones

k = number of agricultural zones of the state.

CHAPTER FOUR

RESULTS AND DISCUSSION

The results and discussion of the study are presented under the following sub-themes:

i. Socio-economic characteristics

ii. Job operations and tasks

iii. Electronic media production capabilities to carry out extension job operations and tasks

iv. Level of electronic media production skills taught in extension training

v. Level of mastery of requisite electronic media production skills by extension personnel

vi. Training needs of mainstreaming electronic media production for extension services

vii. Extension personnel to be availed of electronic media training and resources necessary for the training

viii. Training needs of male and female in mainstreaming electronic media production for extension services

ix. Challenges of mainstreaming electronic media production for extension services

x. Relationship between the socio-economic characteristics of extensionists and their training needs in electronic media production.

xi. Relationship between the capabilities of the extensionists to produce electronic media and their training needs to produce electronic media.

xii. Significant difference in the training needs of extension personnel in the 3 agricultural zones of Imo State to produce electronic media.

xiii. Significant difference between the training needs of male extension personnel and female extensionists to produce electronic media.

4.1 Socio-economic Characteristics

The socio-economic variables of the extensionists examined included: sex, age, educational level, marital status, household size, membership of professional organization and average monthly income. Others were value of household electronic and years spent in service.

4.1.1 Sex

Table 4.1: Distribution of respondents by sex

Sex	Frequency	Percentage %
Male	28	23.3
Female	92	76.7
Total	**120**	**100.0**

Source: Field survey data, 2014

Knowledge of the gender roles of men and women in extension service delivery is crucial, especially when delegating or performing gender sensitive functions. It is important to give attention to priorities of both men and women extension workers - the work that they do; their needs and interest as to end gender biases in extension service delivery which mainly skews towards male farmers, and exacerbated by the small proportion of women extension workers (Spring, 1988). Therefore, mainstreaming electronic media production for extension services requires also that gender differences are taken into account while selecting the training contents, assigning roles, implementing and evaluating performance. However, contrary to the findings of Spring (1988) that the proportion of women extension workers in Africa was lower than their male counterpart (3% women against 97% men), result in Table 4.1 shows that majority, 76.7 percent of the extension personnel were female, while 23.3 percent were male. The dominance of women extension workers in Imo ADP as explained by the management was due to the declining number of male extension job applicants. According to FAO, IFAD and ILO (2008), women

have a lot of domestic responsibilities competing for their time which is capable of undermining their output and indirectly affecting the output of extension organization. However, the women extensionists would be important in producing electronic media that better integrate the needs, interests and peculiarities of women, such as videos, audio recordings, photographs on food processing, home economics and other domestic works undertaken by women.

4.1.2 Age

Table 4.2: Distribution of extension personnel by age

Age (Years)	Frequency	Percentage %	Mean
21-30	25	20.8	
31-40	80	66.7	
41-50	15	12.5	35years
Total	**120**	**100.0**	

Source: Field Survey data, 2014

Result in Table 4.2 shows that majority, (66.7 percent) of the extension personnel fell within the age range of 31-40 years, 20.8 percent and 12.5 percent were within ages 21-30 years and 41-50 years, respectively. The mean age was 35 years. The result shows that the extension personnel were young and in their active and productive age. Thus, would show greater disposition towards acquiring electronic media production skills for enhanced extension performance since enthusiasm and vigor reside more in young people (Onwumere, 2008).

4.1.3 Marital Status

Table 4.3: Distribution of extension personnel by marital status

Marital Status	Frequency	Percentage %
Single	6	5.0
Married	104	86.7
Divorced	1	0.8
Widowed	9	7.5
Total	**120**	**100.0**

Source: Field Survey Data, 2014

The result in Table 4.3 shows that majority (86.7 percent) of the extension personnel were married, 7.5 percent were widowed, 5.0 percent were single and 0.8 percent were divorced. This shows that most of the personnel were married and living with their spouses, thus, conforming with expectations in a traditional Igbo society where much regard is attached to family and marriage. Though, cultural revolution is increasing cases of divorce, the impact as the study has revealed is still minimal. The majority being married in the distribution could be an asset for efficiency in extension work generally and in mainstreaming electronic media production skills in particular. There could be complementarity in performance where the couples are extensionists, serenity and motivation for greater output where they are happily married.

4.1.4 Educational level

Table 4.4: Distribution of extension personnel by educational level

Level of Education	Frequency	Percentage %
Attempted higher Institution	10	8.3
Completed higher education	110	91.7
Total	**120**	**100.0**

Source: Field Survey Data, 2014

Result in Table 4.4 shows that most, (91.7 percent) of the respondents completed higher education while 8.3 percent attempted higher education. This finding measures up with Nigeria's recommended standard, which requires extension workers to have College /Polytechnic Diploma or Bachelor of Science Degree (Agbamu, 2011). The educational background of the extension respondents could facilitate and enhance their training in electronic media production for greater performance.

4.1.5 Household Size

Table 4.5: Distribution of extension personnel by household size

Household size (number of people)	Frequency	Percentage %	Mean
1-3	35	29.2	
4-6	70	58.3	5 persons
7-9	12	10.0	
10 and above	3	. 5	
Total	**120**	**100.0**	

Source: Field Survey Data, 2014

The result in Table 4.5 shows that more than half (58.3 percent) of the respondents had a household size of 4-6 persons, 27.2 percent had a household size of 1-3 persons while 12.5 percent had a household size of 7-9 persons. The mean household size was 5 persons, and thus reveals that extension personnel in Imo State maintain moderate household size. This would help reduce competing needs and pressure on the scarce resources of the extension workers and would make them favourably disposed and inclined to training and role performance.

4.1.6 Professional Organization Membership

Table 4.6 Distribution of respondents by professional organizational membership and membership status

Professional Organizational Membership	Frequency	Percentage %
Yes	69	57.5
No	51	42.5
Total	**120**	**100.0**
Membership Status		
Ordinary members	24	34.8
Regular attendant to meetings	32	46.4
Financial member	13	18.8
Total	**69**	**100.0**

Source: Field Survey Data, 2014

The result in Table 4.6 shows that majority, (57.4 percent) of the extension personnel belong to professional organizations. Most (46.4 percent) of whom were regular attendants to meetings. Thus, the respondents are most likely to benefit and share knowledge of improved and standard practices, privileged and updated information and professional experiences through contacts and cross fertilization of ideas with other members of the organizations, with respect to electronic media production.

4.1.7 Monthly Income of the Extensionists

Table 4.7: Distribution of extension personnel by monthly income

Monthly income (Naira)	Frequency	Percentage %	Mean
21000-30000	2	1.7	
31000-40000	10	8.3	
41000 and above	108	90.0	**N**27,417
Total	**120**	**100.0**	

Source: Field Survey Data, 2014

The results in Table 4.7 revealed that majority, (90.0 percent) of the extensionists lived within the monthly income of N41,000 and above 8.3 percent had a monthly income of N31,000-40,000, while 1.7 percent lived with monthly income of N21,000-30,000. The average monthly income was N27,417. The extensionists lived well above the N18,000 National Minimum wage, and thus implied that they were possibly well motivated following the enhanced remuneration for better work performance.

4.1.8 Value of Household Electronic Gadgets

Table 4.8: Distribution of extensionists by value of household electronic gadgets

Value of Household Electronic Gadgets	Frequency	Percentage %	Mean
10000-200000	2	1.7	
21000-31000	1	0.8	
32000-42000	2	1.7	
43000-53000	8	6.7	
54000-64000	32	26.7	
65000-75000	65	54.2	N64,683
76000 and above	10	8.3	
Total	**120**	**100.00**	

Source: Field Survey data, 2014

The distribution of extensionists by the Naira value of their electronic gadgets shows that 54.2 percent of them had electronic gadgets with values ranging from N65,000 and N75,000. Those with electronic gadgets valued from N54,000.00 and N64,000 were constituted 26.7 percent, while 8.3 percent owned electronic gadgets valued from N76,000 and above. Also 6.7 percent had gadgets valued between N43,000-N53,000. Meanwhile, the average value of the electronic gadgets was N64,683. This result shows the financial capability of the extensionists to acquire personal electronic devices. The personal electronic media could be used to complement what is available in their place of work and also expose them towards increased mastery.

4.1.9 Years Spent in Extension Work

Table 4.9 Distribution of extensionists by years spent on the job

Years spent on the Job	Frequency	Percentage %	Mean
1-4	2	1.7	
5-8	3	2.5	
9-12	30	25.0	
13-16	15	12.5	
17-20	10	8.3	17years
21 years and above	60	50.0	
Total	**120**	**100.0**	

Source: Field Survey Data, 2014

The result on the number of years spent in extension work by the extensionists in Table 4.9 revealed that 50.0 percent of them had spent over 20 years in extension service and 25 percent had put in 9-12 years. Whereas 12.5 percent had spent 13-16years, 8.3 percent had spent 17-20years, 2.5 percent had spent 5-8years. Also, 1.7 percent had spent 1-4 years in service. The average number of years spent was 17years. This suggests that the extensionists were experienced extension workers having spent almost half of their retirement age. This could be an added advantage as their views, assessments and perceptions of what constitute training needs and challenges of mainstreaming electronic media production for extension work could be objective.

4.2 Job operations and tasks

4.2.1 Personnel Cadre

Table 4.10: Distribution of extensionists by Cadre

Staff Cadre	Frequency	Percentage %
Technical Officers	18	15.0
Supervisors	20	16.7
Field Agents	82	68.3
Total	**120**	**100.0**

Source: Field Survey Data, 2014

The result in Table 4.11 on the distribution of the extensionists by cadre shows that field extension agents constituted 68.3 percent of the respondents, (16.7 percent) were supervisors and 15 percent were technical officers. The distribution is normal especially in respect of extension agents' composition as they carry out the bulk of the extension services in ADP, being in contact frequently with the farmers.

4.2.2 Job Operation

Table 4.11: Distribution of extensionists by job operation

Job Operation	*Frequency	Percentage %
Teaching and training farmers	82	68.3
Training extension agents	18	15.0
Managing extension personnel	25	20.8
Managing experimental plots	92	76.7
Facilitating input supply to farmers	94	78.3
Supervising extension field operations	20	19.2

Source: Field Survey data, 2014.

***Multiple responses**

The result in Table 4.12 reveals that the extensionists' job operation mainly centered on facilitating input supply to farmers (78.3 percent), followed by managing experimental plot (76.7 percent) and teaching and training farmers (68 percent). From the result, those who manage extension personnel constituted 20.8 percent, 19.2 percent supervise field operations, while 15 percent train extension agents. The dominance of field extension agents in the extension service corroborates the earlier finding of Okoroma & Anaeto (2013) and shows that bulk of extension job are carried out by field extension agents. Also, the finding of this study confirms the view of Madukwe (2011) which categorized extension workers into (i) those who carryout field operations (ii) the supervisors (iii) the Subject Matter Specialists and those who administer extension service. The result therefore implies that the extensionists perform multiple roles. Most of the responsibilities are in complementarity to ensure synergy in extension service delivery.

4.3 Electronic media production capabilities to carry out extension job operations and tasks

Table 4.12: Distribution of extensionists by perceived electronic media production capabilities to carry out extension job operations and tasks

Electronic media production capability	Very capable	Fairly capable	Capable	Not capable	Means Score	SD	Remark
1. Video recording and production	2(1.7)	8(6.7)	20(16.7)	90(75)	1.3	0.7	NC
2. Digital photo graphical production	5(4.2)	5(4.2)	45(37.5)	65(54.2)	1.5	0.8	NC
3. Computer multi-media production	0(0.0)	3(2.5)	2(1.7)	115(95.8)	1.1	0.3	NC
4. Audio recording and production	15(12.5)	10(8.3)	30(25.0)	65(54.2)	1.8	0.0	NC
5. Internet feeding/streaming	0(0.0)	0(0.0)	0(0.0)	120(1000)	1.0	0.1	NC
6. Non-linear video editing	0(0.0)	0(0.0)	0(0.0)	120(1000)	1.0	0.1	NC
7. Video effects and Animation	0(0.0)	0(0.0)	2(1.7)	118(98.3)	1.1	0.1	NC
8. Graphics designing	2(1.7)	9(7.5)	70(58.3)	39(32.5)	1.8	0.7	NC
9. Script writing for the media	10(8.3)	7(5.8)	30(25.0)	73(60.80	1.6	0.8	NC
10. Voicing/commentary	2(1.7)	4(3.3)	8(6.7)	106(88.3)	1.2	0.2	NC
11. Photo-texting	13(10.8)	16(13.3)	13(10.8)	78(65.0)	1.7	0.6	NC
12. Phone based electronic media production	0(0.0)	0(0.0)	2(1.7)	118(98.3)	1.0	0.1	NC
13. Web-based electronic media production	0(0.0)	0(0.0)	3(2.5)	117(97.5)	1.0	0.1	NC
14. e-learning material production	0(0.0)	8(6.7)	11(9.2)	101(84.2)	1.2	0.1	NC
15. Audio-book production	0(0.0)	2(1.7)	8(6.7)	110(91.7)	1.1	0.1	NC
16. Electronic reporting	1(0.8)	3(2.5)	6(5)	110(91.7)	1.2	0.1	NC
Average perception					**1.3**	**0.4**	**NC**

Source: Field Survey Data, 2014. $\bar{X} \leq 2.5$ (Capable) $\bar{X} < 2.5$ (Not capable)
NC = Not Capable

Often, many attribute poor utilization of electronic media, such as video, internet feeds audio recording, computer multi-media, digital files, etc for extension services to lack of logistic support like power supply and electronic media facilities. However, it could be argued that even

when adequate power supply and media facilities are provided, the extension worker may be incapacitated by skill gaps. Hence, the result in Table 4.12 shows that the extensionists were not capable of performing any of the listed electronic media production activities. These were reflected in the low values for video recording and production (1.3, SD = 0.7), digital photographic production (1.5, SD = 0.8), computer multi-media production (1.0, SD = 0.3), non-linear video editing (1.0, SD = 0.0), video effects/animation (1.1, SD = 0.1), graphics designing (1.8, SD = 0.1), script writing (1.6, SD = 0.1), voicing /commentary (1.2, SD = 0.7), photo-texting (1.7, SD = 0.8), phone-based electronic media production (1.0, SD = 0.2), web-based electronic media production (1.0), e-learning material production (1.2, SD = 0.6), audio book production (1.1, SD = 0.1) and electronic reporting (1.2, SD = 0.1). The result also shows that the extensionists incapability was more on internet feeding/streaming, video editing, phone-based media production and web-based media production (1.0). This implies that the respondents' readiness in reprinting the farmers' helpline of National Agricultural Extension Research and Liaison Services (NAERLS) – operated Nigerian Question and Answer Services (NAQAS) (A MOBILE PROVE/WEB-based) agricultural extension and advisory service for all the extension value chain actors which has recorded huge success in receiving and processing farmers request according to FARMD (2011) is in doubt. This calls for a review of the extension training curriculum especially in electronic media production to equip the extensionists with trendy skills and competences for success on the job. With average standard deviation of 0.4 revealed the extensionists' homogenous perception of their capability to produce electronic media.

4.4 Level of electronic media production skills taught in extension training

Table 4.13: Distribution of respondents by level of electronic media production skills taught in extension training.

Electronic media production skills	VAT	HT	LT	NT	Mean score	SD	Remark
a. Video recording and production	0(0.0)	0(0.0)	0(0.0)	120(100.0)	1.0	0.2	NAT
b. Digital photo graphical production	0(0.0)	0(0.0)	42(35.0)	78(65.0)	1.4	0.2	NAT
c. Computer multi-media production	0(0.0)	0(0.0)	61(50.8)	59(49.2)	1.5	0.3	NAT
d. Audio recording and production	25(20.8)	53(44.2)	20(16.7)	22(18.3)	2.7	0.5	AT
e. Internet feeding /streaming	4(3.3)	32(26.7)	41(34.2)	43(35.8)	2.0	0.2	NAT
f. Non-linear video editing	0(0.0)	0(0.0)	23(19.2)	97(80.8)	1.2	0.2	NAT
g. Video effects /Animation	0(0.0)	15(12.5)	54(4.5)	51(42.5)	1.7	0.6	NAT
h. Graphics designing	8(6.7)	19(15.8)	63(52.5)	30(25.0)	2.0	0.4	NAT
i. Script writing	20(16.7)	38(31.7)	49(40.8)	13(10.8)	2.5	0.6	AT
j. Voicing/commentary	62(51.7)	31(25.8)	18(15.0)	9(7.5)	3.2	0.1	AT
k. Photo-texting	11(9.2)	23(19.2)	42(35/0)	44(36.7)	2.0	0.3	NAT
l. Phone based electronic media production	16(13.4)	43(36.8)	37(30.8)	24(20.0)	2.4	0.4	NAT
m. Web-based electronic media production	0(0.0)	0(0.0)	26(21.7)	94(78.3)	1.2	0.5	NAT
n. e-learning material production	0(0.0)	0(0.0)	13(10.8)	107(89.2)	1.1	0.2	NAT
o. Audio-book production	8(6.7)	7(5.8)	11(9.2)	94(78.3)	1.4	0.2	NAT
p. Electronic reporting	56(46.7)	34(28.3)	5(4.2)	25(20.8)	3.0	0.9	AT
Average assessment					**1.9**	**0.4**	**NAT**

Source: Field Survey Data, 2014 $\bar{X} \leq 2.5$ (NAT) $\bar{X} < 2.5$ (AT)

VAT = Very Adequate Taught, **HT =** Highly Taught, **LT =** Lowly Taught, **NT =** Not Taught

Training is a key factor in enhancing the capacity and capability of extension workers. Hence, the capacity and ability of the extension worker to produce and use electronic media in a number of ways depend on the number of training given in specific areas of electronic media

production which hitherto have not been effective by failing to address relevant training needs. A peep across most in-service training curriculum of institutions of higher learning where extension is taught usually shows vague attention and emphasis being given to electronic media production. In some cases, it is conspicuously skewed or modulled up into ICTs or extension audio-visual aids rather than being offered or treated as a separate course to allow for more extensive and expansive discussion on the subject. Table 4.13 results show that only 4 out of the 16 requisite electronic media production skills listed were taught in extension training. These included: audio recording ($\bar{X}$=2.7, SD = 0.5), script writing ($\bar{X}$=2.5, SD = 0.6), voicing/commentary ($\bar{X}$=3.2, SD = 0.1) and electronic reporting ($\bar{X}$=3.0, SD = 0.9). Subject areas not taught included video recording and production ($\bar{X}$=1.0, SD = 0.2), Digital photographical production ($\bar{X}$=1.4, SD = 0.2), computer multi-media production ($\bar{X}$=1.5, SD = 0.3), internet feeding/streaming ($\bar{X}$=2.0, SD = 0.2), video editing ($\bar{X}$=2.0, SD = 0.2), photo-texting ($\bar{X}$=2.0, 0.6), phone-based electronic media production ($\bar{X}$=2.4, SD = 0.4), web-based electronic media production ($\bar{X}$=1.2, SD = 0.3), e-learning mutual production ($\bar{X}$=1.1, SD = 0.4) and audio booking production ($\bar{X}$=1.4, SD = 0.2). This finding calls for urgent review of extension training curriculum at all levels in tandem with new realities, such as, meeting the work challenges of precision agriculture, farmer helpline extension and advisory services, e-clientele, and e-interaction among the actors of extension value chain, creation and maintenance of location specific electronic database, tele-education for farmers, overcoming local content and language barriers, etc. New areas of specialization in electronic media production should be mounted in extension training institutions to narrow the widening skill gap in the area as well as address the lingering dearth of skilled extension manpower in the area. The extensionists were homogenous in saying that the skills were not adequately taught to the personnel in extension training.

4.5 Level of mastery of requisite electronic media production skills by extension personnel

Table 4.14: Distribution of respondents by level of mastery of electronic media production skills

Electronic media production skills	Highly mastered	Mastered	Not mastered	Mean Score	SD	Remark
1. Video recording and production	0(0.0)	0(0.0)	120(120.0)	1.0	0.1	NM
2. Digital photo graphic production	0(0.0)	78(65.0)	42(35.0)	1.7	0.3	NM
3. Computer multi-media production	0(0.0)	5(4.2)	115(95.8)	1.0	0.1	NM
4. Audio recording and production	22(18.3)	32(29.2)	63(52.5)	1.7	0.2	NM
5. Internet feeding/streaming	0(0.0)	4(3.3)	116(96.7)	1.0	0.1	NM
6. Non-linear video editing	0(0.0)	1(0.8)	119(99.2)	1.0	0.1	NM
7. Video effects/Animation	0(0.0)	2(1.7)	118(98.3)	1.0	0.1	NM
8. Graphics designing	0(0.0)	6(5.0)	114(95.0)	1.1	0.1	NM
9. Script writing	46(38.3)	51(42.5)	23(19.2)	2.2	0.6	Mastered
10. Voicing/commentary	6(5.0)	9(7.5)	105(87.5)	1.2	0.3	NM
11. Photo-texting	28(23.3)	15(12.5)	77(64.2)	1.6	0.4	NM
12. Phone-based electronic media production	0(0.0)	2(1.7)	118(98.3)	1.0	0.1	NM
13. Web-based electronic media production	0(0.0)	4(3.3)	119(99.2)	1.1	0.1	NM
14. e-learning material production	0(0.0)	11(9.2)	109(90.8)	1.1	0.1	NM
15. Audio-book production	0(0.0)	9(7.5)	111(92.5)	1.1	0.1	NM
16. Electronic reporting	4(3.3)	7(5.8)	109(90.8)	1.1	0.1	NM
Average assessment				**1.4**	**0.4**	**NM**

Source: Field Survey Data, 2014. $\bar{X} \leq 2.0$ (Mastered) $\bar{X} < 2.0$ (Not mastered)

NM = Not Mastered

It is one thing to teach and train individuals for specific tasks and job operations and yet another thing for those taught and trained to have mastery of what is taught. Mastery of a subject may be hampered or facilitated by a number of factors like the quality or performance of the

teacher and trainer, availability and conditions of physical facilities wherein teaching occurs; proficiency of the trainer in using the instructional aids, the contents of what is taught and the trainees personality-related factors. In other words, while it is necessary to assess what is taught to extension personnel with respect to electronic media production, it is as much important to determine the level of mastery of what has been taught. In this case, the level of grasp of the extensionists in different skill areas of electronic media production taught them in one extension training or the other. The result in Table 4.14 shows that the extensionists do not have mastery of all the electronic media production operations except script writing (2.2, SD = 0.6). The mean values were; video recording and production (1.0, SD = 0.1), digital photographic production (1.7, SD = 0.3), computer multimedia production (1.0, SD = 0.1), audio recording (1.7, SD = 0.2), internet feeding/streaming (1.0, SD = 0.1), non-linear editing (1.0, SD = 0.1), video effects (1.0, SD = 0.1), graphics designing (1.1, SD = 0.1), voicing (1.2, SD = 0.3), photo-texting (1.6, SD = 0.4), phone-based media (1.0, SD = 0.1), web-based media production (1.1, SD = 0.1), e-learning material production ($\bar{X}$=1.1, SD = 0.1), audio-book production (1.1, SD = 0.1), and electronic reporting (1.1, SD = 0.1). This is not unconnected with the advent of mobile phones with enhanced and simplified photographic capabilities which enables individuals snap and process their photographs within little or no technical training. Thus, supports the assumption that digital ICT is simplifying e-job performance. The near zero standard deviation of the extensionists' assessment ($\bar{X}$ = 1.4, SD = 0.4) strongly indicate the unity in their opinion that the extension personnel did not have mastery of the electronic media skills.

4.6 Training needs of mainstreaming electronic media production for extension service

Table 4.15: Distribution of extensionists by perceived training needs in electronic media production for extension services in Imo State

	Electronic media Training needs	Highly needful	Needful	Not needful	Mean Score	SD	Remark
1.	Video recording and production	82(68.3)	30(25.0)	8(6.7)	2.6	0.3	Needful
2.	Digital photo graphical production	94(78.3)	26(21.7)	0(0.0)	2.8	0.5	Needful
3.	Computer multi-media production	88(73.3)	32(26.7)	0(0.0)	2.7	0.3	Needful
4.	Audio recording and production	22(18.3)	48(7.5)	50(41.6)	2.8	0.2	Needful
5.	Internet feeding/streaming	79(65.8)	34(28.3)	7(5.8)	2.6	0.4	Needful
6.	Non-linear video editing	22(18.3)	45(37.5)	53(44.2)	1.7	0.8	Not needful
7.	Video effects/Animation	19(15.8)	47(39.2)	54(45.0)	1.7	0.6	Not needful
8.	Graphics designing	83(69.2)	24(20.0)	13(10.8)	2.8	0.2	Needful
9.	Script writing	102(85.0)	9(7.5)	9(7.5)	2.8	0.4	Needful
10.	Voicing/commentary	78(65.0)	40(33.3)	2(1.7)	2.6	0.4	Needful
11.	Photo-texting	49(40.8)	62(51.7)	9(7.5)	2.3	0.3	Needful
12.	Phone based electronic media production	79(65.8)	34(28.3)	7(5.8)	2.6	0.3	Needful
13.	Web-based electronic media production	31(25.8)	66(55.0)	23(19.2)	2.1	0.0	Needful
14.	e-learning material production	42(35.0)	53(44.2)	25(20.8)	2.1	0.0	Needful
15.	Audio-book production	37(30.8)	61(50.8)	22(18.3)	2.1	0.0	Needful
16.	Electronic reporting	92(76.7)	18(15.0)	10(8.3)	2.7	0.3	Needful
	Average Perception				**2.4**	**0.3**	

Source: Field Survey Data, 2014. $\bar{X} \geq 2.0$ (Needful) $\bar{X} < 2.0$ (Not needful)

Usually emphasis on extension training programmes are in respect of the number of times

or frequency of such trainings without corresponding attention on the relevance of the training in meeting specific performance gap. Often, training contents are not predicated on systematic needs of the extension workers as observed by Woods (1988) in Tladi (2004). Thus, the performance gap of the extension worker in areas like electronic media production subsists even after participating in several training programmes. Result in Table 4.15 revealed that the training needs of the extensionists included video recording and production ($\bar{X}$=2.6, SD = 0.3), digital photographic production ($\bar{X}$=2.8, SD = 0.5), computer ($\bar{X}$=2.7, SD = 0.3) audio recording and production ($\bar{X}$=2.8, SD = 0.2), internet feeding/streaming ($\bar{X}$=2.6, SD = 0.4), graphic design ($\bar{X}$=2.8, SD = 0.2), script writing ($\bar{X}$=2.8, SD = 0.4) voicing ($\bar{X}$=2.6, SD = 0.4), photo texting ($\bar{X}$=2.3, SD = 0.3), phone-based ($\bar{X}$=2.6, SD = 0.3), web based media production ($\bar{X}$=2.1, SD = 0.6), e-learning material production ($\bar{X}$=1.0, SD = 0.0), Audio book production ($\bar{X}$=2.1, SD = 0.0), electronic reporting ($\bar{X}$=2.7, SD = 0.3). Video editing and video effects were not perceived as needed areas of training by the extensionists. This probably suggests that the extensionists did not see its relevance in performing extension work. The implication of having extensionists who do not see the relevance of developing technical capability in video editing and video effects videos and use video effects would imply having extension professionals who lack the technical ability to be entrepreneurial extension workers. Nwachukwu (2013), noted that entrepreneurial extension can become more productive and effective in disseminating technologies by recording and producing their own message in videos – a task that requires proficiency in video editing and video effects. The standard deviation (SD = 0.3) implied that the extensionists were homogenous in their perception of the performance gaps where training in electronic media production is needed.

4.7 Extension personnel to be electronic media training and resources necessary for the training

4.7.1 Target Trainee

4.16 Distribution of respondents by target trainee

	Target Trainee	Frequency	Percentage
I.	Technical officers	9	7.5
II.	Supervisors	16	13.3
III.	Field extension agents	39	32.5
IV.	Extension personnel of all cadre	56	46.7
	Total	**120**	**100**

Source: Field Survey Data, 2014

Since extension field agents are the ones who make direct contact with farmers; have better understanding of famers' peculiarities, they are considered primary in the task of creating media materials for extension teaching. Nwachukwu (2013) corroborated this when he noted that extension agents could record their own materials/information using the electronic media. However in a pluralistic, client-focused participatory, privatized extension delivery as noted by Omotayo (2013), the task of agricultural information gathering, processing, packaging and delivery is not exclusive to field extension personnel, headquarters staff can also contribute from their location, especially, since the production of electronic media are mainly indoor operations. Table 4.16 result therefore presents the opinions of the extensionists as to which category of extension personnel should be targeted, in the training. Result reveals that majority (46.7 percent) of the respondents indicated that all extension personnel of all cadres should be trained, 32.5 percent favoured field extension agents, 13.2 percent indicated that extension supervisors should be the target, while 7.5 percent favoured technical officers. This result indicates that

extension service delivery is perceived by the respondents as a collective responsibility and thus each personnel should be adequately equipped.

4.7.2 Resources necessary for training in electronic edia production

Table 4.17: Distribution of the extensionists by perceived resources necessary for training in electronic media production

	Necessary conditions	Frequency	Percentage
I.	Availability of internet connectivity	4	3.3
II.	Availability of electronic media studio	5	4.2
III.	Computer multi-media devices	39	32.5
IV.	Availability of media Expert	72	60.0
	Total	**120**	**100.0**

Source: Field Survey data, 2014

Effective training depends to a large extent on the availability of necessary components of a learning situation. Training may not be effective without adequate logistics, instructors, acoustics, training environment, welfare packages for trainees, training objectives, etc. Result in Table 4.17 shows the distribution of extensionnists based on what they perceived as conditions that should be fulfilled for training on electronic media production to take place. Majority (60.0 percent) of the extensionists identified the availability of media expert as training conditions that should be fulfilled. Provision of computer multi-media devices (32.5 percent), availability of electronic media production studio (4.2 percent) and availability of internet connectivity (3.3 percent).

4.8: Training needs of mainstreaming electronic media production by male and female

Table 4.18: Distribution of respondents by perceived difference in training needs between male and female extensionists.

		MALE			FEMALE		
	Electronic media production skills	**Mean**	**SD**	**Remark**	**Mean**	**SD**	**Remark**
a.	Video recording and production	2.5	0.2	TN	2.7	0.2	TN
b.	Digital photo graphical production	2.4	0.2	TN	2.9	0.4	TN
c.	Computer multi-media production	2.6	0.4	TN	2.8	0.5	TN
d.	Audio recording and production	2.8	0.3	TN	1.8	0.2	NN
e.	Internet feeding/streaming	2.5	0.3	TN	2.5	0.4	TN
f.	Non-linear video editing	2.7	0.3	TN	1.9	0.8	NN
g.	Video effects/Animation	2.6	0.4	TN	1.7	0.5	NN
h.	Graphics designing	2.4	0.3	TN	2.8	0.4	TN
i.	Script writing for the media	2.2	0.2	TN	2.6	0.5	TN
j.	Voicing/commentary	2.5	0.3	TN	2.8	0.4	TN
k.	Photo-texting	2.5	0.3	TN	2.4	0.5	TN
l.	Phone based electronic media prodn.	2.6	0.3	TN	2.5	0.4	TN
m.	Web-based electronic media production	2.4	0.2	TN	2.6	0.5	TN
n.	e-learning material production	2.4	0.2	TN	2.9	0.6	TN
o.	Audio-book production	2.3	0.2	TN	2.7	0.4	TN
p.	Electronic reporting	2.5	0.2	TN	2.7	0.4	NN
	Average perception	**2.5**	**0.3**	**TN**	**2.5**	**0.4**	**TN**

Source: Field Survey Data, 2014 $\bar{X} \leq 2.0$ (Training need) $\bar{X} < 2.0$ (Not needful)

TN = Training Needs **NN =** Not Needful

Table 4.18 results underscore the dynamics of gender in mainstreaming electronic media production. Whereas the female respondents did not see any need in training extension personnel in audio recording and production ($\bar{X}$=1.8, SD = 0.3), Non-linear video editing ($\bar{X}$=1.9, SD = 0.8) and video effects/animation ($\bar{X}$=1.7, SD = 0.5) amidst the list of media production skills, their male counterpart on the contrary identified them amongst the list of skills where extension personnel need to be trained. However, the standard deviations on the average indicate that both male and female extensionists were united in their perception of the trainings the needs.

4.9 Challenges of mainstreaming electronic media production for extension services

4.9.1 Access to electronic media facilities by the extensionists

Table 4.19: Distribution of extensionists by access to electronic media facilities and devices

	Electronic media	Access	No Access
		* Frequency (%)	* Frequency (%)
i.	Internet connectivity	3(2.5)	117(97.5)
ii.	Computer multi-media devices	17(14.2)	103(85.8)
iii.	Personal computer	26 (21.7)	94 (78.3)
iv.	Digital camera	9 (7.5)	111 (92.5)
v.	Audio recorder	66 (55.0)	54 (45.0)
vi.	Video instructional Materials	12(10.0)	108 (90.0)
vii.	Web-based electronic media devices	6 (5.0)	114 (95.0)
viii.	Phone-based election media devices	9(7.5)	111(92.5)

Source: Field Survey Data, 2014 *** Multiple Responses**

Limited access or a total absence of necessary ICT facilities can constitute a significant challenge to training in electronic media production in that if the trainees do not have access to laboratory /studio /practice devices, memory of what is learnt may be lost in a short while. In view of this, Arokoyo (2011) noted that limited access to electronic media is part of the

constraints to ICT use in extension especially in developing countries. The result in Table 4.19 on the distribution of the extensionists based on their access to electronic media production devices shows that most of the extensionists had no access to electronic media facilities /devices. Precisely, 95.07 percent lacked access to internet connectivity, while 83.8 percent lacked access to computer multi-media devices. Also, 78.3 percent lacked access to personal computer, 92.5 percent to digital camera and 91.0 percent to, video instructional materials, whereas 95 lacked access to web-based electronic media devices, 92.0 percent lacked access to phone-based electronic media devices. On the other hand, majority (55.0%) had access to audio recorder. Notably, the difference between the challenge posed by access to electronic media and other forms of challenges is that the former could hinder effective teaching and learning/training, while the effects of the latter may be felt during the stage of implementation of what is learnt.

4.9.2 Perceived level of challenges to electronic media production

Table 4.20 Distribution of respondents by perceived level of challenges for mainstreaming electronic media production in extension services

Area of Challenges	SA	A	U	D	SA	Mean	SD	Remark	Rank
Technical problem									
A. Inadequate skill teaching	84(70.0)	24(20.0)	12(10.0)	(0.0)	(0.0)	4.6	0.4	Challenge	5th
B. Poor knowledge-Base	97(83.8)	13(10.8)	4(3.3)	6(5.0)	0(0.0)	4.7	0.3	Challenge	3rd
Finance problem									
D. Poor budget /funding	64(53.3)	47(39.2)	9(7.5)	0(0.0)	0(0.0)	4.5	0.2	Challenge	8th
Infrastructure Challenges									
F. Lack of access to ICT devices	104(86.7)	16(13.3)	0(0.0)	0(0.0)	0(0.0)	4.9	0.3	Challenge	1st
G. Lack of access to web-based electronic media	91(75.8)	18(15.0)	7(5.8)	4(3.3)	0(0.0)	4.6	0.3	Challenge	5th
H. Lack of access to phone based electronic media	82(68.3)	18(15.0)	3(2.5)	17(14.2)	0(0.0)	4.4	0.2	Challenge	7th
Policy Challenges									
K. Lack of supporting government policy	79(65.8)	13(10.8)	17(14.2)	10(8.3)	3(2.5)	4.3	0.2	Challenge	9th
L. Weak implementation of policy	62(51.7)	42(35.0)	8(6.7)	6(5.0)	2(1.7)	4.3	0.2	Challenge	9th
Institution related Challenges									
N. Poor curriculum	108(90.0)	12(10.0)	0(0.0)	0(0.0)	0(0.0)	4.8	0.4	Challenge	2nd
O. Poor teaching methods and condition	74(61.7)	41(34.2)	2(1.7)	3(2.5)	0(0.0)	4.6	0.3	Challenge	5th
Organization related Challenges								\	
Q. Lack of Professionalism	102(85.6)	8(6.7)	4(3.3)	2(1.7)	4(3.3)	4.7	0.4	Challenge	3rd
Average Perception						**4.6**	**0.3**	**Challenge**	

Source: Field Survey data, 2014 $\overline{X} \leq 3.0$ (Challenge) $\overline{X} < 3.0$ (No challenge)

Successful electronic media production for extension purposes predicate on a number of factors. Result in Table 4.20 reveals that all the items were perceived as challenges with lack of

access to ICT devices and poor training curriculum ranking first ($\bar{X}$=4.9, SD = 0.3). Poor knowledge base and lack of professionalism had mean values of 4.7; SD = 0.4. Others were: lack of access to web-based electronic media ($\bar{X}$=4.6, SD = 0.3), poor teaching methods and conditions ($\bar{X}$=4.6, SD = 0.3), inadequate electronic media Production skill ($\bar{X}$=4.6, SD = 0.3), poor budget/funding ($\bar{X}$=4.5, SD = 0.3), lack of access to phone-based electronic media ($\bar{X}$=4.4, SD = 0.2), weak policy implementation ($\bar{X}$=4.3, SD = 0.2), lack of supporting government policy ($\bar{X}$=4.3, SD = 0.2), lack of access to readable electronic database ($\bar{X}$=4.1), dearth of skilled extension personnel ($\bar{X}$=4.1) lack of alternative sources of funding and market for produced electronic media materials ($\bar{X}$=4.1), policy inconsistency ($\bar{X}$=4.0), low level of ICT utilization ($\bar{X}$=3.9), lack of personnel motivation ($\bar{X}$=3.6), poor extension administration ($\bar{X}$=3.5) and lack of periodic curriculum review ($\bar{X}$=3.4). The findings of the study which identified access to ICTs and poor curriculum amongst factors influencing the training needs of the extensionists conforms to the earlier finding of Arokoyo (2011) that lack of access to ICTs constrained the use of ICTs in delivering extension services in developing countries, as well as the position of Asiabaka (2002) that those who do extension work must be technically sound vis-à-vis trainings. ICT enables extension maintain link with a network of farmers and other actors in the agricultural knowledge and information system as well as enable extensionists access expert knowledge and other information that facilitate the accomplishment of day-to-day extension activities (Omotayo, 2011). Therefore, the implication of lack of access to ICTs and poor curriculum development will entail increase in the skill gaps of extensionists in producing electronic media. The extensionists were unified ($\bar{X}$=4.6, SD =0.3) in the views that the listed factors influenced electronic media production.

4.9.3 Effects of Challenges of Mainstreaming Electronic Media Production for Extension Services

Table 4.21: Distribution of respondents by perceived effects of the challenges of electronic media production in extension

	Areas of Effects	HA	MA	A	NA	Mean	SD	Remark	Rank
a.	Personnel efficiency	94(78.3)	16(13.3)	10(8.3)	0(0.0)	3.7	0.6	Affected	3rd
b.	Performance skills	107(89.2)	13(10.8)	0(0.0)	0(0.0)	3.9	0.8	Affected	2nd
c.	Use of electronic media	117(97.5)	3(2.5)	0(0.0)	0(0.0)	4.0	0.1	Affected	1st
d.	Cost of extension service	58(48.3)	15(12.5)	26(21.7)	21(17.5)	2.9	0.1	Affected	4th
	Average perception					**3.6**	**0.4**	**Affected**	

Source: Field Survey Data, 2014 $\bar{X} \geq 2.5$ (Affected) $\bar{X} < 2.5$ (Not affected)

Poor utilization of ICTs in extension service delivery is often considered a challenge for the extension service. Little of this is quantified or rated more often than not, thereby creating gaps in knowledge of specific areas being affected. The result in Table 4.21 shows that the ability of extension personnel to use electronic media was the most affected $\bar{X}$ = 4.0, SD = 0.1. This was followed by personnel performance skills ($\bar{X}$ = 3.9, SD = 0.8). Whereas personnel efficiency had $\bar{X}$ = 3.7, SD = 0.6, while cost of extension service delivery had $\bar{X}$ = 2.9, SD = 0.1. The latter agrees with the finding of Vishy (2011) that it relatively costs less to convince a farmer to adopt, a technology using electronic media hence, absence of it will lead to increased cost of extension delivery services. The average standard deviation of 0.7 showed that the extension personnel were homogenous in perceiving the challenges of creating electronic media for extension teaching as affecting the extensionists in various performance areas. Corroborating this, Arokoyo (2011) identified ineffective communication of agricultural technologies by extension agents as resulting from militating factors of ICTs utilization.

4.10 Hypotheses

The results of the four hypotheses of the study are presented below:

4.10.1: Hypothesis 1: The socio-economic characteristics of extensionists have no significant relationship with the training needs in electronic media production for extension services in Imo State.

Table 22: Relationship between the socio–economic characteristics of extensionists and the training needs in electronic media production for extension services in Imo State

Explanatory Variables	Linear Function	Double Log	Semi-log	Exponential Function
Constants	1.696	12.560	2.137	22.634
R^2	0.650	0.436	0.598	0.479
No of Observation	120	120	120	120
F-value	11.193**	2.423*	0.783	0.221
Sex X_1	0.515(1.983)*	0.000(8.373)**	0.033(2.626)**	0.000(1.724)
Age X_2	0.000(2.151)*	0.000(-0.899)	0.009(-1.989)*	0.085(11.244)**
Marital Status X_3	0.022(1.24)	0.369(0.330)	0.001(-0.729)	0.000(16.830)**
Educational Level X_4	-0.000(-5.289)**	0.000(-7.095)**	0.000(1.792)	0.000(0.415)
Household size X_5	0.002(2.250)*	0.000(-1.168)	0.000(0.404)	0.001(-1.415)
Membership of Social Org. X_6	-0.003(-4.240)**	0.030(0.207)	0.000(-1.464)	0.009(-4.848)**
Membership Status X_7	-0.006(2.943)**	0.000(-2.469)*	0.000(4.292)**	0.000(1.510)
Monthly income X_8	-0.000(-2.753)**	0.000(2.179)*	0.000(1.840)	0.000(-3.698)**
Value of Househd electronics X_9	-0.000(5.193)**	0.000(1.166)	0.066(-1.443)	0.000(1.455)
Year of Work Experience X_{10}	-0.000(-4.212)	0.010(0.211)	0.015(4.312)	0.000(-6.581)

Source: Field survey Data, 2014

* t – ratio significant at 5% probability level

** t – ratio significant at 1% probability level

Table 22 shows that the linear functional form of the ordinary least square multiple regression analysis gave the best fit, viz: greater number of statistically significant variables, magnitude of F-value and the value of coefficient of multiple determination (R^2). The R^2 value was 0.650, implying that about 65 percent of the variation in the training needs of electronic media production for extension services in Imo State was accounted for by socio-economic characteristics investigated in the study. The coefficients of membership of social organization (t = - 4.24), educational level (t = - 3.289), membership Status (t = 2.943), value of household electronics (t = 5.193), monthly income (-2.753) and years of work experience (t = -4.212) were significant expressing them as very important factors influencing the training needs in electronic media production for extension services in Imo State.

The negative coefficient of educational level (t =- 3.289), membership of social organizations (t = - 4.24), monthly income (t = -2.753) and years of work experience (t = -4.212), implies that increasing the level of education and membership of social organization of the extensionists will lead to reduction in their training needs. This concurs with Clover and Darroch (2005), that education is thought to increase intrinsic motivation and energizes behaviours and the more training an individual receives, the greater the possibility of the job success. An increased professional experience improves the quality of services rendered. Increase in years of work experience contributes to wealth of skills needed for effective job performance. This result, agrees with the priori expectation. On the other hand, the positive coefficient of membership status (t = 2.943), value of household electronics (t = 5.193) infers that increase in the membership status and value of household electronics of the extensionists will likely increase the number of skills to explore and tasks to perform towards electronic media production for extension services in Imo State.

The results further show that the coefficient of sex (t = 1.983), age (t = 2.151) and

household size (t = 2.250) were positively significant portraying them also as important factors that reduce the training needs of the extensionists for electronic media production upon their reduction. According to Onwumere (2008), age increases enthusiasm and vigor for the work performance. Based on the result, the null hypothesis was rejected, implying that a significant relationship exists between the socio-economic characteristics of the extensionists and the training needs of electronic media production for extension services in Imo State.

4.10.2 Hypothesis 2: The training needs in electronic media production for extension services in Imo State do not differ between the male and female extensionists.

Table 23: Z-test of significant difference between the training needs of male and female extensionists electronic media production in Imo State

Variables	N	Mean	Standard deviation	DF	Z-cal.	Z-tab	Decision
Male	28	30.556	7.002	118	1.95	1.96	The null hypothesis is accepted
Female	92	31.685	8.172				

Source: Field Survey Data, 2014

Result in Table 23 shows that the mean training needs for mainstreaming electronic media production between male and female were 30.56 (S.D = 7.00) and 31.69 (S.D= 8.17), respectively. The test produced a Z-value of 1.95 which was not significant when compared with the critical Z-value of 1.96 at 5% probability level of significance for a two tailed test. Since Z-calculated (Z-cal =1.95) was less than Z-tabulated (Z-tab =1.96), the hypothesis which states that there is no significant difference between the training needs in electronic media production between the male and female extensionists in Imo State was accepted. By implication, both male and female extensionists have the same skill gaps with respect to producing electronic media.

4.10.3 Hypothesis 3: The capability of extensionists to produce electronic media for extension services has no significant relationship with the training needs in electronic media production.

Table 24: Pearson correlation between electronic media production capability of extensionists and training needs in electronic media production for extension services in Imo State.

Electronic media production capability	**Electronic media production capability**	**Training needs of mainstreaming electronic media production**
Pearson correlation	1	
Sig(2-tailed)	-0.636	0.000
N	120	120
Training needs in electronic media production		
Pearson correlation	-0.636	1
Sig(2-tailed)	0.000	
N	120	120

Source: Field Survey Data, 2014

Table 24 result shows that a negative and significant relationship (r = - 0.636; P = 0.05) exists between the capability of extensionists to produce electronic media and the training needs of mainstreaming electronic media production for extension services in Imo State. This relationship infers that increasing the capabilities/skills of the extensionists through increased exposure/experiences in making electronic media will result in a decrease in the skill gaps (training needs) of mainstreaming electronic media production for extension services in Imo State.

4.10.4 Differential training needs of mainstreaming electronic media production for extension services

Table 25: Analysis of Variance (ANOVA) of the training needs of extensionists in the 3 agricultural zones of Imo State (Owerri, Orlu and Okigwe)

	Sum of Squares	DF	Mean Square	F-cal	F-tab	Sig.	Decision
Between Groups	9.566	10	0.957	1.277	0.75	0.252	Null is rejected
Within Groups	81.634	109	0.749				
Total	91.200	119					

Source: Field Survey Data

Result in Table 25 shows that a test of Analysis of Variance was carried out to ascertain whether the training needs of extensionists in the 3 agricultural zones significantly differ from one another. The test produced an F-value of 1.277 and a significant value of 0.252 which was significant at 5% level of significance. Hence, the hypothesis which posits that the extensionists in the 3 agricultural zones of Imo State do not differ in their training needs of mainstreaming electronic media production for extension services is therefore rejected implying that extension personnel in the three agricultural zones of Imo State differed in their performance gaps (skill deficiency for which training is required). This is due to the uneven distribution of electronic media facilities in the State which gives greater access and experience to extensionists posted and operating in areas of the State that are relatively more developed than the others.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

We are approaching a paperless and electronic society, where it is faster, common and cheaper to pass on words, knowledge and skills electronically than to handle them physically; a time when significant number of farmers and agricultural information users meet their information needs through electronic channels. Hence, nothing could be more rewarding and appropriate in equipping extension professionals for the attendant challenges of electronic agriculture than understanding where the skill gaps exist, what needs to be taught to makeup for the gaps and who needs to be taught what.

The study was therefore carried out to assess the training needs and challenges of mainstreaming electronic media production for extension services in Imo State. The specific objectives of the study were to describe the socio-economic characteristics of the extensionists; ascertain the job operations and tasks of the extensionists; examine the electronic media production capacities of the extensionists; assess the level of electronic media production skills taught in extension training; investigate the level of mastery of electronic media production skills of the extensionists; assess the training needs in electronic media production for extension services in Imo State; assess the difference in training needs between male and female respondents; determine extension personnel needed to be availed of electronic media training and resources necessary for the training; challenges of mainstreaming electronic media production and the level to which they affect the extensionists.

Four hypotheses guided the study, namely: there is no significant relationship between the socio-economic characteristics of the extensionists and their training needs; The capabilities

of the extension personnel to produce electronic media for extension services do not influence the training needs in electronic media production; there is no significant difference between the training needs of the male and female extensionists; and the training needs of the extensionists electronic media production in the 3 zones of Imo State were put to test.

Data for the study were collected using structured and validated questionnaire from 120 extension personnel selected through multi-stage sampling techniques. Descriptive and inferential statistical tools such as mean, frequency score, percentages, Ordinary Least Square (OLS), Pearson's bivariate correlation, Z-test, Analysis of Variance (ANOVA).

Results of the socio-economic characteristics revealed that majority (76.7 percent) of the respondents were female extension personnel while 23.3 percent were male. The average age of the respondents was 35years; about 87 percent of them were married, and 91.7 percent completed higher education. The average monthly income was N27,417. The average household size of the respondents was 5 persons and 57.5 percent belonged to professional organizations. The average value of their household electronic gadgets was N64, 683. Also they had on the average 17 years working experience in extension.

Results further showed that most, (68.3 percent) of the extensionists were field extension agents, while an average respondent performed 3 different extension tasks. Result further revealed that extension agents lack capabilities of producing different electronic media for extension services. Only 4 out of 16 listed electronic media production skills, namely: audio recording and production (2.7), script writing (2.5), voicing/commentary (3.2) and electronic reporting (3.0) were adequately taught in extension training; script writing ($\bar{X}$ = 2.2) was the only skill mastered by the respondents out of 16 different electronic media production skills taught. Besides video editing ($\bar{X}$=1.7) and video effect ($\bar{X}$= 1.7), other skill areas were perceived as training needs/deficient areas. A greater proportion (46.7 percent) identified all personnel as the

target trainees and availability of media expert trainers (60 percent) as a condition necessary for effective training to take place. While the female extensionists did not perceive audio recording and production ($\bar{X}$=1.8), non-linear video editing ($\bar{X}$=1.9) and video effects/animation ($\bar{X}$=1.7) as their training needs, the male respondents identified all the skills area as their training needs; majority (55 percent) had access to audio recorder, therefore, it was not perceived as a challenges to the respondents. Lack of access to ICT devices ($\bar{X}$ = 4.9) and poor training curriculum (x =4.9) were ranked first amongst the areas of challenges for mainstreaming electronic media production in extension; while the ability of the respondents to use electronic media ($\bar{X}$ = 4.0) was ranked as the area most affected by the challenge.

The hypothetical analyses show the existence of a significant relationship (r = 0.650) between the socio–economic characteristics of the extensionists and the training needs; that male and female extensionists do not differ significantly (Z-cal =1.95; tab =1.96) in their training needs of mainstreaming electronic media production for extension services in Imo State; that a negative and significant relationship (r = - 0.636; P = 0.05) exists between the capability of extensionists to produce electronic media for extension services and their training needs; and the existence of a significant difference in the training needs of extensionists in the 3 agricultural zones of Imo State (F-value of 1.277 and significant value of 0.252 at 5% level of significance).

5.2 Conclusion

Given that training needs entail what to teach, who to teach and conditions under which training would take place, the study therefore concluded that the extension respondents lack the capabilities to produce electronic media for extension services as a result of poor extension training in electronic media production. The extensionists, both male and female require training in all the sixteen listed skill areas to make-up for their performance gaps. The target trainees

should comprise extension personnel of all cadre as they perform somewhat similar and multiple functions. Poor access to ICTs and inadequate training curriculum are major infrastructure and institutionally inclined challenges that militate against the mainstreaming of electronic media production for extension service delivery in Imo State.

5.3 Recommendations

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

1. Government and intervention agencies should increase extension personnel's access to ICTs through ICT support schemes, such as providing personal computers, internet connectivity, digital cameras, etc, to them as that would facilitate and enhance their training in electronic media production.
2. Extension Organizations should seek technical partnership and collaborative funding with international and national organizations to provide ICT facilities like computer laboratories, audio – visual recording studios, radio stations, cyber centres, information/news gathering centre, mainframe computer database, etc, to provide electronic media production training and utility platforms for their extension personnel.
3. Extension curriculum should be reviewed in line with new realities and challenges of extension service delivery through the electronic media. Extension pre-service training curriculum should be reviewed to provide adequate background information and knowledge of media production applications, especially to enable future extension personnel to adequately cope with the task ahead. In-service training curriculum on the other hand should be redesigned to build the capacity of extension personnel to cope with job challenges using electronic media.
4. To enhance agricultural extension professionalization, agricultural journalism or electronic communication should be institutionalized as an area of specialization in

extension in order to give impetus to cyber extension, extension media broadcasting, e-agriculture, among other electronic communication-oriented areas of specialties. Thus, extension practitioners would become multi-career practitioners-by working in the media houses and in their statutory organizations.

5. Issues of funding and operation should be addressed through strong supporting policies of government, such as policies instituting extension radio and TV stations in all the states of the Federation; mandating agricultural news correspondents across all media organizations, especially, government-owned media houses to acquire qualifications in agricultural extension, by so doing the practice of agricultural information dissemination would be regulated for effective performance.

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Appendix

Dear Respondent,

The researcher is carrying out a study on the **Training Needs and Challenges of Mainstreaming Electronic Media Production for Extension Services in Imo State.** You are kindly requested to assist by completing this questionnaire. The information you will provide will be treated confidentially. Please answer the questions sincerely.

1.0 SOCIO-ECONOMIC CHARACTERISTICS

Sex: Male ☐ **Female** ☐

Age:……

Marital Status: single ☐ Married ☐ Divorced ☐ Widowed ☐

Others……

Household Size:……

Educational Level: No Formal Education ☐ Primary Sch. Attempted ☐

Completed Primary Sch ☐ Secondary Sch. Attempted ☐ Completed sch. ☐

Attempted Institution ☐ Completed Education ☐

Membership of Professional Organization: Ordinary members ☐ Regular member ☐

Financial member ☐ Committed member ☐ Executive member ☐

What is your average monthly income all your income sources (in naira)?

…….....

What is the Value of your Household Electronic Gadgets (in Naira)?

……

Indicate your Accessibility to ICT Facilities?

ICT Facilities	**Access**	**No Access**
Internet connectivity		
Computer multi-media devices		
Personal computer		
Digital camera		
Audio recorder		
Video instructional materials		
Web-based electronic media		
Phone-based electronic media device		

How many years have you spent in your job?

……..

Which is Your Zone of Operation?

Owerri ☐ Orlu ☐ Okigwe ☐

2.0 TO ASCERTAIN THE JOB OPERATIONS AND TASKS OF THE RESPONDENTS

To which of these categories of Staff do you belong to?

Administration ☐
Supervision ☐
Field extension agents ☐

Which of these job operations do you undertake?

Job Operation	
Training farmers	
Train extension agents	
Manage extension personnel	
Manage experimental farm plots	
Facilitate input supply to farmers	
Supervise extension field agents	

3.0 Examine the electronic media production capabilities of the respondents for carrying out extension job operations and tasks

How capable are you in the areas of electronic media production skill listed below for carrying out your extension job operations?

Electronic media production skill	**Capability**			
	Very Capable	**Fairly Capable**	**Capable**	**Not Capable**
Video recording and production				
Digital Photographical production				
Computer multi-media production				
Audio recording and production				
Internet feeding/streaming				
Video editing				
Video effects/animation				
Graphics designing				
Script Writing				
Voicing/commentary				
Photo-texting				
Phone based media connectivity				
Computer based media connectivity				
e-learning material production				
Audio-book production				
Electronic Reporting				
None				

4.0 To assess the level of electronic media production skills taught in extension training.

To what level are these electronic media production skills are taught in extension training? Please tick accordingly.

Electronic media production skill	**Level of Electronic media taught**			
	Very Highly taught	**Highly taught**	**Low**	
Video recording and production				
Digital Photographical production				
Computer multi-media production				
Audio recording and production				
Internet feeding/streaming				
Video editing				
Video effects/animation				
Graphics designing				
Script Writing				
Voicing/commentary				
Photo-texting				
Phone based media connectivity				
Computer based media connectivity				
e-learning material production				
Audio-book production				
Electronic Reporting				
None				

5.0 To determine the level of mastery of the requisite skills by extension personnel.

Electronic media production skill	**Level of Mastery**			
	Highly Mastered	**Mastered**	**Not Mastered**	
Video recording and production				
Digital Photographical production				
Computer multi-media production				
Audio recording and production				
Internet feeding/streaming				
Video editing				
Video effects/animation				
Graphics designing				
Script Writing				
Voicing/commentary				
Photo-texting				
Phone based media connectivity				
Computer based media connectivity				
e-learning material production				
Audio-book production				
Electronic Reporting				
None				

6.0 To evaluate the training needs of mainstreaming electronic media production for extension services in Imo State.

Which of these performance skills are needful to you in producing electronic media for extension services in Imo State?

Areas of performance/skill gaps where training is needed	**Level of Mastery**			
	Highly needful	**Moderately needful**	**Low**	
Video recording and production				
Digital Photographical production				
Computer multi-media production				
Audio recording and production				
Internet feeding/streaming				
Video editing				
Video effects/animation				
Graphics designing				
Script Writing				
Voicing/commentary				
Photo-texting				
Phone based media connectivity				
Computer based media connectivity				
e-learning material production				
Audio-book production				
Electronic Reporting				
None				

Who and who in your opinion should be trained on electronic media production?

Administrative personnel ☐

Supervisory personnel ☐

Field extension personnel ☐

All personnel ☐

Identify conditions under which training on electronic media production should take place?

Conditions under which Training will Occur	
Availability of internet connectivity	
Availability of electronic Media studio	
Computer multi-media production devices	
Availability of Media Expert	

7.0 To evaluate the differences in training needs of mainstreaming electronic media production for extension services in the State as perceived by male and female respondents;

Areas of performance /skill gaps where training is needed	**Training needed**	**No training needed**
Video recording and production		
Digital photographical production		
Computer multi-media production		
Audio recording and production		
Internet feeding/streaming		
Video editing		
Video effects/animation		
Graphics designing		
Script Writing		
Voicing/commentary		
Photo-texting		
Phone based media connectivity		
Computer based media connectivity		
e-learning material production		
Audio-book production		
Electronic reporting		
None		

8.0 To ascertain the extent to which the process of mainstreaming of electronic media production for extension services in Imo State constitute challenges as perceived by male and female extension respondents

Areas of Challenges	**Strongly Agree**	**Agree**	**Undecided**	**Disagree**	**Strongly Disagree**
Lack of Technical skill					
Inadequate finance					
Poor access to infrastructural facilities					
Poor supporting policy					
Institutional related challenges					
Organizational related challenges					