

Information Communication Technology and Agricultural Development in Benue State

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Abstract

Benue state is faced with an increasingly complex challenge of feeding her growing population, while assuring an equitable and sustainable development. Scientific and technological progresses are generating the knowledge and tools to make this possible. Perhaps the use of ICT becomes important for modern agriculture to increase food production. The study interrogates the impacts of Information Communication Technology (ICT) on agricultural development in Benue State. The study was undertaken in Benue state, Nigeria. Taro Yamane's Formula was used to determine the sample size which was arrived at 400 respondents. Data was collected using questionnaire. 400 questionnaire were administered and 380 returned for analysis. Tables and simple percentages were used for the analyses of the field results. The findings of the study reveal that, shortage of power supply, limited access to computer and internet, high level of rural poverty, illiteracy among peasant farmers among others hinders the adoption of ICT at the rural areas to enhance food production. Low level deployment of ICT in this very important segment of the economy leaves a lot of room for improvement in both quantitative and qualitative food production to feed the overgrowing population in the state. The study therefore recommends, ICT education should be made compulsory in schools and colleges/universities, improved power supply and proper dissemination of information to farmers using radio, television and telephones in indigenous languages among others to aver them with the new technology that will improves food production in Nigeria.

Keywords: Information Communication Technology, Agriculture, Farmer, Development.

Introduction

Nigeria has become heavily dependent on her oil revenue to the neglect of her agricultural sector which previously was the mainstay of the country's economy. The advent of oil brought about the relegation of export crops and domestic agricultural produce whose markets were not as stable and lucrative as that of petroleum. Cocoa, palm produce, cotton wool and groundnuts now contribute less than 10 per cent of foreign exchange earnings. Rice, beans, cowpea, Bambara nut, wheat, tomatoes and other domestic staples are now imported to offset inflationary pressures in an economy where local production cannot hope to contend with the growing food shortage (Nwankwo in (Mckinlay, 2001).

Agriculture plays a significant role for economic and social development in most undeveloped countries. Reasons for this include issues of food security and health of people, requirement for increasing yields and food quality improvement. Challenges in agricultural development of every country are great, not only because of fulfilment of increasing demand for food, but because of poverty and malnutrition reduction. Issues are also made more complex as agricultural sector development should be achieved on sustainable manner considering natural environment protection. However, non-application of technology couple with the discovery of oil make the agricultural sector unproductive in Nigeria (Nwankwo in Adam, 2002).

However, over the years, Information Communication Technologies (ICTs) have changed the lives of individuals, organizations and indeed entire world, no country and communities are been left untouched by “information society”. The value of information can never be under estimated especially in the 21st century because of its importance. Information can be figures, facts, graph, images that are processed and organized into meaningful form, it can be said to be message from a sender to one or more receivers (Claude in Nwankwo in (Mckinlay, 2001). Information has been identified as one resources required for the improvement of agricultural production, it is defined as the data for decision making and a resource that must be acquired and used in order to make an informed decision making and a resource that must be acquired and used in order to make an informed decision. Those who posse’s appropriate and timely information will make a more rational decision than without (Davin in Adam, 2002).

Davin (1976) “every individual whether literate or non-literate needs information in order to make decisions thus every sector of the population engaged in agriculture needs information”. Communication is the exchange of meanings between individuals through a common system of symbols. Our existence depend on communication in many ways that we can easily enumerate without our initial backlog of genetic messages we would not be who we are and without the internal communication of our bodies we could not live and functions as we do. Living therefore is largely a matter of communication and many people make their living by communicating with others: broadcasters, politicians, advertisers, teachers-and librarians who are involved in communication in a special way (Davin in Adam, 2002).

Technology is the application of scientific knowledge to the practical aims of human life, or as it sometimes phrase to the change and manipulation of human environment, the development overtime of systematic techniques for making and doing things. Information Communication Technologies (ICTs) are those technologies that can be used to interlink information technology devices such as personal computers with communication technologies such as telephone and their telecommunication networks (Davin in Adam, 2002). Michiels and Vancrowder (2001) defined ICTs as a range of electronic technologies which, when converge in new configuration are flexible, adaptable, enabling and capable of transforming organizations and redefining social relations. ICTs therefore, are an expanding assembly of technologies that can be used to collect, store and share information among people using multiple devices and media.

It has agreed that agricultural development in Benue State depend upon the small scale farmers who form the bulk of the farming community and that for agriculture to really develop these small scale farmer must know and understand what constitutes progress in agriculture. The extent to which these farmer progresses depend largely upon their access to accurate and reliable information, the type of information they use to solve their problems. In essence then, the dissemination of information about farm practices is an important aspect in the adoption of the practices (Mckinlay, 2001). Dissemination of information to farmers can be said to be as important as the development of the technology itself. Any technology no matter how promising, that does not reach the farmer can be said to be useless to the farmer. Farmers on their own part need to know how to increase their yield, how to use new techniques and the findings of contemporary agricultural research and how to operate in changing market and credit situation. Mass media, commercial and government agencies and agents as well as the personal contact have assumed a major function of disseminating information about farm matters with other farmers, friends and relatives.

Agricultural information is necessary if farmers have to go beyond their present level of production, a steady flow of accurate, understandable, factual information links the scientist with the farmer through the various sources that communicate such information, particularly the extension service (Adam, 2002). Information about agricultural practices increase the

adoption of improved practices by getting information about the practices to a reasonable numbers of people engaged in agriculture. Information effectively communicated to the farmers can help meet farming emergencies by giving farmers timely warning about market disease and other rapidly changing conditions. While modernizing agriculture requires many activities such as supplies, market services, new technology and information. This project sees farm information as essential ingredient in agricultural development, not merely as a facilitating influence and regards agricultural information as information sufficiently tested to establish its utility as a part of the technology base for farming at the time and under the circumstances in which it is being used (Michiels and Vancrowder, 2001).

A large number of innovations are available and are being communicated to the rural people through variety of channels. It is obvious that, the information being communicated does not reach the farmer as evidenced by the farmers' generally inadequate knowledge, understanding, skill and sometimes-negative attitude relating to change. This leads to rural farmers to either delay or take no action at all about suggested innovations (Singh in Mckinlay, 2001). This unfortunate scenario therefore makes the researcher deemed it necessary to investigate the impacts of ICT on the development of agriculture in Benue State.

Statement of the Problem:

Benue state is a vast land with different farming systems involving a variety of crop, cereals, legumes, fibres, roots, vegetable and tubers and so on. The agricultural sectors play a key role in the economic development of Nigeria in the terms of food, foreign exchange from exports, raw materials for industries and employment. Unfortunately information about these practices does not reach the rural farmer on time and may not get to them at all. Perhaps the use of information and communication Technology might instigate this problem. Information specialists and extension officers have the primary responsibility of disseminating agricultural information to user population. They are expected to collect all relevant agricultural literature and make it available through various methods such as current awareness services; selective dissemination of information, translation services. ICT is seen as an important means of achieving such a transformation when used as a broad tool for providing local farming communities with scientific knowledge. Against this background, it is clear that farmers need new improved technologies to transform the traditional agriculture and increase production above the level of traditional technique.

Majority of Benue State farmers are small scale farmers using traditional methods to grow complex mixture of crops. The farmers are poor not because they are small but because they do not have access to valuable information in other to improve their productivity. Information Technology can be of assistance by enabling extension worker to gather, store, retrieve and disseminate a broad range of information needed by farmer thus transforming from extension workers into knowledge workers.

Agricultural extension systems in most developing countries are underfunded and have had mixed effects, much of the extension information has been found to be out of date, irrelevant and not applicable to small farmers' needs, leaving such farmer with very little information or knowledge and advice as an input for modern farming to improve their productivity. This has become the major problem for the development of agriculture in Benue State.

Objectives of the Study

The general objective of this paper is to investigate the role of ICT on the future of agriculture development in Benue State. Specifically, this study;

1. Examines the impacts of ICT on agriculture development in Benue state.
2. Determines the factors limiting the use of ICT among farmers in Benue State.

3. Identifies the consequences for farmers not using ICT in Benue State.

Research Questions

The research paper is guided by the following research questions:

1. What are the impacts of ICT on agriculture development in Benue State?
2. What are the factors hindering the use of ICT among farmers in Benue State?
3. What are the consequence of farmers using ICT in Benue State?

Methodology

The study adopted descriptive survey design. Secondly and primary sources of data collection was used by this paper as sources of information. The derivation of data was sourced from questionnaire and interviewing the farmers as a primary source of information and text books, journals, governments' publications, seminar/workshop papers and national dailies from the secondary source.

Population, Sample and Sampling Techniques of the Study

The population of this study comprises of all the population of Benue state. The total population of Benue State based on the 2018 National Population Commission (NPC) assumption is 5,741,800 people spread across the twenty three (23) local government areas of the state. This population is large and therefore studying the entire population was very difficult. Also, not every member of this population is a farmer that have the information needed to answer the research questions.

Thus, the application of statistical formula becomes imperative in determining the sample size. The sample size will be determined using Taro Yamane's Formula (2004) which has been proportionately shared as indicated below:

$$n = \frac{N}{1 + N(e)^2}$$

Where

n = sample size

N = population of the study

e = tolerable error (5%)

$$n = \frac{5,741,800}{1 + 5,741,800(5\%)^2}$$

$$n = \frac{5,741,800}{1 + 5,741,800(0.05)^2}$$

$$n = \frac{5,741,800}{1 + 5,741,800(0.0025)}$$

$$N = \frac{5,741,800}{1 + 14354.5}$$

$$N = \frac{5,741,800}{14355}$$

$$N = 399.98$$

Approximately. N = 400

Conceptualising Information and Communication Technology or Technologies (ICT)

Blurton (2004) ICT is defined as a "diverse set of technological tools and resources used to communicate, and to create awareness, disseminate, store, and manage information". ICT is an umbrella term that includes any communication device or application,

encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. ICT technologies are used by skilled professionals to create, operate, design, maintain, programme and deploy information. In a nutshell, ICT connotes technologies (or application of scientific knowledge) in the communication of information. These technologies are both hardware and software.

Review of Literature

ICT; Information communication technology has proved useful in most human endeavours and as such continuous effort has been geared towards improving on the technologies that facilitate the processing and communication of information. This is because information is the basis for human existence and surviving in information age depends on the availability and accessibility of information networks. Ogbomo and Ogbomo (2008), one of the identified agents through which the world will constantly experience change is technology. Hassan, Hassan, Shaffril, and D' Silva, (2009) defined Information Technology as a number of components including skills of accessing, recording, arranging, manipulating and presenting data or information using tools and software. It also includes Communication Technology (CT) which consists of telecommunication tools used to disseminate and access information. Ogbomo and Ogbomo also defined Information Technology as the use of man-made tools for the collection, generation, communication, recording, re-management and exploitation of information. It includes those tools and application by which information is transferred, recorded, edited, stored, manipulated or disseminated.

Information and communication technology holds great promise for agriculture in developing countries like Nigeria in that it provides access to information and advice to improve farming practice as well as marketing of agricultural produce. Given that Nigeria is an agrarian society with over 70% of the population depending on agriculture for livelihood and agriculture accounting for 23% of the country's GDP (Asoegwu and Asoegwu, 2007). Nigerian farmers are yet to embrace the advent of information technology. Despite the fact that agriculture provides the bulk of employment, income and food for the rapidly increasing population and also, supplies raw materials to industries, farming in Benue state has been characterized by the use of obsolete farming practices, poor government rural development policy conception, poor implementation of viable policies, ineffective extension services and the challenge of accessing market for agricultural produce (Itodo, 2011). To this effect, Nwachukwu (2011) referred to Nigeria as an "information-poor" country. An information society is one that makes the best possible use of ICTs. Martin in Itodo (2011) supports this assertion by describing it as a society an information society as one in which the quality of life, as well as prospects for social change and economic development, depend increasingly upon information and its exploitation. In such a society, according to Martin, living standards, patterns of work and leisure, the education system, and marketplace are all influenced by advances in information and knowledge. This is evidenced by an increasing array of information-intensive products and services.

Access to knowledge and information in many forms is the key element of agricultural competitiveness at household, state, regional and international levels (United State Agency for International Development, 2003). Agricultural information and the means of its acquisition account for an increasing proportion of the final price. However, the information by itself is insufficient unless it gets to farmers at the right time, and this can only be facilitated by the use of ICT tools such as the mobile phone, computer, internet, fax, television, radio, e-mail, digital and non-digital libraries, etc. in processing and dissemination of information in agricultural sector.

These technologies that facilitate the use, exchange and reliability of information have always been the important aspect of agriculture and marketing of agricultural products. Farmers, like other businessmen, needs to take certain decisions crucial to their production, for example, farmers must make critical decisions such as what to and when to plant, and how to manage pests, how to cultivate and harvest, where to store and sell and, at what price to sell, while considering off-farm factors such as environmental impacts, market access, and industry standards all depend on knowledge and exchange of information (Wesseler, Elder & Veldhuizen, 2004). Chisita (2010) noted that information technology is an indispensable tool for empowering small and large scale agricultural farmers effectively so that they will be able to make informed decisions. Chisita observed also that access, efficiency and affordability of information technology is the major barrier in the battle to improve agricultural productivity among farmers. However, this challenge can be alleviated through the exploitation of innovative solutions that integrate information and communication technologies in the marketing of agricultural products. Through the use of Computer, Mobile Phone, Internet, Radio, Television, Camera, Telephone, Video Player, Fax Machine and Printer.

The Role of ICTs in Agriculture Development.

ICT contribute immensely to the development of agricultural especially in developing nations in the following ways:

ICTs help extension workers and researchers to adopt improved agricultural practices and disseminate them to farmers. They provide agricultural information that is relevant to farmers such as agricultural techniques, commodity prices and weather forecasts to farmers. The utilization of ICTs, especially mobile technologies, help agricultural producers, who are often unaware of commodity price in adjacent markets and rely on information from traders in determining when, where, or for how to sell their produce, to have relevant and timely information or its misinterpretation by middle traders has serious consequences for agricultural producers, leading to charging low prices or high/low produce supply in the market. ICT especially mobile phones are very effective in the rural areas.

ICTs provides very important information to farmers such as high yielding variety of crops and improved breeds of animals for onward development of agriculture. In an interview with the manager Oracle farms in Makurdi, Benue State. He review that most of their crops planted this cropping season (2020) were obtained through the use of internet. He also review that most of the animals and fish acquired were advertised via internet which he put a call crossed to the seller which facilitate their supply to Oracle farm.

With the help of ICTs information about fertilizer, herbicides, insecticides and their methods of applications gets to the farmers within the short possible time. This information get to the farmers through the use of radio and mobile phones especially to the rural areas and through internet services for those who could afford computers and other appliances that can access internet services. ICTs enable farmers to have access to information about weather forecast, the amount of rainfall within a giving geographical area in a particular year. This enabled farmers to cultivate their crops with regards to specifications of the weather.

ICT provide information on production equipment and agricultural inputs. The information is gathered from enterprises selling equipment for soil processing and other production equipment, seed and the other agricultural inputs. Information collected in such way is offered to farmers.

Market information, In order to support farmers in gaining the best prices for their products, information on market of various agricultural products should be created. Aims of market information activities are to show review of prices on various markets and to facilitate reorientation of farmers' production to markets where better prices are expected. Farmers need overall reviews of food market information. The reviews present valuable information on some

most important import and export markets. It can support to provide forecast information on main agricultural products in subsequent years. Such information helps farmers and traders to make decisions when and how to sell their products (do they sell just after harvest or do they store products in expecting higher season prices). In combination with the other data (for example, available budget of the farm enterprise) such information can be used for decision making about crops which should be produced in next season.

The other information of interest for farmers and their families, Examples of such information includes weather forecast, availability of credit, and expert advice about maintaining crops in healthy state, etc.

There is no doubt that improved information flow has positive effect on the agricultural sector and individual producers, but gathering and distribution of information is difficult and expensive activity. ICT offers capability for increase quantity of information that is available to all stakeholders in agricultural sector and for reduction of information distribution costs to all interested users. ICT can obtain the information to farmers, even when they are in remote places.

Farmers need ICT applications supporting operative aspects of agricultural production for increase of productivity (applications for real-time decision making based on broadband wireless internet, e-mail and chat applications enriched with pictures, video clips and sounds, etc.). These applications are going to play great role in operative management of agricultural production in future. A good example of ICT use for agriculture improvement is mobile communications. This ICT is used as a tool for access to market information (prices), weather forecast, advice of agricultural experts, etc. Today, it is most accessible technology that is available to great number of people including marginalized people in remote, rural areas. All these technological changes give advantage to farmers in creation of effective and inexpensive agricultural production and marketing programs and give opportunity for reduction of poverty and improvement of their life quality (Gorla, 2009).

Contribution of ICT to improvement of agricultural sector

The potential of ICT in agricultural sector can be used on two ways:

1. Directly, where ICT is used as a tool that contributes directly to productivity of agricultural production, and
2. Indirectly, where ICT is used as a tool that provides information to farmers for making quality decisions in efficient management of their enterprises.

Direct contribution of ICT to agricultural production - Precise farming that is popular in developed countries is based on intensive use of ICT and it contributes directly to agricultural productivity. In order to increase agricultural production, techniques of remote sensors with support of satellite technology, geographic information systems (GIS), agronomics and soil science are applied. ICT supports farmers to track and react to weather condition changes on daily basis. Meteorological stations on field supplied with solar energy can be connected to computers of farmers in order to send information on current temperature of air and soil, rainfall, relative humidity of air, moisture of leaf, moisture of soil, length of day, speed of wind and solar radiation. All these techniques and technologies of precise farming require great capital investments which are payable for big farms. They are appropriate for corporate farming while they are less suitable and efficient for small enterprises and farms.

Indirect Contribution of ICT to agricultural production - Indirect benefits of ICT are manifested in enabling of farmers for decision making and should be realized in the future development of agriculture. Farmers need timely and reliable sources of information that is explained in previous section of paper. Presently, farmers depend on conventional sources of information that are unreliable and do not give timely information. Changes in the agricultural environment that farmers face make information not only useful but necessary for them to stay competitive and survive on globalized market.

However, efforts on providing of the information will be wasteful if farmers are not able to use ICT. However, for farmers to use internet services for searching useful information and communication, elementary computing literacy is required. Through internet, they can track prices and communicate with colleagues around world as often as they want. They can exchange ideas, ask questions and get answers on specific themes. Of specific importance is receiving advices from researchers and agronomists on cultivation of crops and rearing of animals. ICT influences on reduction of gap between agricultural researchers and farmers that leads to high developed agriculture having enormous contribution to national economy and society.

Factors Affecting the Dissemination of Agricultural Information to Peasant Farmers.

There are number of factors which makes efforts to communicate to Nigerian farmers more or less effective. One obvious factor mentioned here is man's ability to think and to draw logical inferences. This is of course something that is of importance for most aspects of human behaviour and it's certainly so for our communication behaviour. A second, category of communication skills is related to the ability one can have in coding and decoding messages; examples are:

- The ability to read and write (literacy)
- The ability to speak certain language
- The ability to understand not only the language but all symbols of information communication in a particular area.

Lack of experience combined with illiteracy restrict farmers' imagination and make it difficult to transfer new practices to them. To achieve best results with visual aids in extension with illiteracy for example, the ICT in particular, visual, the oral and the print should all be used together, so that the farmers can connect them in his mind on the spot.

Attitude of Information Agent: Perhaps one of the largest obstacles in disseminating agricultural information to the farmers is that of attitude and self-understanding of the agent himself. "Attitude can be described as "the total of knowledge, beliefs and feeling about a certain subject that help us form an opinion on that subject". In discussing the importance of attitudes for the effectiveness of our communicative behaviour, it is useful to distinguish between the attitude that we have towards ourselves and the people with whom we communicate and the attitude that we have towards the subject matter of the communication. Farmers in our type of economy have limited knowledge and their speech patterns and thinking tend to be different. This tends to restrict their imagination and make their understanding of scientific terms, difficult, particularly abstract concepts. Education is presumed to enhance farmers' ability to receive, decode and understand information. The fact that farmers have low levels of education and that education enhances comprehension should be taken into account, if not; it is unlikely that they will completely understand any new concept or idea. Information has a remarkable characterizes that marks it out from other resources (money, people, oil, timber) in that it deployment to a particular use does not or need not, reduce its value or content or availability for other uses. Modern ICT provides remarkably powerful and cheap alternative means of dissemination, in so far as information is useful, the low cost of replication and the ease of wide dissemination provide good reason for public institutions to recognize information as an important resource, a public good and a valuable agent for development.

Types of Information Required by Farmers:

According to the majority of farmers interviewed the type of information needed generally for agriculture development includes:

- Application of Fertilizer for higher productivity

- Government policy on food production.
- Crop Diseases, Preventive measures and in case of disease curative measures
- Educating farmers on what needs to be done at pre-harvest stage and post-harvest stages to avoid post-harvest losses.
- Educating farmers on modern ways of preserving fruits and vegetables because they are perishable in nature.
- Advice on the vegetable crops to be sown, timing of sowing, varieties to be used, areas for growing particular crops, preventive measures for diseases which pesticides should be used, herbicide usage, storage facilities available, measures to be adopted to enhance proper preservation.
- Information about Crop and Animal Diseases and Preventive Measures
- Information's on weed control
- Modern method of crops storage.
- Disseminating information about improved farm practices
- Information on agronomy and animal husbandry
- Information about the high yielding crops.

Factors Limiting the Use of ICT among Farmers in Nigeria

There are still very serious limitations for ICT use; particularly in the rural areas despite the world-wide ICT revolution. Principal one among them are:

1. The low-level ICT readiness of not only the Research and Extension organizations but indeed of the developing countries themselves. Most developing countries have very poorly developed ICT infrastructural facilities including poor and limited number of telephone lines, most of which are still in the analogue mode.
2. Very low level capacities of gateways and portals to international networks/satellite systems.
3. Erratic and unstable power supply and high cost of alternative power through standby generators.
4. Limited and very high cost of telephone services either by land lines or GSM. It has been estimated that Nigeria has the highest GSM call rates in all developing countries that have the facility. Whereas the telephone is part of everyday normal life in developed countries and ordinarily taken for granted, it is a different matter in developing countries where it is either non-existent, terribly limited, services very abysmal and cost astronomical. The teledensity for Nigeria is about 1 for 400 - 500, not comparable to South Africa. Despite the phenomenal rise in the availability and access to phone lines, the extension service has not taken commensurate advantage to exploit the opportunity.
5. Limited access to computers and even worse access to the internet, making even basic inter and intra organizational networking for information exchange almost impossible. Lack of a communications policy by governments of most developing countries or policy inconsistencies in the sector that discourage private sector investment.
6. High level of rural poverty;
7. High level illiteracy of farmers and computer illiteracy among researchers, and extension Limited access to world-wide databases on CD-ROMs or DVDs due to foreign exchange constraints. With respect to the Internet, major problems to contend with include; content. The vast majority of sites are not relevant to rural people and it is quite a problem finding the few sites that have the technical information on agriculture market information and useful contacts that are relevant to their needs.

Data Presentation and Analysis

A total of 400 copies of questionnaire were taken to the field and administered to 400 respondents and 380 or 98% copies of the questionnaire were returned answered without any

damage. The presentation, analysis and interpretation of data were organized around the four research questions.

Table 1. The Relevance of ICT to Modern Farming System in Benue state.

Items No	Items Description	Responses				Total
1	ICT provide basic information to farmers	SA 180 (47%)	A 150 (39%)	D 40 (11%)	SD 10 (3%)	380 100%
2	Educate farmers about new farm implements.	240 (63%)	100 (26%)	25 (7%)	15 (4%)	380 100%
3	Majority of the farmers are not educated.	250 (66%)	115 (30%)	9 (2%)	6 (2%)	380 100%
4	Erratic and unstable power supply.	280 (74%)	90 (24%)	5 (1%)	5 (1%)	380 100
5	Farmers not using ICT will not have access to certain information/new technology	280 (74%)	90 (24%)	6 (1%)	4 (1%)	380 100%

Source; Field Survey, 2020.

The table above represents the importance of ICT on modern farming in Benue state. The data as presented above shows that, 160 respondents representing 42% strongly agreed that ICT provide needed information to farmers in Benue state. 150 respondents representing 39% agree with the above view why 51 respondents representing 14% disagree and 19 respondents representing 5% strongly disagree with the above assertion. The above data entails that with aid of ICT in Benue state farmers get their needed information on carrying out farm activities especially in areas like improves seeds, fertilizer application, herbicide and insecticide.

Items 2: The above table indicates that, 160 respondents representing 42 per cent and 150 respondents representing 39% respectively Agreed and Strongly Agree that, educate farmers on various aspect of farming activities while 51 respondents representing 14% and 19 respondents representing 5% disagree with the above perception. This indicates that ICT educate farmers on various aspects of farming activities.

Item 3: This item explains the factors militating against the usage of ICT among farmers in Benue state.100 respondents representing 26% and 160 respondents representing 42% agreed that majority of farmers are not educated, this make many farmers on able to use ICT facilities like computer cell phone and other ICT gazette while 70 respondents representing 19% and 50 respondents representing 13% disagree with the above view. This entails that illiteracy among farmers in Benue state hinders the usage of ICT by most farmers.

Item 4: 180 respondents representing 47% and 100 respondents representing 26% agreed that erratic and unstable power supply affect the usage of ICT in Benue state while 45 respondents representing 12% and 55 respondents representing 15% disagree with the above notion. This indicates that unstable power supply affect the use of ICT appliances among farmers.

Item 5: 150 respondents representing 40% and 190 respondents representing 20% attest to the fact that, illiterate farmers who do not use ICT, did not have access to modern information farming system while 20 respondents representing 5% and 20 respondents representing 5% disagreed. This shows that, farmers who did not used ICT did not have access to modern farming system.

Findings

The findings of this study clearly revealed that the level of information dissemination is not far from what it should be if IAR is to live up to its mandate of making its work beneficial to farmer. There is also the need to translate such findings into other local languages outside English for effective dissemination of new innovations. In line with modern trends in knowledge dissemination, the internet should be explored as a way of reaching high net farmers who can access such right in their homes. The radio still remains the best mode of reaching farmers in terms of access to research information's so the Institute should liaise with NGOs, States and LGA with a view to working out modalities for making these items (fertilizers, improved seed varieties, herbicides, pesticides etc.) available at subsidized rates to farmers. Others modes of enlightenment such as the use of cooperative bodies should be explored in order to make research findings available to rural farmers.

Farmer needs information on every member of his family enterprise from the complex matter of production through the marketing of the products. In other words, farm information is an important ingredient in the agricultural development process. The findings also identifies the various channel of communication used by farmers, these include the use of mass media, particularly the radio, personal contact with extension workers and personal contacts with other farmers. The level of formal education was low among the respondents; i.e., more than 50% of the respondents did not received formal education. The findings of this paper also reveal that there is persistent shortage of power supply in the entire state which has become very difficult for the usage of ICT facilities in Benue State.

Conclusion

The general objective of this research study was to evaluate the use of ICT in agricultural development. The findings of the study revealed that ICT channels had positive impact on creating awareness for agricultural development. The reason advanced by farmers for increase productivity were, adequate information from ICT channels about recommended farm practices, increase farm size, use of improved varieties. Finally, the study clearly showed the importance of using ICT channels in the dissemination of agricultural information and consequently enhanced agricultural development in the state.

Recommendations

In view of the above findings the following recommendations are hereby made;

1. The Government should create an integrated agricultural information system on agro-technologies and techniques, pricing and market information so that strategic information could be provided to farmers and other stakeholders at national, provincial and district levels.
2. There is need to intensify the use of radio and television programmes and integrate new technologies as a means to reach extension workers and farmers.
3. The Government and NGOs should sensitize the farmers on the benefits of using ICTs and ICT education in the schools and colleges/universities should be made compulsory to address the shortage of ICT skills.
4. With Public-Private Partnership (PPP) ICT infrastructure should be developed across the state to ensure that farmers have access to ICT technologies.
5. Government should provide an enabling environment to encourage software developers by reducing taxes to develop packages that are suitable for local market conditions.
6. The existing communication tower infrastructures should be upgraded to ensure better cell phone and internet coverage. Fibre Optic Cable should be promoted to improve the quality of network connectivity.
7. Stable power supply accessible telecoms infrastructure in rural areas should be developed to enhance usage of ICTs in the state.

8. Creating ICT awareness among all farmers nationally as well as educating the local farmers on the usage of ICT equipment's effectively.

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