Research

Agricultural Extension and Advisory Officers' Familiarity and Competence for Application of ICTs in Agricultural Advisory Services Delivery in Imo State, Nigeria

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ABSTRACT

This paper examined the familiarity and competence of agricultural extension staff with and in use of ICT devices for communication to and with farmers. The specific objectives were to ascertain extension officers ' familiarity with ICT devices; identify perceived ICT capability competence of extension officers; and identify perceived challenges facing extension staff use of ICT devices. One hundred and twenty (120) extension staff of the Imo ADP were purposively selected and interviewed. Percentage and mean were used to analyse the data. The findings reveal that the extension agents were familiar with radio, television, computers, internet, projector, printer, ipads, ipods, web-boards, interactive white boards among others. They have the ability to use computers, knowledge of the internet, use computers to solve problems, data processing and sending text messages - Lack of training in ICTs, poor infrastructure, and poor power supply, high cost of ICT devices and high cost of maintenance were challenges facing extension personnel in ICT use. To improve ICT use by extension offices, training should be given regularly to staff, availability of maintenance shops be encouraged and cost of ICT device be brought low.

Keywords: Capability, ICT application, ICT competence, Agricultural information, Extension staff.

INTRODUCTION

Information and Communication Technologies (ICTs) play a critical role in facilitating rapid, efficient and cost effective knowledge and information management and communication to the farming community. Muriithi et al. opined that ICTs have provided humans with a possible pathway of access to agricultural information [1].

In the words of Kabura information and communication technologies (ICT) have the capacity to improve farm business and networking between farmers, buyers and extension agents and also facilitate access to hidden markets [2]. A World Bank report on ICTs for development indicated that connectivity, whether through Internet or mobile phones, is increasingly bringing market information, financial services, and health services to remote areas, and is helping to change people's lives in unprecedented ways [3].

With a large number of farmers per EA (more than 3000 families per officer), catering to individual needs, requirements and queries of farmers is now beyond the existing capacity and resources [4]. Applications of ICT will enable people to communicate effectively thus overcoming

the limitations of time and space in extension service. This is a viable solution to the problem of reaching plenty farmers at a time [5]. ICT empowers people by availing them with opportunities to learn, generate income and enable people to actively participate in decision making process [6]. In providing solutions on appropriate ICT applications for improving extension services, skills and competencies of stakeholders need to be improved while providing necessary advocacy.

ICTs and mobile-enabled agricultural services act as instruments to deliver extension services and help to create awareness amongst farmers [7]. ICT have shown potential to improve extension and advisory services. Advances in information technology, biotechnology, and nanotechnology have put agriculture at the threshold of an exciting frontier of opportunities to advance economic growth, sustainability, and the building of human capabilities. Acknowledging this, Chamala said that extension practitioners in the Cooperative extension system will need to develop new educational curricula, programs, and delivery systems to facilitate adoption of these technologies [8].

Because of the changing nature of our fast developing world, there will be new staff competency in the Information Communications, Web site development, direct customer assistance technologies (such as use of voice-over-IP), electronic management of science-based information, technical applications (such as geographical information system and nanotechnology), and delivery of research-based extension information and educational programming through such means as e-Extension, distance learning, and Web-based. For extension to be effective there will be a need to educate the users including the managers and the general public on how to use technology and the World Wide Web [9].

In most developing countries, Nigeria inclusive however, the extension system does not have a modern mechanism likewise ICT to acquire and deliver information to farmers [2]. This paper therefore, investigates extension workers' familiarity and competence for application of ICTs in order to capture and convey agricultural information to the farming community.

METHODOLOGY

The study was carried out in Imo State ADP (Agricultural Development Project). The population of the study consists of all extension technical Officers, extension supervisors, field agents of Imo State ADP. Stratified random sampling technique (a sampling technique used when the sample does not constitute a homogenous group) was used in selecting the extension respondents for the study. The first strata composed of 18 Technical Officers, ZEOs and SMSs), drawn from the three agricultural zones (**Table 1**). The second group comprised 39 Block Extension Supervisors (BES), while the third strata comprised of 113 Extension Agents (EAs) as shown in **Table 1**. Out of the 18 ZOEs/SMSs, 13 were randomly selected and 37 BESs were also selected randomly, while 70 EAs were randomly selected from 113, making a total of 120 extension officers. Data collected with questionnaire were analysed using descriptive statistics. This includes use of percentage presented in frequency distribution table to achieve objective 1. While objective 2 was achieved on a three point Likert-type scale of highly capable, capable and not capable, assigned scores (weighted index) of 3, 2 and 1. The weight index of 3, 2 and 1were added to give 6 divided by 3 to give 2.0. Any mean value less than 2.0 was taken as not capable. Objective 3 was achieved on a four point Likert-type scale of strongly agree, agree, disagree and strongly disagree weighted 4, 3, 2 and 1. The weight index was added to give 10 divided by 4 to give 2.50. Any value less than 2.50 was not accepted as a challenge faced by extension staff in their use of ICT devices.

Table 1: Distribution of Imo ADP extension personnel.

Category	Owerri	Orlu	Okigwe	Total selected
ZEOs/SMSs	9	4	5	13
BESs	20	8	11	37
Eas	56	25	32	70
Total				120

Source : Imo ADP

RESULTS AND DISCUSSION

Table 2 showed that for an extension officer to have command over his duties, he must first be familiar with his tools and able to use them when situation calls for that. All the extension officers interviewed were familiar with the ICT tools for their work. They are familiar with desktop/laptop computers (100%), digital camera (91.6%), printer (100%), photocopier (100%), tablets (84.2%), ipods/ipads (99.2%) respectively. Other tools included microphones (100%), facebook (53.3%), and video games (87.5%), USB/Wifi (95%), flash disc/drive (87.5%), interactive boards (90.8%), DVDs and CDs (78.1%). Their familiarity with use of radio (100%), and television (100%) was high.

The use of these devices would make them capable of delivering advice to farmers easily and successfully. The use of the following tools were high-desktop/laptops (83.3%), radio (100%), television (100%), DVDs/CDs (90%), microphones (95%), projector (65.8%), printer (66.6%), photocopier (46.6%), tablets (53.3%), among others. Other tools were digital cameras (29.2%), pen drive (30.8%), scanners (20%), flash drive (58.3%), facebook (8.3%) web-boards (15%), and ipods/ipads (17% and 40%) respectively.

Familiarity with a tool is a factor, while its use is another and important factor. The tools with low percentage response in terms of usage could be as a result of their sophistication, cost, and economic standing of the extension officer. The table has about 20 tools, 10 has use response of 50% and above, while the remaining 10, has use response below 50%. The extension staff should improve in their ability to use these tools because the success of their work depends on familiarity and frequent use of the tools to solve problems. The use level is not high, this is not encouraging at all.

Table 2: Extension officer's familiarity and use of ICT devices.

Devices/Tools	*Familiarity percentage	*Use percentage
Desktop and Laptops	100	83.3
Projector	100	65.8
Digital Camera	91.6	29.2
Printer	100	66.6
Photocopier	100	46.6
Tablets	84.2	53.3
Pen Drive	83.3	30.8
Ipods	99.2	17.5
Ipads	58.3	40
Web boards	56.4	15
Scanners	54.2	20
Microphones	100	95
Interactive white Boards	90.8	53.3
DVDs and CDs	78.1	90
Flash Drives	87.5	58.3
Video games	87.5	37.5
USB or Wifi	95	25
Radio	100	100
Television	100	100
Facebook	53.3	8.3
*Multiple responses		

ICT capability of extension workers in Imo state

Table 3 showed the command extension workers have over material resources for discharge of their duties-ICT tools. With a discriminating mean (M) index of 2.0, the table showed the ICT capability of extension workers. The following capability are exhibited by extension staff ability to use computers (M=2.81), this is also called computer literacy. Knowledge of the internet (M=2.31), use of emails/goggle accounts (M=2.51), word processing (M= 2.30), use in making calculations (M=2.20), use of power points for presentations (M=2.41), sending text messages to farmers (M=2.81), ability to explain use of located data use to solve farmers problems (M=2.30), and collaboration, share and exchange information (M=2.30).

Computer literacy is a stepping stone to efficient and effective use of ICT tools. The changing nature of agricultural extension practice in our changing world demands the compulsory acquisition of computer skills. This can be seen in the areas of using the internet freely, checking emails and goggle for recent developments, making presentation using power points, explaining information received, and exchanging same among others.

Again, the extension workers are not competent in certain important areas as indicated by the low mean response of below 2.0. The areas included photo editing (M=1.45), use of computers for games and shows (M=1.37), data processing work (M=1.07), use to identify information location (M=1.80), use to prepare work plan (M=1.61), use to answer question (M=1.45) and ability to read, interpret icons (M=1.83).

The table revealed that core extension communication practices are not fully handled such as photo editing which gives a visual picture of extension work demonstration for better understanding of factual information. An extension worker that cannot handle pictures, photographs, games, and data, locate icons and explain them will not succeed in his discharge of duties. Again, preparation of work plans and finding answers/solutions to problems entails the use of ICT tools and gadgets. Where the skills for the above are lacking, the capability of such an agent is in doubt.

Table 3: ICT capability of extension workers.

Capability indicators	Mean	SD
Ability to use computers (Literacy)	2.81	0.19
Knowledge of the internet	2.31	0.85
Use of emails/Google accounts	2.51	0.41
Word Processing	2.3	0.61
Use in making calculations	2.2	0.45
Photo editing works	1.45	0.54
Use of computer for games/shows	1.37	0.7
Use of power points for presentations	2.47	0.37
Use to maintain farmer data base	2.04	0.76
Data processing work	1.07	0.52
Text messaging to farmers	2.81	0.74
Use to identify information locations	1.8	0.41
Use icons to locate/generate information	1.79	0.58
Ability to explain use of located data	2.4	0.59
Use to solve farmer problems	2.3	0.45
Use to prepare simple work plan	1.61	0.54
Use ICTs to answer farmer questions	1.9	0.078
Collaboration, share/exchange information	2.3	0.98
Understand computer mediated Communication	1.54	0.61
Ability to read/code computer information	1.76	0.59
Ability to save, retrieve digital data	1.45	0.76
Ability to read interpret Icons	1.85	0.5

Challenges faced by extension workers in using ICT devices

Table 4 showed that application of ICT tools by staff is limited on account of lack of training in ICTs with a mean response of (M=2.85), lack of ICT use awareness (M=2.40), poor ICT infrastructure (M=2.74), poor access to internet (M=2.50), limited access to computer (M=2.41), low level of basic computer skills, lack of experience in browsing (M=2.40), non-availability of computer laboratory, Inability to use smart phones (2.30), poor power supply (2.90), high cost of ICT devices among others. This finding is in line with a study by Derso et al. conducted in central highlands of Ethiopia that lack of training in ICTs, lack of ICTs use awareness, poor infrastructure, lack of agricultural information centre were the major constraints while using ICTs in agricultural extension [10].

Table 4: Challenges faced by extension staff in using ICT device.

Challenges	Mean	SD
Lack of training in ICTs	2.85	0.74
Lack of ICT use awareness	2.4	0.41
Poor ICT infrastructure	2.74	0.58
Lack of agricultural information Centre	1.89	0.24
Poor access to internet	2.5	0.77
Limited access to computer	2.41	0.67
Low level of basic computer skill	2.9	0.87
Lack of experience in browsing	2.4	0.53
Non availability of computer laboratory	2.76	0.68
Inability to use mart phones	2.3	0.98

Poor power supply (erratic)	2.9	0.49
High cost of ICT devices	2.84	0.61
High Maintenance cost of ICT	2.61	0.59

CONCLUSION

The Extension officers were familiar with ICT tools such as desktop and laptops, projectors, printers, photocopies among others. They use few of the tools and they need to improve in their use of the other tools. They are capable in using certain ICT tools and not capable in others such as photocopies, use of computer for games, data processing among others. They are faced with the challenges of lack of training in ICTs, poor power supply, high cost of ICT device and high cost of maintenance. It is recommended that tray be other organized for the m to learn use of ICT.

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