

Contributions of ICTs towards Agricultural Development Among Agricultural Researchers in Ibadan North West Local Government, Oyo State, Nigeria

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Abstract

The study examines the contributions of Information and Communication Technology (ICT) towards Agricultural Development among Agricultural Researchers in Ibadan North West Local Government Area of Oyo State. Random sampling technique was used in the selection of 50 respondents that constitute the sample size for the study. Primary data were collected through the use of a well-structured questionnaire from the Agricultural researchers. Frequency counts, Percentages and Pearson Product Moment Correlation (PPMC) were used to analyse the data. Analysis of the data revealed collected that majority (70%) of the respondents are male, (64%) are married and (58%) had ICT usage experience of 1-5 years. The result also shows that the mean age of the respondents is 36.5 years while (62%) had Post Graduate degree education. There is a significant relationship between contributions of ICT facilities to agricultural development and selected agricultural websites accessed which are worldagriculture.com ($r = 0.044$, $p = 0.002$), moa.gov.jm ($r = 0.364$, $p = 0.010$), iita.org ($r = 0.358$, $p = 0.012$) and agweb.com ($r = 0.435$, $p = 0.002$). The study therefore recommends that internet facilities should be made available and affordable to agricultural researchers to enhance their accessibility, usage and contributions to agricultural development.

Keywords: Contributions, ICT, agriculture, researchers, development

Introduction

¹Information has been the driving force to so many human activities in search of developing one-self, which has created a basis for the need to know. It has been said that "Ignorance is a disease and knowledge is its cure, which is achieved by obtaining information" (Momah, 1999). This therefore leads to formation of Information and Communication Technologies (ICT). An ICT is any device, tool, or application that permits the exchange or collection of data through interaction or transmission. ICT is an umbrella term that includes anything ranging from radio to satellite imagery to mobile phones or electronic money transfers. The increases in

their affordability, accessibility, and adaptability have resulted in their use even within rural homesteads relying on agriculture. New, small devices (such as multifunctional mobile phones and nanotechnology for food safety), infrastructure (such as mobile telecommunications networks and cloud computing facilities) have proliferated (ICT in Agriculture, 2012). Many of the questions asked by farmers (including questions on how to increase yields, access markets, and adapt to weather conditions) can now be answered faster, with greater ease, and increased accuracy. Many of the questions can also be answered with a dialogue—where farmers, experts, and government can select best solutions based on a diverse set of expertise and experience. The ability of ICTs to bring refreshed momentum to agriculture appears even more compelling in light of rising investments in agricultural research, the

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private sector's strong interest in the development and spread of ICTs, and the upsurge of organizations committed to the agricultural development agenda.

The place of Information and Communication Technology (ICT) in agricultural development cannot be over emphasized. This is because the world is becoming a global village where access to information is faster, quicker and easier than one would ever think of. More so, with the ICT facilities all over the world, there is need for researchers to make use of these facilities in order to master their field of study in agricultural development. As this is done, there will be more impartation of knowledge, skill and experience to the researchers and extension agent to better development in the field of agriculture. ICTs have the potential and ability to transform agricultural extension if they are adopted and properly applied. The contributions of ICT facilities in extension services include: availability of information, making farmers more intelligent, connecting farmers directly by passing extension works, new skill for extension workers and enhancing the feedback between extension and clients (FAO, 1993). ICT play a necessary role in addressing these challenges and uplifting livelihoods of the rural poor. ICT have helped a lot in some agricultural institute in developing countries in order to enhance the knowledge and understandings of researchers which facilitate the innovations taking to the farmer's and help in transforming information directly by the researchers to the farmer whose are not chance to attend agricultural extension meeting or services. Five main trends have been the key drivers of the use of ICT in agriculture, particularly for poor producers: low-cost and pervasive connectivity, adaptable and more affordable tools, advances in data storage and exchange, innovative business models and partnerships, and the democratization of information, including the open access movement and social media. These drivers are expected to continue shaping the prospects for using ICT effectively in developing-country agriculture (World Bank, 2011) Information and communication have always mattered in agriculture. Ever since

people have grown crops, raised livestock, and caught fish, they have sought information from one another. People seek to obtain relevant and purposeful information by asking questions such as: What is the most effective planting strategy on steep slopes? Where can I buy the improved seed or feed this year? Who is paying the highest price at the market? How can I participate in the government's credit program? Producers rarely find it easy to obtain answers to such questions, even if similar ones arise season after season. Farmers in a village may have planted the "same" crop for centuries, but over time, weather patterns and soil conditions change and epidemics of pests and diseases come and go. Hence, this study is necessary to enlighten the public on various ways by which ICT facilities has contributed to agricultural development. There are technological divide (great gaps) in ICT facilities and a lot of web-based information which available to the real need of researchers and extension workers for Agricultural development. The Agricultural researchers are still lagging behind in the use of ICT facilities and the benefit contributed by ICTs, compare with their counterparts in many other developing areas, in transforming and developing Agriculture (FAO, 1993). Arising from these challenges, the study is designed specifically to: determine the level of utilization of available ICT facilities among the researchers, examine the agricultural websites accessible to Agricultural researchers, and describe the socio-economic characteristics of agricultural researchers in the study area.

Methodology

The study was carried out in Ibadan North West Local Government Area of Oyo State. It shares boundary with Ido, Ibadan South West and Ibadan North local governments. The headquarters of the study area is located at Dugbe-Onireke. It has an area of 26 km² and a population of 152,834 at the 2006 census. There are two Agricultural Research Institutions located at the study area which include: National Horticultural Research Institute (NIHORT) and Forestry Research

Institute in Nigeria (FRIN). NIHORT headquarters is located on 350 hectares of land in the rainforest zone, Idi-ishin, Ibadan. Some of the institution mandates are: research into the genetic improvement, development, processing and marketing of vegetables, citrus, ornamental plants and spices. However, FRIN conducts research into all aspects of forestry and forest products utilization and for the training of technical and sub-technical personnel for the forestry services in the country. Two stage sampling technique was used for the study. First stage involved purposive selection of two agricultural research institutes (FRIN and NIHORT). The two institutes are the only agricultural research institute available in the study area. The list of agricultural researchers was obtained from their respective research institutes; hence second stage involves random selection of 40% of agricultural researchers from each of the research institutes, 14 respondents were randomly selected out of 35 from NIHORT and 36 respondents out of 90, thus the sample size was 50 respondents. The dependent variable is the contributions of ICT facilities to Agricultural development. It was measured by scoring some statements relating to ways by which ICT facilities has contributed to agricultural development. The statements are: getting information every time needed, enhance production in getting technical information on agriculture, getting updated agricultural information, getting skills and knowledge of modern technology, disseminating new knowledge and technology, motivating in sustaining and enhancing agricultural production, linking researchers to organization that finance research work, ICT as means effective extension channel, developing website for the purpose of agricultural production and enabling in creating simulation of agriculture in increasing the productivity. It was measured on 3 point scale of always-2, sometimes 1, never-0. The scores were sum up to generate contribution index. Data collected was analyzed with the use of descriptive statistics such as frequency counts, percentage and Pearson Product Moment Correlation (PPMC) for the inferential statistics.

Result and discussion

Social economic characteristics of respondents

In Table 1, majority of the respondents (70%) were male and (30%) were female. This implies that male researchers dominated Agricultural Research Institute in the study area. This finding supported the works of Ogunjobi and Fagbami (2012) that there were more male researchers than female researchers in Agricultural Research Institutes in Ibadan metropolis of Nigeria. Also, less than half (46%) of the respondents were between age 21-30 years and only (2%) were greater than 50 years in the study area. The finding shows that most of the agricultural researchers are still in their active age, hence they are capable of searching for useful information on agricultural development through ICT facilities. Meanwhile, the marital status shows that majority of the researchers (64%) are married and 36% are still single. This implies that respondents in the study area assume some responsibility with their family.

Table 1 also indicated that most of the respondents (34%) earned annual income between the range of ₦501, 000 – 1,000,000 and the lowest 20% earned below ₦ 100,000. This implies that majority of the respondents obtained reasonable amount from their agency which can influence their acquisition and use of ICT facilities for agricultural development. Similarly, more than half (58%) of the respondents had experience of using ICT of 1-5years. This means that most of the respondents had some experience and are knowledgeable about utilization of ICT facilities which can build their confident in the research work so as to make better contribution to agricultural development. In addition, 62% of the respondents had post graduate degree education, this finding supported the works of Salau and Saingbe (2008) that majority (71.10%) of the agricultural researchers had post graduate degrees. This finding shows that they are highly knowledgeable and educated because education is light, knowledge and power, therefore high contributions to agricultural development are expected from these

agricultural researchers as they use ICT facilities.

Table 1: Distribution of respondents by socio-economic characteristics n=50

Socio-economic characteristics	frequency	percentage
Sex		
Male	35	70.0
Female	15	30.0
Age		
21 – 30	23	46.0
31 – 40	22	44.0
41 – 50	4	8.0
>50	1	2.0
Marital Status		
Married	32	64.0
Single	18	36.0
Annual Income (Naira)		
<100,000	10	20.0
100,000 - 500,000	10	20.0
501,000 – 1,000,000	17	34.0
>1,000,000	13	6.0
Year of Using Facilities (Years)		
1 – 5	29	58.0
6 – 10	16	32.0
> 10	5	10.0
Higher Education Attainment		
Post Graduate	31	62.0
First Degree	19	38.0

Source: Field Survey, 2012

Agricultural websites accessed by the respondents

Agricultural websites contain information on agriculture and agricultural related issues. Table 2 shows that majority of the respondents accessed and utilized information obtained

from the following websites: fao.org, frin.com, hypergurl.com and iita.org. This means that the stated websites are highly accessible and useful to agricultural researchers in the study area.

Table 2: Distribution of respondents by access to agricultural website

*Agricultural website(www)	frequency	percentage
World-agriculture.com	25	50.0
mao.gov.gm	9	18.0
E-agriculture.com	25	50.0
fao.org	43	86.0
frin.com	39	78.0
nihort.com	23	46.0
hypergurl.com	14	28.0
iita.org	42	84.0
usda.gov	30	60.0
agsites.net	15	30.0
ukagriculture.com	12	24.0
nigeria.gov.ng	23	46.0
agricultureguide.org	24	48.0

agweb.com	18	36.0
mofa.gov.gh	15	30.0
nda.agric.za	16	32.0

*Multiple Responses

Source: Field Survey, (2012)

Contributions of ICT facilities to agricultural development

Data in table 3 revealed several ways in which ICT facilities has contributed to agricultural development in the study area. It can be observed that most of the respondents (78%) claimed that they always obtained information every time needed. This finding supported Ogunjobi and Fagbami (2012) that most researchers use ICT for research challenges because it is a source of information required for a meaningful research work on the

mandate of any research institute. This means that ICT facilities can be relied upon to get information on agriculture every time needed. Also (68%) of the respondents claimed of getting skills and knowledge of modern technology through ICT facilities especially internet. This implies that respondents' source skills acquisition through ICT. However, (42%) of the respondents never develop website for the purpose of agricultural production. This means that some of them lack skills for website designing.

Table 3: Distribution of respondents by contributions of ICT facilities to agricultural development

*Contributions of ICT facilities	Never	Sometimes	Always
Getting information every time needed	0(0)	11(22.0)	39(78.0)
Enhance production in getting technical Information on agriculture	3(6.0)	15(30.0)	32(64.0)
Getting updated agricultural information	2(4.0)	17(34.0)	31(62.0)
Getting skills and knowledge of modern technology	4(8.0)	12(24.0)	34(68.0)
Disseminating new knowledge and technology	2(4.0)	19(38.0)	28(56.0)
Motivating in sustaining and enhancing agricultural Production	7(14.0)	13(26.0)	28(56.0)
Linking researchers to organization that finance Research work	10(20.0)	18(36.0)	21(42.0)
ICT as means effective extension channel	11(22.0)	17(34.0)	22(44.0)
Developing website for the purpose of agricultural Production	21(42.0)	14(28.0)	6(12.0)
Enabling in creating simulation of agriculture in Increasing the productivity	14(28.0)	20(40.0)	9(18.0)

Percentage in parentheses

*Multiple responses

Source: Field Survey, 2012

Usage of ICT facilities

It can be observed from table 4 that majority of the respondents use most of the ICT facilities presented such as: personal computer,

e- mail (personal), mobile phone, website and so on. This means that respondents put to use various ICT facilities available to them.

Table 4: Distribution of respondents according to usage of ICT facilities

*ICT facilities	not in use	in use
CD- Rom	4 (8.0)	46(92.0)
E-mail (personal)	0 (0)	50(100)

Website (personal)	18(36.0)	32(64.0)
Electronic book	7(14.0)	43(86.0)
Computer	1(2.0)	49(98.0)
VCD/Audio CD	8(16.0)	42(84.0)
Mobile phone	2(4.0)	48(96.0)
Newspaper	1(2.0)	49(98.0)
Radio	2(4.0)	48(96.0)
Television	4(8.0)	46(92.0)
E-mail (Organization)	6(12.0)	44(88.0)
Website (Organizations)	7(14.0)	43(86.0)
Multi-media projector	9(18.0)	41(82.0)
Overhead projector	15(30.0)	35(70.0)

*Multiple response

Source: Field survey, 2012

Correlation analysis of the relationship between contributions index of ICT facilities to agricultural development and access to selected agricultural websites

Data presented on Table 5 shows that there is a significant relationship between contributions index of ICT facilities to agricultural development and access to selected agricultural websites such as worldagriculture.com ($r = 0.044$, $p = 0.002$), moa.gov.jm ($r = 0.364$, $p = 0.010$), iita.org ($r = 0.358$, $p = 0.012$) and agweb.com ($r = 0.435$,

$p = 0.002$). This implies that the more the respondents accessed and utilized agricultural information on these selected websites, the better their contributions to agricultural development. The findings supported (Adetimirin, 2009) that the usage of ICT was attributed to the fact that many researchers have access to the Internet in their offices and that many of them have modem for browsing in their homes, only few of them go to cybercafés to browse.

Table 5: Correlation analysis showing significant relationship between contributions index of ICT facilities to agricultural development and access to selected agricultural websites

Selected websites	correlation coefficient (r)	P-value	Remark
World-agriculture.com	**0.044	0.002	Significant
moa.gov.jm	*0.364	0.010	Significant
iita.org	*0.358	0.012	Significant
agweb.com	**0.435	0.002	Significant

**Significant at 1%

*Significant at 5%

Source: Field Survey, 2012

Conclusion

Based on the findings of this study, it can be concluded that agricultural researchers in study area accessed and utilized selected agricultural websites of which they obtained relevant and useful agricultural information which contributes to agricultural development. Also, ICT facilities has contributed to

Agricultural development through several ways such as developing website for the purpose of agricultural production and getting useful information as at when needed. The study therefore recommends that internet facilities should be made available and affordable to agricultural researchers to enhance their accessibility, usage and contributions to agricultural development.

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