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Awareness, Access and Usage of Information and Communication Technologies Between Female Researchers and Extensionists

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Abstract: Information and Communications Technology has become a very important feature in the Nigerian agricultural sector in contemporary times. Even though it is still a new concept, an increasing number of professionals are appreciating its use for development work. This study examines awareness, access and utilization of ICT among female Researchers and female Extensionists. Data was obtained from 106 female Researchers and 27 female Extensionists in SouthEastern Nigeria, with the aid of a questionnaire. Information collected showed that about 84% of the female Researchers are aware of ICT while 88.5% of female Extensionists are aware of ICT; 82% of the female Researchers know how to access Internet on their own while 74.1% of female Extensionists know how to access Internet on their own. Also, 71.7% of the female Researchers do not have adequate access to IT, 59.3% of the female Extensionists have adequate access. The findings of the study showed that 60.4 and 59.3% of the female Researchers and female Extensionists respectively have no Personal Computers in their offices; 55.7 and 70.4% of female Researchers and female Extensionists respectively used ICT for between 3 to 5 times a week. The types of ICT needed by female researchers and female Extensionists include; World Wide Web, Electronic Mail, Electronic Spreadsheet, Word Processing, CD-ROM, Use of Projector, Use of computer, Web Design, Chatroom.

Key words: Awareness, access, utilization, ICT, female researchers, female extensionists

INTRODUCTION

Information and Communication Technology (ICT) also referred to as Information Technology (IT) is the scientific, technological and engineering disciplines and the management technologies used in the handling of information, processing and application related to computers. It is also concerned with the interactions with man and machines and associated socio-economic and cultural matters (UNESCO in Osuagwu,[1]). Information Technology according to Marshall, in Madu[2] is the coming together of computing and telecommunications for the purpose of handling information. The bottom-line is that information technology is all applications that are computer-based for the purpose of sharing ideas, data and other relevant information for the improvement of the statusquo. According to CTA Information and Communication Technologies are technologies which facilitate communication and thus the processing and transmission of information electronically. The use of ICT in agricultural extension and rural development is significant especially now that its use has witnessed an upsurge in almost all areas of rural life in several African countries despite the persisting problems of access, connectivity, literacy, content and costs. In this respect, Omotayo[3] observed that agricultural extension depends largely on information exchange between and among farmers and a broad range of other actors is an area in which ICT is known to have significant impact. Frontline extension workers who are the direct link between farmers and other actors in the Agricultural Knowledge and Information System (AKIS), are well positioned to make use of ICT to access expert knowledge or other types of information that could facilitate the accomplishment of their routine activities.

Modern agricultural extension system encourages the development of positive attitude in the scientists to appreciate the knowledge, experience and capacities of the local people in the research development process[4]. Information and Communication Technology (ICT) is a means to this end. ICT as an extension tool will enhance flow of information in the application of agricultural extension services Arokoyo[5] reported that to date, the radio and television have been the major ICTs used in

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agricultural extension delivery in Nigeria. Despite the importance of these channels, they are principally owned and controlled by government. This means that only programmes that are government-owned and government-based are featured. The information content of these channels is more provider-driven than user-driven and this has serious implications for extension delivery.

Although most of the organizations in the National Agricultural Research and Extension System (NARES) now have computers for information and data management, most of the computers have neither telephone nor internet access[5]. Consequently, a substantial number of research institutes and Extension organizations have no Email contacts.

Contemporary situations show that if modern ICT facilities are not adequately built into the mainstream of Nigerian agricultural system, there is likely to be stagnation in the dissemination, utilization and application of scientific agricultural information for purposeful development of the system. Meera *et al.*[6] had noted that as a result of the emerging new paradigm of agricultural development, old ways of delivering important services to citizens are being challenged; traditional societies are also being transformed into knowledge societies all over the world. ICT has been a tool for achieving meaningful societal transformation. This transformation is a function of reliable agricultural research network. A network is a group of individuals or institutions linked together because of commitment to collaborate in solving a common agricultural problem and to use existing resources more effectively. The use of computers and computer-related mechanisms enhance research network in various ways which are facilitated through communication technologies like electronic mail, electronic conferencing, etc. Through these means scientists, administrators and information personnel are provided with rapid and reliable communication while increasing productivity and decreasing communication costs by reducing the physical means of communication channels[7].

The use of computers by extensionists has been noted as a crucial part of extension development[8]. Goode and Elliot[9] as insisting that for contemporary extension to provide viable educational programmes and opportunities to expanded audiences, the use of new electronic technology, including computers is inevitable. Elliot[10] classified extension applications of computers into two general categories to include office management uses and educational uses. The educational uses take care of clientele services which is a prerogative of agricultural extension delivery. Astroth[11] advised that we need to adopt technologies that will enhance our delivery system. According to him, at a minimum we need administrators who will foster on institutional culture with a strong commitment to advanced communications technology. Female professionals fit this description.

Over the years the importance of females to the development of agriculture has been emphasized. They are major stakeholders in food security provision. But in the very conservative settings it is difficult for extension service delivery to reach these women. However, it is only when the female scientists are aware of, have access to and can use modern Information and Communication Technologies (ICTs) that they can effectively discharge their communication functions. This is because females are almost always not available to reach them because they can empathize more with them. This study therefore examines the level of awareness, access and utilization of Information and Communications Technology (ICT) among female researchers and extensionists. These two categories of professionals are concerned with agricultural information that will eventually be utilized by relevant clienteles in the long run. The study also determined the types of ICTs needed by respondents for their study.

MATERIALS AND METHODS

The study area is South-eastern Nigeria which is made up of five states namely Imo, Abia, Enugu, Ebonyi, Anambra states. Two States namely Abia and Imo were randomly selected for the study. Five organizations were used as sampling frame; Agricultural Development Programmes, Universities, colleges of Agriculture, Non Governmental Organizations and research institutes. For the purpose of this study, respondents from the ADPs and NGOs were categorized as Extensionists while respondents from Universities, Research institutes and Colleges of Agriculture/Technology were categorized as researchers.

In Imo State, 74 respondents were identified made up of 59 Researchers, (which cut across Federal University of Technology, Imo State University, Michael Okpara College of Agriculture and Technology, Nigeria Institute of Horticulture) and 15 Extensionists which cut across the Agricultural Development Programmes (ADP) and two Non-Governmental Organizations (NGOs).

In Abia state, 65 respondents were identified made up of 47 researchers, (which cut across Michael Okpara University of Agriculture, Abia State University, Forestry Research Institute, National Root Crops Research Institute) and 18 Extensionists, (which cut across the

Agricultural Development Programme (ADP) and Non Government Organization). In all, 139 respondents were identified and used for the study, but data was available for 133 respondents made up of 106 Researchers and 27 Extensionists.

Data collection and analysis: Data collected for this study was by the use of questionnaire which consisted of open and close-ended questions. The study lasted for 5 months from May to September. The Statistical Package for the Social Sciences (SPSS version 11) was the computer software used for data analysis. The statistical tools used for the study include; frequencies, percentages, means

RESULTS AND DISCUSSION

Personal characteristics of female researchers and female extensionists: Table 1 shows that 73.6% of the female Researchers are married while 70.4% of the female Extensions are married. The findings showed that 58.5% of the female Researchers are between 35 and 40 years old, with mean age of 38 years while 100% of the female Extensionists are between 29 and 34 years old, with mean age of 31 years old. It is obvious that female Researchers were relatively older than female Extensionists. The study also reveals that 88.7% of the female Researchers reported that they have work experience of between 3 and 8 years, with average working experience of 6 years, while 100% of the female Extensions reported work experience of between 3 and 8 years, with mean work experience of 4 years suggesting that female researchers had relatively higher working experience than female extensionists. Findings further showed that 89.6% of the female Researchers had MSc as highest academic qualification, while 57.3% of the female Extensionists reported having MSc. The findings revealed that 50.9% of female Researchers belong to educational institutions (universities, colleges of Agriculture/Technology and Research Institutes). However, 41% of the female Extensionists belong to the Agricultural Development Programmes (ADP). The ADP is the major organ of agricultural extension in Nigeria, while some rural development NGOs also carry out extension sudy.

In order to determine if respondents were skilled in the use of ICT, they were requested to rate their skills themselves. Among the female researchers, 62.3% had an information Technology self-rating of between 0 and 1, with mean rating of 1.49, while 100% of the female extensionists had an IT rating of between 2 and 3, with mean rating of 2.29. The implication of this finding is that female extensionists had higher mean IT skill rating than female Researchers. Female Extensionists have been more receptive to Information and Communication Technology (ICT) suggesting a moderate level of IT skills.

Table 1: Personal characteristics of respondents

Variables	Female researches	Female extensionists
Marital Status	(n = 106)	(n =27)
Single	28(26.4)	8(29.6)
Married	78 (73.6)	19(70.4)
Age		
29-34	15(14.2)	27(100.0)
35-40	62 (58.5)	-
41-47	29(27.4)	-
Working experience		
3-8	94(88.7)	27(100.00)
9-13	12(11.3)	-
Academic qualification		
HND/BSC	-	11(40.7)
MSc	95(89.6)	16(57.3)
PhD	11(10.4)S	-
Category		
Educational	54(50.9)	10(37.0)
ADP	2.3(21.7)	11(41.0)
Research Institution	21(19.8)	3(11.0)
Non Governmental Organization	8(7.5)	3(11.0)
H spent on IT (weekly)		
0 – 4	59 (55.7)	8 (29.6)
5 – 8	47 (44.3)	19 (70.3)
Information Technology skill rating		
0-1	66(62.3)	-
2-3	40(37.7)	27(100.0)
Length of Exposure to IT (years)		
2-5	73(68.9)	19(70.4)
6-9	16(15.1)	8(29.6)
9-11	17(16.0)	-
Distance of IT facility from office (km)		
0 –11.5	20 (18.9)	11 (41.0)
12 – 23	86 (81.1)	16 (59.0)

Source: Field Survey data, 2005

Gregg and Irani reported average self-rating of IT skills among Extension agents. This present study reveals that 68.9 and 70.4% of female Researchers and female Extensionists respectively have been exposed to IT for between 2 and 5 years with mean years of exposure of 4.5 years. It is pertinent to note that IT made significant entry into Nigeria about five years ago. This obviously could have accounted to the few years of exposure. The findings of the study showed that 81% of female Researchers and 59% of female Extensionists travel for between 12 and 23 km to use ICT facility far away from their respective offices because their office computers are not connected to the Internet. This shows that female Researchers and female Extensionists obtain ICT services from Public cybercafés. Omotayo[3] stated that Public cybercafés offer value-added services and are key instruments in telecommunication policy. Public cybercafes are common features in the study area hence respondents utilize the services easily.

Respondents' awareness, access and utilization of ICT: About 84% of the female Researchers indicated that they are aware of ICT while 88.5% of female Extensionists indicated that they were aware of ICT suggesting that a relatively higher percentage of female Extensionists are aware of ICT. Also, about 82% of the female Researchers indicated that they know how to access Internet on their own while 74.1% of female Extensionists indicated that they know how to access Internet on their own. Whereas 71.7% of the female Researchers indicated that they do not have adequate access to IT, 59.3% of the female Extensionists indicated that they have adequate access. The findings which showed that female Researchers do not have adequate access to Information Technology is a clear indication of the dearth of computer and computer related facilities in their work environment. This is further compounded by inadequate seminars and workshops on the use of Information Technology as attested to by respondents.

Table 2 showed that 60.4% and 59.3% of the female Researchers and female Extensionists respectively have no Personal Computers in their offices. Those who indicated that they have Personal Computers in their offices stated that they were not connected to the Internet. This is a serious situation that shows that there is still a lot to be done if the Nigerian agricultural sector must meet up the global challenges of ICT. When asked to indicate how frequent they used information technology in a week, 55.7% and 70.4% of female Researchers and female Extensionists respectively indicated 3 to 5 times a week. As expected female Extensionists recorded a higher percentage compared to female researchers.

Types of ICTs needed by respondents: Using an open ended question, the types of ICT needed by female Researchers and female Extensionists were found to include; World Wide Web, Electronic Mail, Electronic Spreadsheet, Word Processing, CD-ROM, Use of Projector, Use of computer, Web Design, Chatroom Table 3.

Gregg and Irani reported the use of E-mail, Microsoft PowerPoint, World Wide Web, Spreadsheets, Web page editing and development. There is no doubt that Information and Communication Technologies are required for effective agricultural extension. This is because of their potentials in reaching a larger audience, their effectiveness for training and demonstration for capacity building. Their usefulness in the search and packaging of information on demand and for exploring alternative production options and technologies have been reported[5].

Table 2: Awareness, access and utilization of ICT between female researchers and extensionists

	Female researchers	Female extensionists
Awareness		
Yes	89 (84.0)	22 (88.5)
No	17 (16.0)	5 (18.5)
Do you know how to access Internet on your own?		
Yes	87 (82.1)	20 (74.1)
No	19 (17.9)	7 (25.9)
Do you have adequate access to IT?		
Yes	30 (28.3)	16 (59.3)
No	76 (71.7)	11 (40.7)
Do you have personal computer in your office?		
Yes	42 (32.6)	11 (40.7)
No	64 (60.4)	16 (59.3)
Is it connected to the Internet?		
Yes	17 (16.0)	4 (14.8)
No	89 (84.0)	23 (85.2)
Frequency of IT use (number of times per week)		
0-2	47(44.3)	8(29.6)
3-5	59(55.7)	19(70.4)

Source: Field survey data, 2005

Table 3: Types of information and communication technology needed by respondents

World wide web
Electronic mail
Electronic spreadsheet
Word processing
CD-ROM
Use of projector
Use of computer
Training on web design
Chatroom

Source: Field survey data, 2005

Differences in h used on IT between female researchers and female extensionists: Table 4 shows that female researchers spent an average of 3.5 h on information and communication technology (ICT), while female Extensionists spent an average of 4.4 h on ICT. The result reveals that female Extensionists spend relatively higher number of h on ICT compared to female Researchers.

The Z-test analysis showed that there is no significant difference in the number of h spent on using ICT weekly. The implication of this finding is that female Researchers and female Extensionists are not spending enough time on ICT. When compared to findings of Goode and Elliot[10] who found in their study that extension personnel spent an average of six h each week on IT, it is easy to conclude that female Researchers and female Extensionists in Southeastern Nigeria still need to spend adequate time on ICT to enable them increase their skills on the tools.

Differences in the distance from office of respondents and ICT facility: Table 5 shows that female researchers indicated the distance between their office and the ICT facility is an average of 13.99 km, while female extensionists indicated an average of 12.74 km.

Table 4: Z-test analysis showing differences in h used on IT between female Researchers and female extensionists

Category	N	Mean	SD	df	z-value
Researchers	106	3.528	2.458	131	1.758^{NS}
Extensionists	27	4.407	1.647		

Source: Computed from survey data, 2005

Table 5: Z-test analysis showing differences in distance of IT facility from the office of researchers and extensionists

Category	N	Mean	SD	Df	Z-value
Researchers	106	13.991	8.194	131	0.452NS
Extensionists	27	12.741	5.088		

Source: Computed from survey data, 2003

The Z-value of 0.452 shows that there is no significant difference in the distance to ICT facility between office of female researchers and female extensionists. Respondents had indicated that they have computers in their offices but these are not connected to the Internet. The long distance indicated in this study is a manifestation of frustration experienced in using ICT tools among respondents.

CONCLUSION

The study investigated awareness, access and utilization of ICT between female researchers and female extensionists. Female scientists are significant stakeholders in the agricultural sector. The study identified that awareness of ICT among female researchers and female extensionists is high and found that respondents know how to access the Internet but reported inadequate access to ICT. Most respondents do not have computers in their offices and for those who indicated that they have personal computers in their offices reported that they are not connected to the Internet. It was found that majority of the respondents used ICT for between 3 and 5 times a week. The study found that female Researchers spent an average of 3.5 h on ICT weekly, while female Extensionists spent 4.4 h weekly. There was no significant difference in the number of h spent on ICT weekly between female researchers and female extensionists.

Also, it was found that the distance between ICT facility and office of female Researchers is approximately 14km, while for the female Extensionists a distance of approximately 13km was indicated. The types of ICT needed by female Researchers and female Extensionists include World Wide Web (www), Electronic mail (E-mail), Electronic spreadsheet (Microsoft Excel), word processing, compact Disk Read Only memory (CD ROM). Use of projector, use of computer, training on web design, chatroom, VCD and DVD.

RECOMMENDATIONS

Based on the findings of the study the following recommendations are hereby made:

Since a dearth of computers in offices of female Researchers and female Extensionists was identified, the need to equip offices with personal computers and link them up with the Internet is very important. This will reduce the stress of travelling for distance of 13-14 km to utilize ICT facilities. A situation where scientists go to public cafes to use ICT tools is saddening. The use of CD ROM, chatroom and Electronic spreadsheet should be given serious consideration in ICT applications among respondents. It is disappointing that many researchers and extensionists find it difficult to use these tools. This has serious implication for scientific agriculture in Nigeria as a whole.

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