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AVAILABILITY AND USE OF INFORMATION COMMUNICATION TECHNOLOGY IN RESEARCH INSTITUTES IN OYO STATE, NIGERIA

By

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Abstract

This research work examined the availability and use of information and communication technologies by researchers in research institutes in Oyo State, Nigeria. The study aimed at determining the personal characteristics of the respondents, identified the information communication technologies (ICTs) available in the research institutes, the usage pattern of ICT facilities by researchers and activities for which ICT resources are used. The population of the study was three hundred and thirty-seven (337) researchers and the data collection instrument used was questionnaire. The study confirmed the availability of some ICT facilities such as computer, mobile phones, internet, scanners, DVD, and CD ROM. The study also revealed that fax and telex were the least available ICT facilities in the research institutes. Majority of the researchers were below 50 years, mostly males with higher educational achievements as most had the master and doctorate degrees. The study reported that majority of the researchers use ICT very frequently in the course of their work. It further revealed that researchers benefit immensely from the use of ICT facilities as they help in the dissemination of information.

Key words: Availability of ICTs, Use of ICTs, ICT facilities, Researchers, Research Institutes

Introduction

Information is a basic factor input for scientific and technological process and is therefore central to sustaining productivity and growth of an economy. The public sector remains the largest collector, user, holder and producer of information, which forms the central resource for the sector's activities. The role of information in the society is becoming more and more recognized, especially as a tool to support decision making and boost productivity. Information is one of the most vital assets any organization must possess. According to Aina (2004), it is 'news', while others refer to it as facts, and yet to others, it is essential data. Information and communication technology (ICT) is an umbrella term that includes all technologies for the manipulation and communication of information. ICT encompasses any medium to record information (magnetic disk, tape, optical disk (CD/DVD) flash and paper record), technology for broadcasting information - radio, television and technology for communicating through voice and sound or images, microphone, camera, loudspeaker, telephone to cellular phones.

Edoka (2002) reported that research libraries are increasingly using the information and communication technology (ICT) to perform the work of information storage and retrieval. Since great emphasis placed on quick and precise response to information requirement, the computer

can actively promoted the effectiveness of any research library. The performance of the agricultural sector of the economy in Nigeria according to Oladele (2005) cannot be separated from the development of information and communication technology (ICT), and availability of such in respect of information centres of National Agricultural Research Institutes (NARIs) should be seen as a tool to enhancing agricultural research development in Nigeria. Furthermore, low level of information and communication technology (ICT) in agricultural research information centre could lead to information sharing available on the need for the development of information and communication technology (ICT) is a global resolution and has been a subject of great significance to all mankind (Olaofe, 2005).

These technologies have become central to contemporary societies: whether one is talking on phone, sending an e-mail, going to the bank, using a library, listening to sports coverage on the radio, watching the news on television, working in an office or in the field, going to the doctor, driving a car or catching a plane, one is using information and communication technology (ICT). Information and communication technology is a shorthand for computer software networks, satellite links and related systems that allow people to access, analyze, create, exchange and use data, information and knowledge in ways that were almost unimaginable (Association of African Universities, 2000). The prevalence and rapid development of information and communication technology has transformed the human society from the information technology age to knowledge age (Galbreath, 2000).

Objectives of the Study

The objectives of this study are to:

- i. find out the types of information and communication technology used in agricultural research institutes in Ibadan, Oyo State and
- ii. determine the frequency of use of information and communication technology by researchers

The study was carried out in Ibadan, Oyo State of Nigeria where there is high concentration of agricultural institutes. Seven of such institutes were purposively selected. They are Cocoa Research Institute of Nigeria (CRIN); Forestry Research Institute of Nigeria (FRIN); Institute of Agricultural Research and Training (IAR&T); International Institute for Tropical Agriculture (IITA); National Institute for Horticultural Research and Training (NIHORT); Nigeria Institute of Social and Economic Research (NISER); and Nigeria Stored Products Research Institute (NSPRI). Agriculture has been the major source of foreign exchange in Nigerian economy before the 1980s. National Agricultural Research Institutes (NARIs) were established to provide solutions to some problems facing the agricultural sector with the aim of boosting the production of the main source of foreign earnings.

Utilization of Information and Communication Technologies by Researchers

Many researchers have found that the common information technology facilities used by researchers include but not limited to computer system; internets and intranets; audiovisual; video conference and video cassette. Other includes VCD and DVD; video and digital video camera; CD ROM; diskette and flash diskas well as Fax and/or telex

Arokoyo (2005) reported that, to date, the radio and television have been the major ICT used in the research institutes in Nigeria. Despite the importance of these channels, they are principally owned and government-based features. The information content of these channels is more provider-driven than user-driven and this has serious implications for research findings or agricultural information delivery.

Meera (2004) had noted that as a result of the margining new paradigm of agricultural development, old ways of developing important services to citizens are being challenged, traditional societies are also being transformed into knowledge societies allover the world. Gregy and Irani (2004) reported the use of e-mail, Microsoft, worldwide web, spread sheet, web page editing and development: there is no doubt that Information Communication Technology (ICT), such as e-mail is required for effective agricultural detention. This is because it has the potentials to reach larger

audience; ICT is also effective for training that enhances capacity building of the end users (Arokoyo, 2005). Rivard (2004) viewed that as more and more computers are connected through the internet to form the worldwide web, allowing researched benefits of Information Communication Technology (ICT) have indeed become global. The use of ICT can impact on the traditional process of organization processed, working methods and culture (Ruiker, 2005). In this regards, some benefits of CT critical to the performance of the research institutes are time for data processing and communication information and to improve communications for effective decision making and coordination among research institutes (Oladapo, 2007).

Some benefits of ICT critical to the performance of researchers in the research institutes are to reduce the time for data processing, information communication and improve communication for effective decision making and coordination among researchers to enhance their productivity. This is possible because the internet based tools of ICT allow communication between remote users and enables them to share files, comments on changes and post request for information the more research institutes are connected through the internet to form the world wide web, the more researchers in different institutes in different nations or continents will readily exchange information amongst themselves (Delap, 2004).

Technical application, data and storage, user support and training service, implementation of research network, assessment and provision of data storage and technology foresight (Fegan, 2004). Effective use of ICT can help improve many aspects of research and recovery efforts during the investigation on different concept. This relatively recent emergence of the tech-contextualized in research institutes has in turn generated numerous issues worthy of investigations, including awareness, adoption and usage of emerging technologies and electronic services, and social exclusion due to unequal adoption by different segments of the society (Kumar, 2008).

Linkage between technological development and economic development has been well documented (Grossbauer, 2004; Moyo, 1996). Research institutes in the developed countries continue to struggle technologically, finding it increasingly difficult to make marks on the same marketplace. While the north-south divide diversifies, global competition is gathering momentum leaving the developing countries more vulnerable economically. Although this digital divide remains topical on local and international platforms (Grout, 2006), little is known regarding its nature, scope and impact on specific research institutes, contribution towards bridging this knowledge gap. There is a growing concern over the wholesale importation of technologies by the developing countries (Lall and Pietrobello, 2003) raising questions on the suitability of such technologies to service the specific needs and interests of organizations in the developed countries.

Research Methodology

This research is a descriptive survey which involved the use of questionnaire to generate response from 337 respondents drawn from seven research institutes in Ibadan. The questionnaire is divided into two parts containing bio data and questions on availability and use of ICT in research institutes respectively. Purposive sampling technique was used in which all researchers in the research institutes in Ibadan were included. Out of 337 copies of the questionnaire, 316 copies were retrieved and worked with in this study.

Table 1: Statistics of respondents from the research institutes

Research Institutes	No. of Researchers
Institute of Agricultural Research and Training (IAR&T)	80
Cocoa Research Institute of Nigeria (CRIN)	35
Forestry Research Institute of Nigeria (FRIN)	32
Nigeria Institute of Social and Economic Research (NISER)	30
International Institute for Tropical Agriculture (IITA)	60
Nigeria Stored Products Research Institute (NSPRI)	15
National Institute for Horticultural Research and Training (NIHORT)	85
Total	337

The data analysis for this study was based on the responses of the respondents. The statistical package for the social sciences (SPSS) was used for the analysis. Simple frequencies and percentage distributions were the analytical techniques that were used.

Discussion of Findings

This section aimed at the presentation of data, analysis of data presented and the discussion of results. Based on the questionnaire administered and retrieved, data gathered from the respondents are presented in tables. Each question was analyzed and interpreted in order to derive value conclusion on the objectives of the study.

Demographic Information of Respondents

Table 2 shows that majority (91 or 28.8 %) of the respondents are between the age of 36 - 40 followed by 31 - 35 (71 or 22.5 %). The table also reveals that majority (171 or 54.1 %) of the respondents are males, while only 145 (45.9 %) are females. This implies that there are more male researchers than the females in the Research Institutes located in the study area.

It could be deduced from the table that majority (162 or 51.3 %) have M. Sc. degree, while only 17 (5.4 %) have HND and 85 (26.9 %) have the Ph.D. This implies that majority of the respondents had higher degrees, which is in line with Lawal (2007) who stated that majority of researchers in natural agricultural research institutes possessed higher degrees. The table also shows the breakdown of respondents from the seven research institutes in Ibadan with Institute of Agricultural Research and Training (IAR&T) having the highest (71 or 22.5 %) of the respondents, while Forestry Research Institute of Nigeria (FRIN) has the least (19 or 6.0 %) as shown in Table 2.

Table 2: Distribution of respondents according to personal characteristics (n = 316)

Characteristic	Classification	Frequency	Percent
Age	26 - 30	48	15.2
	31 - 35	71	22.5
	36 - 40	91	28.8
	41 - 45	63	19.9
	above 45	43	13.6
Gender	Male	171	54.1
	Female	145	45.9
Academic qualification	HND	17	5.4
	B. Sc.	52	16.5
	M. Sc.	162	51.3
	Ph.D	85	26.9

Availability of ICT Resources in Research Institutes

Table 3 presented information on the available ICT facilities in research institutes. The table reveals that computer laptop (310 or 98.1 %) was the most available followed by mobile telephone (304 or 96.2 %), photocopier / printer (280 or 86 %), internet facility (240 or 75.9 %), scanner (216 or 68.4 %), CD ROM (200 or 63.3 %). The least available ICT are telex (50 or 15.8 %) and fax (60 or 19.0 %). From the data, it could be deduced that computer / laptops were the most available ICT device in Research Institutes, while telex was the least available. Computer / laptop topped the list of available ICT because researchers use them for their various activities. Telex/fax on the other hand is technologies with the capacity for sending information usually in form of documents over a long distance. The reason why telex and fax are the least available ICT devices in research institutes may be due to the fact that their functions have been taken over by computer laced with internet facilities and mobile phones. Anderson (1983) affirmed that functions of telex/fax have been eroded with the coming of computers connected with internet and scanners.

Table 3 shows that different information communication technologies are available in all the research institutes.

Table 3: Frequency Distribution of Availability of ICT Facilities in Research Institutes

ICT facility in research institutes	Available		Not Available	
	Frequency	Percentage	Frequency	Percentage
Internet	240	75.9	76	24.1
Mobile phone	304	96.2	12	3.8
Scanner	216	68.4	100	31.6
Computer/laptop	310	98.1	6	11.9
Photocopier	280	86.6	36	13.4
CD ROM	200	63.3	116	36.7
Fax	60	19.0	256	81.0
Printer	280	88.6	36	11.4
Telex	50	15.8	266	84.2
DVD	190	52.7	126	47.3

Frequency of Use of ICT Facilities

Table 4 reveals the frequency of use of ICT by the researchers in research institutes. It shows that majority (155 or 49.1 %) use ICT facilities daily, 96 (30.4 %) of the respondents use them 2 - 3 times weekly, 40 (12.7 %) use them once weekly, while 25 (7.9 %) use the ICT facilities once in a month. Thus, the result indicates that majority frequently use ICT facilities, which is unconnected with the fact that researchers need ICT to generate and disseminate technologies to their clientele. In the process of generating and disseminating technology, certain information communication technologies are needed and this account for the frequent use of ICT by the researchers.

Table 4: Respondents' Distribution of Frequency of ICT Usage

Response	Frequency	Percentage
Daily	155	49.1
2 - 3 times weekly	96	30.4
Once weekly	40	12.7
Once monthly	25	7.9

Table 5: Frequency Distribution of Respondents' Usage of the Internet for Job Function

Activities	Always		Occasionally		Rarely		Never	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
To search for information	277	87.6	34	10.8	5	1.6	-	-
To communicate/ link with colleagues	271	76.6	53	16.8	18	5.7	4	1.3
For research	211	66.7	87	27.5	17	5.4	1	0.3
To search for business	55	17.4	143	45.3	86	27.2	32	10.1
To establish self	70	22.1	179	56.6	54	17.1	13	4.1
Reading/downloading online newspaper/news magazine	118	37.3	132	41.8	51	16.1	15	4.7
Looking for job/sending job application	25	7.9	61	19.3	176	55.7	54	17.1
Ordering and selling goods and services	32	10.1	34	10.8	150	47.5	100	31.6

Table 5 shows that 277 (87.6 %) of the respondents use the internet always to search for information, 271 (76.6 %) use it for the purpose of communicating or linking up with colleagues, 211 (66.7%) use the internet for research purposes, which of course is the primary responsibility of researchers. Few (55 or 17.4 %) use the internet always for business transaction. This could be due to the fact that most researchers are academicians who do not indulge in the act of combining research work with business. Table 5 further shows that majority of the respondents always use the internet facility for productive purpose.

Conclusion

The study concluded that researchers in research institutes in Ibadan, Nigeria use available information communication technology facilities to a large extent in the discharge of their duties. The use of these facilities has enhanced their productivity in a number of ways though they do encounter certain challenges common to ICT users in Nigeria.

Recommendations

Based on the findings and conclusion drawn from this study, the following measures are recommended in order to overcome the observed dearth in the provision and use of ICT by researchers in research institutes in Ibadan, Nigeria.

Research institutes, being a nation's center for generating feasible, adoptable and socio-culturally acceptable technologies should be equipped with different state of the art Information and Communication Technology devices that will increase the rate at which researchers are generating findings and also increase the speed of disseminating those findings to the population they serve. Policy makers in the country should formulate policy that would encourage the use of information communication technologies to enhance research activities in the institutes.

Capacity building that would encourage researchers use different ICTs should be continuously organized. This will improve the effectiveness in the use of available information communication technologies.

Government should intensify efforts to provide alternative source of power for research institutes to enjoy uninterrupted use of the available ICT resources while technology to boost reception and improve connectivity should be cited close to research institutes.

To communicate/link with colleagues.

Reading/downloading online newspaper/news magazine etc

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