

INFORMATION AND COMMUNICATION TECHNOLOGY TRAINING NEEDS ASSESSMENT OF AGRICULTURAL EXTENSION OFFICERS IN KWARA STATE, NIGERIA

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ABSTRACT

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The failure of many developing countries to appreciably harness the potentials of ICT has been largely attributed to poor technological know-how among other constraints. A training needs assessment is therefore necessary to ensure that training efforts are correctly channeled to create the optimum impact possible. The study assessed the (ICT) training needs of extension officers in Kwara State, Nigeria. Data for the study were collected from the extension officers of the Kwara State Agricultural Development Project (KWADP) with the use of a structured questionnaire. Data analysis involved the use of both descriptive and inferential statistical tools. The Borich's need assessment model revealed that more than 70% of the respondents had training needs in internet browsing, word processing, electronic mail and use of ICT in presentations. Job status was the major determinant of training need in most of the selected ICT areas. The study therefore recommended continuous training of all extension officers of the KWADP particularly in the identified ICT application areas. It is also recommended that job status be considered in the planning and design of ICT training programs for extension officers of the KWADP.

Keywords: ICT, Training needs, Extension Officers, Binary Logistic Regression Model, Borich's Needs Assessment Model.

INTRODUCTION

In developing countries, rural farmers are the backbone of agricultural production. Though, largely resource poor with fragmented farm plots, their indigenous agricultural production and post-harvest activities have continued to provide some level of sustenance and even contribute to the economic growth of some such countries. In Nigeria for instance, the average rural farmer cultivates less than two (2) hectares of farmland (Manyong *et al.*, 2005), while an aggregate of the activities of millions of such farmers contributed 88% of Nigeria's non oil earnings in 2007 (Daramola *et al.*, 2009). With a firm understanding of the role of the rural populace in economic development, agricultural extension becomes top priority as it strives to improve the livelihoods of poor rural families thereby directly or indirectly impacting on agricultural production. According to Ovwigho *et al.* (2009), agricultural extension service in its entire ramification is coterminous with the use of variegated communication strategies. A current trend in agricultural extension is a change from a process of technology transfer to a process of facilitating a wide range of communication, information and advocacy services. This is perhaps so because information has been identified as a vital ingredient of rural development (Mchombu 1992, Gericke, 1997 and FAO, 2000). According to Maningas *et al.* (2000), information within the hands of rural farmers means empowerment through control over their resources and decision-making processes. Information and Communication Technology (ICT) has changed the face of communication in the world. It has transformed the world into a 'global village' due to the timely, cost effective and seamless nature of information flow via its various media. Greenidge (2003) defined ICTs as those technologies that can be used to interlink information technology devices such as personal computers with communication technologies such as telephones and their telecommunication network. Omotayo (2005) opined that since agricultural extension depends largely on information exchange, frontline extension workers who are the direct link between farmers and other actors in agricultural knowledge and information system (AKIS), are positioned to make use of ICT to access expert knowledge or other types of information that could facilitate the accomplishment of their routine activities. The existing under-utilization of scientific agricultural information in Nigeria due to poor dissemination can be ameliorated if the potentials of ICT are harnessed. In spite of the knowledge of the role that ICT can play in facilitating agricultural extension service provision, the level of access and usage of ICT among agricultural extension officers in Nigeria is very low. In a study carried out in Delta State, Nigeria, Ovwigho *et al.* (2009) also ascertained that extension agents do not make use of modern ICT involving the use of computers in the performance of their duties. Most studies have identified lack of technological know-how as a constraint to the use of ICT among agricultural extension agents and recommended training programs for extension officers (Ovwigho *et al.*, 2009, Ndag *et al.*, 2008, Ommani and Chizari 2006, Daudu *et al.*, 2009, Adejo and Haruna 2009, Abubakar and Abdullahi, 2009).

The fact that there has not been any appreciable improvement in agricultural extension officer's usage of ICT may be suggestive of continuous training deficiencies among other causes. Assessment of training needs is a vital prerequisite for any effective training program. Formulating ICT training contents for agricultural extension personnel without first carrying out a needs assessment may miss priority needs, or even cover areas that are not essential. While the need for training agricultural extension agents in ICT is apparent, it is important that a needs assessment be carried out to determine actual areas of ICT training need. It is against this background that this study sets out to determine the ICT training needs of extension officers in Kwara State, Nigeria, and ascertain the determinants of ICT training needs among extension officers in Kwara state.

MATERIALS AND METHODS

Study area

The study area is Kwara State, Nigeria. With a land area of about 32,500Km² and a population of about 1.5million, agriculture is the mainstay of the economy. Agricultural extension service delivery in the state is primarily public in nature and is administered by the Kwara State Agricultural Development Program (KWADP) under the supervision of the State Ministry of Agriculture.

Sampling technique and data collection

The population for the study comprised all extension officials in Kwara State. A total of 99 extension officials of the KWADP comprising the Extension Agents (EAs), Subject Matter Specialists (SMSs) and Block Extension Supervisors (BESs) constituted the sample for the study. Data were collected with the aid of a structured questionnaire.

Method of data analysis

Data used for this study were analysed using descriptive and inferential statistical analysis. The method adopted for the assessment of training needs among extension officers is the Borich's Needs Assessment Model. This is based on an evaluation of the discrepancy between the perceived importance and competency of a given subject matter or skill. The model which was developed by Borich has been widely used in the assessment of training needs (Nieto et.al 1997, McCaslin and Tibeziinda 1998, Bowe et.al 1999, Gregg and Irani2004). According to Borich, 1980, training needs (which is taken as the mean weighted discrepancy score MWDS) can be calculated using the following formula:

Training need (MWDS) = (Importance score – Knowledge score) × Mean of Importance.

Training needs can therefore be computed using the model for individuals, items, issues, topics and skills and then ranked accordingly.

For the purpose of this study however, a threshold of two thirds (2/3) of the mean weighted discrepancy score (MWDS) was adopted for the establishment of respondents' need for training in any particular area of ICT application. Hence, a respondent with MWDS of less than two third of the MWDS of the entire respondents in any area of ICT application does not require training in such an area.

A five point likert-type scale was employed in the measurement of the respondents' perceived importance of selected areas of ICT application and also the level of the respondents' competence on the selected areas of ICT application. The scale was graded as follows:

Perceived importance of selected areas of ICT application: Strongly disagree = 1: disagree = 2: indifferent = 3: agree = 4: strongly agree = 5

Respondents' perceived level of competence in selected areas of ICT application; Excellent = 5: Good = 4: Fair = 3: Poor = 2: not all = 1

A binary logistic regression model was employed to identify the determinants of training needs among the respondents as follows:

$$Y = f(X_1, X_2, X_3, X_4, d_1, d_2, d_3, u)$$

Where:

Y = training needs (training needed =1, 0 otherwise)

X₁ = age of respondent in years

X₂ = household size

X₃ = monthly income in Naira

X₄ = work experience in years

d₁ = dummy for job designation (SMS=3, BES=2, EA=1)

d₂ = gender (male=1, female =0)

d₃ = dummy for educational level (university degree=1, 0 otherwise)

u = error term

RESULTS AND DISCUSSION

Socio-economic characteristics of respondent

This section presents a description of the respondents based on selected socio-economic characteristics. The socio-economic characteristic of the respondents are as presented in Table 1.

Table 1: Selected Socio-economic Characteristics of Respondents

Variables	Frequency	Percentage
Age		
≤ 30	6	6.06
31-50	77	77.78
> 50	16	16.16
Total	99	100.00
Household Size		
1-6	37	37.37
> 6	62	62.63
Total	99	100.00
Monthly Income		
≤ ₦ 10,000	5	5.05
₦10,001- ₦ 20,000	54	54.55
₦20,001- ₦ 30,000	39	39.39
> ₦ 30,000	1	1.01
Total	99	100.00
Work Experience		
< 10 years	41	41.41
≥ 10 years	58	58.59
Total	99	100.00
Job Description		
Extension Agent (EA)	73	73.74
Block Extension Agents (BEA)	6	6.06
Subject Matter Specialists (SMS)	20	20.20
Total	99	100.00
Gender		
Male	79	79.80
Female	20	20.20
Total	99	100.00
Highest Educational Attainment		
School Certificate	4	4.05
Ordinary National Diploma (OND)	27	27.27
National Certificate in Education (NCE)	13	13.13
Highest National Diploma (HND)	7	7.07
First Degree (University)	99	100.00
Higher Degree (Post Graduate)		
Total		

Source: Field Survey, 2010

Table 2: Respondents' ICT Training Needs

ICT application area	Mean of importance	Mean of competency	MWDS
Electronic Mail	4.55	1.98	11.67
Internet Browsing	4.51	1.71	12.62
Presentations (power point, Charts e.t.c)	4.46	1.89	11.49
Word Processing	4.34	1.70	9.73
Chats	4.05	2.17	7.61
Computer Peripherals (printers, scanners, webcam e.t.c	4.04	1.79	9.10
Use of Storage Devices (Discs, flash drive e.t.c)	3.72	2.10	7.52
MS Access (for existing and creation of new files)	2.69	1.84	2.28
Electronic Spread Sheet	2.56	1.82	1.89
Web Design	2.03	1.25	1.58

Source: Field Survey, 2010

About 70% of the respondents are below the mean age of 42.7 years. This may have implication for the adoption and implementation of knowledge and new ideas impacted during training programs. Given their age distribution, it is expected that the respondents are still relatively young enough to respond positively to training and thereby help to achieve the desired benefits from training on ICT that may be organized by their establishments. The respondents have a mean household size of eight people. About 63% of the respondents have household sizes that comprise more than six members. The household size has implications for the expenses profile of the respondents and hence personal acquisition of ICT facilities as well as personal effort at acquiring training. With a mean income of about ₦20000 (about \$125), the per capita daily income of the respondents is just about \$0.52.

This implies that the respondents are below poverty line and may be unable to afford to independently access training in ICT.

Sixty three percent (63%) of the respondents have less than the mean years of work experience given as 16 years. This may have positive implications for the effectiveness of training programs targeted at the respondents. This is because extension officers that have longer years of service are likely to be very conservative and be less amenable to new techniques of doing things including adoption of modernization in extension service delivery.

Table 1 also reveals that the majority of the respondents are male. However, with the majority of the respondents (74%) being Extension Agents, it is expected that they have access to ICT which is very important to the effectiveness of extension service delivery. The block extension officers are only seven in number meaning that several blocks may not have designated block extension officers. Just about 20% of the respondents have university education. On the average, the respondents are poorly educated for the nature and requirements of an effective discharge of their duties. Educational level may also have implications for ICT training needs given the technical nature of ICT.

ICT training needs

This section presents the respondents' ICT training needs. The aggregate training needs of the respondents in selected ICT application areas presented in Table 2 was determined as the Mean Weighted Discrepancy Score (MWDS).

On the aggregate, Table 2 reveals that internet browsing with the highest MWDS of 12.62 is the ICT application area in which training is most needed. This is closely followed by the use of electronic mail and presentation. Electronic Spreadsheet and web design with MWDSs of 1.89 and 1.58 respectively, are the ICT areas with the least training need.

Table 3 presents a summary of respondents according to their training needs in different areas of ICT application

Table 3: Summary of individual training needs of respondents

ICT application areas	Respondents			
	With Training Needs		Without Training Needs	
	Frequency	%	Frequency	%
Electronic mail	76	76.77	23	23.23
Internet Browsing	84	84.85	15	15.15
Presentations (power point, Charts etc)	74	74.75	25	25.25
Word Processing	80	80.81	19	19.19
Charts	63	63.64	36	36.36
Computer Peripherals (printers, scanners, webcam etc)	64	64.65	35	35.35
Use of Storage Devices (Discs, flash drive etc)	45	45.45	54	54.55
MS Access (for existing and creation of new files)	57	57.58	42	42.42
Electronic Spread Sheet	37	37.37	62	62.63
Web Design	35	35.35	64	64.65

Source: Field Survey, 2010

About 85% of the respondents require training in internet browsing while only 35% of the respondents require training in web design. Aside from web design, electronic spread sheet and use of storage device in which less than 50% of the respondents were found not to require training, all other areas of ICT application have more than 50% of the respondents requiring training in them.

Determinants of training needs

This section presents the result of regression analysis to ascertain the determinants of training needs among the respondents. The determinants of training needs among respondents are as presented in Table 4.

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Table 4: Result of the binary logistic regression analysis between selected socio-economic characteristics of respondents and their training needs

Variables	ICT Application Areas										MS Access
	Internet Browsing	E-mail	Presentation	Word Processing	E- Sheet	Chat	Web Design	Storage Facilities	Computer Peripheral		
Gender	.232	-.353	-.526	.198	.109	.255	.131	.616	-.487	.079*	
Age	.945	-.082*	-.947	-.398	.183	.829	.559	.248	.480	.243	
Household size	.872	.967	-.326	-.116	.608	-.352	-.375	-.382	-.508	.526	
Education	-.101	.702	-.505	.536	-.313	-.728	.040**	-.201	-.063*	-.417	
Work Experience	-.276	.052**	.244	.492	-.322	-.713	.379	-.327	-.947	-.821	
Job status	-.004***	-.000***	-.005***	-.018***	.367	-.069*	-.001***	-.003***	-.024**	.794	
Salary	.210	.165	.913	.142	.247	.516	.446	.034**	.723	.590	
Constant	.066	.002	.096	.011	-.026	.634	-.018	-.588	.274	.123	
Nagelkerke R ²	.436	.449	.269	.371	.107	.115	.399	.255	.250	-.104	

Source: Data Analysis, 2010

NB *** Coefficient significant at 1%, ** Coefficient significant at 5%, * Coefficient significant at 10%

Table 4 shows that job status is a major determinant of training needs among the respondents. Except for spreadsheet and MS Access in which cases the coefficients of regression are not significant, all other ICT areas have significant and negative regression coefficients for job status. This implies that, the higher the job status of the respondents, the lower their ICT training needs. It is important to note that the EAs who happen to be the lowest in job status among the respondents are the farmer facing unit of the KWADP and require the most training in the examined ICT application areas. Given the field nature of their job, EAs need to be adequately positioned to use ICT both to deliver services to the farmers and communicate with the BESs and SMSs who reside more in the office.

CONCLUSION AND RECOMMENDATIONS

The study was conducted to determine the ICT training needs and ascertain the determinants of such needs among extension officers in Kwara State, Nigeria. The study revealed that the respondents are deficient in their competence of important ICT application areas considered important to their job. In view of the importance of the ICT to improve service delivery among the extension officers in the state, there is a need to address the major issues that affect their skills and understanding of the identified ICT application areas.

Towards ensuring that agricultural extension officers in Kwara State are optimally positioned to fully harness the potentials of ICT in transforming extension service delivery, the study makes the following recommendations:

Considering the high proportion of respondents that require training, the issue of continuous training of all extension officers in the use of specific areas of ICT such as internet browsing, e-mail, presentation and word processing should be urgently addressed by the Government;

Having expressed high levels of perceived importance of ICT to their job, extension officers should be encouraged to take advantage of the various private ICT training outlets for personal development; and

Lastly, job status should be considered in the design of training programs for agricultural officers in Kwara State.

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