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Assessment of Preference of Information and Communication Technologies in Training and Communicating Crop Farmers by Village Extension Agents of Ogun and Oyo States, Nigeria

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Abstract – The use of ICTs among the agricultural stakeholders is a prevalent phenomenon across the globe, which has significantly encouraged the information sharing on improved agricultural production. ICTs bridges the communication gap between the rural farmers and VEAs at least cost and lesser time. The study therefore assessed the ICTs preference in training and communicating crop farmers by VEAs. The study described the socio-economic characteristics of the VEAs in both States; identified and determined the frequency of use of the ICTs in training and communicating to farmers by the VEAs; and level of preference of ICTs for training and communicating farmers by the VEAs. The study revealed that more than half (57.5%) of the EAs in the selected States were between age of 31-40years and majority (90.6%) were males and literate with different educational qualifications and years of working experience in extension service. The study further revealed GSM-phone ($\overline{X}$ =2.78 -1st), CD/DVD player ($\overline{X}$ =2.35 – 2nd) and CD-ROM ($\overline{X}$ =2.33 – 3rd) as ICTs that had highest mean values on basis of frequency of use; GSM-phone ($\overline{X}$ =1.98 – 1st) and radio ($\overline{X}$ =1.68 – 2nd) were also ranked first and second on the basis of most preferred ICTs in training and communicating farmers; age (0.514), sex (0.432**), educational qualification (0.403**) and years of working experience (0.426**) of the EAs exhibited a significant relationship with their preference for ICTs in training and communicating farmers. The study therefore recommends the need to encourage the utilization of different ICTs that are considered to be appropriate for extension training and communication among the VEAs and the need for logistic support in form of acquisition of these ICT tools and provision of training on the application of different ICTs for extension services among the VEAs of the selected States.**

Keywords – Preference, ICT, VEAs, Training, Communicating, Farmers

I. INTRODUCTION

The role of Information and Communication Technologies (ICTs) in agriculture cannot be overemphasized. With ICTs, the communication gap between different stakeholders in agriculture has drastically reduced. The rural farmers are in constant contact with the extension service through the Village Extension Agents (VEAs). The excitement generated by ICT as it spreads throughout developing countries has often masked the fact that its contributions to agriculture are both rapidly evolving and poorly understood. Many African citizens and people in various industry sectors now own personal ICT devices such as computers, tablets and mobile phones among others. This trend also includes smallholder farmers using ICT for a variety of uses from personal communications to market intelligence. Indeed, in Sub-Saharan Africa, the mobile telecommunication Global System for Mobile

communication (GSM), is recognized as experiencing the largest increase in usage among all the ICT of any continent with some unique and innovative uses being found[6]. It is too early to have a clear idea, supported by rigorous analysis, of how ICT supports agricultural development, and under what conditions. While there is credible evidence of a positive impact, questions remain about how to make these innovations replicable, scalable, and sustainable for a larger and more diverse population.

A central goal of this Sourcebook is to analyze and disseminate evidence of ICT's impact on agricultural development and rural poverty reduction, exploring opportunities for long term and expansive efforts [4]. Employment of increasingly popular ICT tools, such as mobile phones, can enhance connectivity between extension personnel and farmers, which will enhance the quality of services delivered [5]. ICT emerges as a strong linking tool for two reasons. First, it is an effectual means for improving service provision as well as governance through the transparency and accountability it provides. Second, it encourages active participation of the service users, the farmers [8]. Effective use of modern ICTs may require Extension officers engage in professional development to build their skills in using modern ICTs to communicate with farmers. In addition, [9]indicated a lack of enabling policy and managerial support for using ICTs. As a result, it is critical an appropriate policy encourage extension officers' use of a combination of technologies to meet the diverse needs of farmers' [7]. ICT scan be effective in easing the burden of extension officers seeking to meet the demand of many farmers. Nevertheless, the use of ICTs in training or communicating innovations to rural farmers required that the VEAs need to possess certain skills in the application of different ICTs for extension services. More importantly, individuals VEAs may have preference for a certain ICT over the other in communicating available agricultural innovations to rural farmers. This study therefore assessed the ICTs preference in training arable crop farmers among the village extension agents of Ogun and Oyo States, Nigeria. Specifically, the study described the socio-economic characteristics of the VEAs in both States; identified and determined the frequency of use of the ICTs in training and communicating farmers by the VEAs; and level of preference of ICTs in training and communicating farmers by the VEAs. The study established significant relationship between the dependent and independent variables.

II. Methodology

This study was conducted in Ogun and Oyo States of Nigeria. The two States are part of South-West region which lies between latitude 6.00°N and 9.00°N and between longitude 2.00°E and 7.00°E. The region collectively covers 114.271 km2, approximately 12% of Nigeria's total area. The capital Oyo State is Ibadan, with population of 5,591,589 (Census, 2006). Ogun State's nickname is "Gateway State". It was created on February 3rd, 1976 from the former Western State with a total population of 3,751,140 with land area of 16,980.55km^2. The climate in the two States favours the cultivation of crops such as maize, yam, cassava, millet, rice, plantains, cocoa, palm produce, cashew etc (Ogun State –Wikipedia, the free encyclopedia.htm). These two States encourages agricultural production through the Agricultural Development Project under the ministry of agriculture. Oyo State Agricultural Development Project comprises of four zones (Ogbomoso, Ibadan/Ibarapa, Saki and Oyo), while Ogun State Agricultural Development Project made up of four Agricultural zones (Abeokuta, Ijebu-ode, Ilaro and Ikenne). The study employed multistage sampling technique in the selection of Two hundred and eighty-seven (287) EAs in two States, while structured interview schedule was used to collect relevant data from the sampled EAs. Focus Group Discussion (FGD) was conducted among the arable crop farmers to compared the EAs' responses on the focus of this study. The collected data were analyzed with descriptive tools such as frequency distribution, percentages, mean and ranking; and Pearson Product Moment Correlation was used to make inference between the measured variables.

III. Results And Discussion

3.1 Socio-Economic Characteristics

Data collected on socio-economic variables revealed in Table1 that 58.3% (Ogun) and 57.5% of the EAs were between the age distribution of 31 – 40 years with the mean age of 37.84 (Ogun) and 38.50 (Oyo) respectively, while the pooled percentage was 57.5% and the mean of 38.25 years. The result implies that the EAs in the selected States were in the age that could be considered active age, the age that is expected to influence their preference for the selection of appropriate ICTs in training and communicating farmers on new innovation in crop production across the States. On the sex of the EAs, majority (85.2% - Ogun and 93.9% - Oyo) were males, while only14.8%, and 6.1% of EAs were female from both Ogun and Oyo States. This result implies that both male and female are engaged for the extension service in the selected States. Most (99.1% - Ogun and 98.9% - Oyo) were married. This marital status is expected to affect their level of maturity and have a positive impact on their job performance and influence their

preference of ICTs for training their respective farmers within their job jurisdiction. More than half (57.4% - Ogun and 62.0% - Oyo) of the EAs in both States holds first degree (BSC/B.Tech); an equal proportion of 11.1% (Ogun) and 11.7% (Oyo) holds Ordinary National Diploma (OND); 13.9% (Ogun) and 7.8% (Oyo) holds Higher National Diploma (HND). Moreover, only 13.9% (Ogun) and 3.9% (Oyo) holds National Certificate of Education (NCE); while very few (3.7% - Ogun and 14.5% - Oyo) were Master degree holders. The result implies that all the EAs in the two States hold relevant educational qualifications. This educational status is expected to have influence on their preference of ICTs and encourage its appropriate application in training and communicating farmers on farming techniques.

Table1: Distribution of Respondents by Socio-Economic Characteristics

	*Frequency (Percentage)		
Socio-economic variables	**Ogun (n = 108)**	**Oyo (n=179)**	**Pooled (n=287)**
Age (years)			
≤30	18(10.0)	33(11.5)	51(17.8)
31-40	63(58.3)	102(57.0)	165(57.5)
41-50	23(21.3)	47 (26.3)	70(24.4)
Above 50	7(6.50)	12 (6.7)	19(6.60)
Sex			
Male	92(85.2)	167 (93.9)	260(90.6)
Female	16(14.8)	11 (6.1)	27(9.40)
Marital status			
Married	107(99.1)	177(98.9)	284(99.0)
Never married	1(0.9)	2(1.1)	3(1.0)
Educational qualification			
OND/HND/NCE	42(38.9)	40(22.4)	84(29.2)
BSc/B.Tech	62(57.4)	111(62.1)	173(60.3)
MSc/M.Tech4	(3.70)	26(14.5)	30(10.5)
Additional skill on ICTs			
Yes	87(80.4)	140(78.2)	260(90.6)
No	21(19.6)	39(21.8)	60(20.9)
Years of working experience			
≤5 39	39(38.9)	63(35.2)	102(35.5)
5-10	42(38.9)	73(40.8)	115(40.1)
Above 10	27(25.0)	43(40.0)	70(24.4)
Mean:	5.96	6.19	6.10

Source: Field Survey, 2012

Figures in parentheses are percentages

Again, majority (80.4% - Ogun and 78.2% - Oyo) have additional skills in ICTs. The knowledge of EAs in ICTs may be a factor that could influence their preference of different ICTs used for extension purpose. Table 1 further revealed that 36.1% (Ogun) and 35.2% (Oyo) of the EAs indicated between less and equal to 5 years of working experience in extension services as a profession, 38.9% (Ogun) and 40.8% (Oyo) indicated between 6.10 years of working experience, 13.9% (Ogun and 15.6% (Oyo) indicated between 11 – 15 years of working experience, while only 11.1% (Ogun) and 8.4% (Oyo) have above 15 years of working experience as at the time the data was collected. The mean years of working experience of the EAs in extension service were approximately 6years in both States and that of pooled. The result suggests that all the sampled EAs have certain number of years of working experience. The difference in their years of experience may be due to variations in their years of engagement in extension service. This years of working experience in extension service may also have influence on their preference of ICTs for training and communicating farmers on extension crop recommendations.

3.2 Frequency of use of the ICTs in training and communicating to farmers by the VEAs

This objective was measured on three (3) rating scale of Often, Sometimes, and Rarely and mean ($\overline{X}$) score was calculated to determine the rank order of the frequency of use of the identified ICTs among the VEAs of the selected States. Table2 reveals that Global System for Mobile Communication (GSM-phone) was ranked first with mean value of 2.78 followed by CD/DVD Player (2nd), ($\overline{X}$ =2.35) CD-ROM (3rd) ($\overline{X}$ =2.33) and flash drive (4th) while extension bulletins/poster/newspaper were ranked fifth (5th) ($\overline{X}$ =2.02), internet, projector and digital camera were ranked 6th, 7th and 8th with mean values of 2.00, 1.86 and 1.75 respectively. The result implies that GSM-phone is frequently used ICT among the VEAs in the area when compared with other types of ICT identified. The reason behind this may be due to the fact that GSM-phone is the major ICT used by VEAs and their clients which appeared to be the most used training and communication tool in the current age, while the use of CD/DVD player that was ranked second among the most frequently use ICTs may be due to the ownership status of computer set or laptop.

Table 2: Distribution of respondents by frequency of use of the ICTs for training and communicating farmers

ICT Facilities	**Frequency (Percentage)**				
	Frequency of use				
	Often	**Sometime**	**Rarely**	$\overline{X}$	**Rank**
CD/DVD Player	171(59.6)	45(15.7)	71(24.7)	2.35	2nd
CD-ROM	162(56.4)	58(20.2)	67(23.3)	2.33	3rd
Digital camera	42(14.6)	131(45.6)	114(39.7)	1.75	8th
Projector	87(30.3)	72(25.1)	128(44.6)	1.86	7th
Flash drive	87(30.0)	121(42.2)	79(27.5)	2.03	4th
GSM-phone	225(78.4)	62(21.6)	-	2.78	1st
Internet	92(32.1)	104(36.2)	91(31.7)	2.00	6th
Ext. bulletins/ poster/news mag.	64(22.3)	164(57.1)	59(20.6)	2.02	5th

Source: Field Survey, 2012

Figures in parentheses are percentages

This may also due to the fact that individual VEAs have access to either personal computer set or laptop which may be responsible for the frequency of use of CD/DVD player among the sampled VEAs. This is similar to the result reported by [3] in the use of ICTs by researchers in Edo State, Nigeria. The farmers in both States during the FGD ranked GSM-phone first as the most frequently ICT used in accessing information on agricultural extension technologies from extension agents, followed by radio and television. Though it was clear that GSM-phone are used among the individual extension agents of both states, while the radio and television are usually used by the extension agency of the two States. The extension bulletins/posters are usually distributed to farmers by the VEAs.

Therefore, one can download or send farm information through text message on mobile phones. This is an indication that times are indeed changing to allow training and communication and contacts without physical contact with each other. The present Growth Enhancement Scheme (GES) of the Federal Government of Nigeria incorporate the distribution of mobile phones to small-scales farmers; this is a right step in a right direction by virtue of this result. This implies that the Federal Government has positioned Nigerian farmers for prompt extension services and improved farm support services. This assertion is in line with [1], who reported that mobile phone penetration has growing rapidly even in the remote rural areas. The unprecedented speed of adoption of mobile phone technology has raised the general expectations about its potential contributions to spread of innovative farming technology as well as farmers knowledge and awareness of other relevant knowledge and information.

3.3 Level of preference of ICTs for training and communicating farmers by the VEAs

This objective was measured on three (3) rating scale of Mostly Preferred, Preferred and Not Preferred and they were also ranked accordingly. Table3 reveals that Global System for Communication (GSM-phone) had the highest mean value of 1.98 and was ranked first among different ICTs identified, followed by radio, television and projectors were ranked 2nd ($\overline{X}$ =1.68), 3rd ($\overline{X}$ =1.540 and 4th ($\overline{X}$ =1.45). Similarly, extension bulletins/ poster/newspapers were ranked 5th ($\overline{X}$ =1.12), followed by internet (6th) ($\overline{X}$ =1.09), camera, flash drive and digitalized video were ranked 8th ($\overline{X}$ =0.90), 9th ($\overline{X}$ =0.89) and 10th ($\overline{X}$ =0.62) respectively. This implies that all the respondents have preference for the use of different ICTs in training and communicating agricultural extension technologies to rural farmers. Their level of preference may be due to literacy of their clients, different benefits and what they may considered as advantage derived from one form of ICT or the other, that may be differ with respect to different ICT gadgets used in training and communicating agricultural extension messages.

Table 3: Distribution of respondents by the level of preference of ICTs for training and communicating farmers

ICT Facilities	**Frequency (Percentage)**				
	Level of Preference				
	Mostly preferred	**Preferred**	**Not preferred**	$\overline{X}$	**Rank**
Radio	210(73.2)	62(21.6)	15(5.2)	1.68	2nd
Television	170(59.2)	102(35.5)	15(5.2)	1.54	3rd
CD-ROM	48(16.7)	75(26.1)	164(57.1)	0.60	11th
Digitalized camera	73(25.4)	113(39.4)	101(35.2)	0.90	8th
Digitalized video	21(7.3)	135(47.0)	131(45.6)	0.62	10th
Projector	171(59.6)	95(33.1)	43(15.0)	1.45	4th
CD/DVD Player	117(40.8)	75(26.1)	95(33.1)	1.08	7th
Flash drive	73(25.4)	110(38.3)	104(36.2)	0.89	9th

Internet	109(38.0)	93(33.1)	83(28.9)	1.09	4th
GSM-phone	281(97.9)	6(2.1)	-	1.98	1st
Ext. bulletins/ poster/news mag.	98(34.1)	125(43.6)	64(22.3)	1.12	5th

Source: Field Survey, 2012

Figures in parentheses are percentages

$\overline{X}$ **: Mean**

During the FGD, rural farmers also ranked GSM-phone first, followed by radio, television, while extension bulletins/posters/leaflets were ranked least in order of preference of identified ICTs used by the extension agents in training and communicating farmers on extension crop technologies. It is interesting to note that GSM-phone, radio and television came first, second and third respectively. This shows that these are the most preferred ICT tools for VEAs. It is also interesting to know that Internet service came forth in order of preference while digitalized camera and digitalized video came 8th and 10th in the order. This result corroborates [2], who reported that the preferences of old ICTs among the respondents were ranked in order of importance, radio>video>television>extension bulletin/poster>newspaper>land telephone. Also, the pattern of preferences for the new ICTs are GSM-phone>computer>Internet and CD-ROM.

3.4 Test of hypothesis

For the test of significant between the measured variables, Pearson Product Moment Correlation (PPMC) was used and the result in Table4 revealed that most of the selected socio-economic variables such age (0.514**), sex (0.432**), educational qualification (0.403** and years of working experience in extension service (0.426*) respectively exhibited significant relationship with the level of preference of ICTs for extension training and communication among the EAs. This result implies that all the afore-mentioned socio-economic characteristics of the EAs have decisive influence on their preference of ICTs for extension training and communicating farmers in the study area.

Table4: Test of significant relationship between the selected socio-economic variables and level of preference of ICTs for training and communicating farmers by the EAs– using PPMC analysis

Socio-economic variables	Correlation coefficient	Decision
Age	0.514**	Reject Ho
Sex	0.432**	Reject Ho
Marital status	0.011	Accept Ho
Educational qualification	0.403**	Reject Ho
Years of working experience	0.426**	Reject Ho

Source: Computed Data, 2012.

****: Correlation is significant at 0.01 level (2-tailed)**

***Ho: Null hypothesis**

IV. Conclusion And Recommendations

Conclusively, this study revealed that the EAs in the both Ogun and Oyo States are of different age groups, with male EAs constituted the major population of the sample and they were married with few single populations. All the EAs holds different qualifications with majority holding B.Tech/B.Sc and few M.Sc holders. Most of the EAs had additional skill on ICTs, hence they are not novice in the operation of ICT such as CD/DVD player, Digital camera, projector flash drive with GSM-phone that had the highest mean in the measured of frequency of use of different ICTs and as the most preferred ICT compared to the rest of ICTs use for extension/farmers training/communication among the EAs sampled for the study. The result of the PPMC analysis revealed that most of the selected socio-economic characteristics of the EAs were statistically significant with the level of preference of ICTs for training and communicating farmers on extension crop recommendations. The study therefore recommends the need to encourage the utilization of different ICTs that are considered to be appropriate for extension training and communication among the EAs. Also, there is need for logistic support in form of acquisition of these ICT tools and provision of training on the application of different ICTs for the extension services among the EAs of the selected States.

References

[1] Aker, J.C. (2011). Dial 'A' for agriculture: a review of information and communication technologies for agricultural extension in developing countries. *Agricultural Economics, 42 (6), 631-647.*

[2] Augustine, A.N. (2011): Use of Information and Communication Technologies among Women Farmers in North-Eastern, Nigeria. Unpublished Ph.D Thesis of Department Agricultural Extension and Rural Development, Faculty of Agriculture and Fishery, University of Ibadan. Pp. 23 & 25.

[3] Banmeke, T. O. A. and Ajayi M. T. (2010). The use of information and communication technologies (ICTs) by agricultural researchers in Edo state, Nigeria, *The Journal of Development Communication, 21(1):53-61*

[4] e-Sourcebook (2017). ICT in Agriculture: Connecting Smallholders to Knowledge, Networks and Institutions. World Bank Group, Updated Edition, pg. 6.

[5] Ferroni, M., & Zhou, Y. (2012). Achievements and challenges in agricultural extension in India. *Global Journal of Emerging Market Economies, 4(3), 319-346.* doi:10.1177/0974910112460435

[6] Irungu, K.R.G., Mbugua, D. and Muia, J. (2015). Information and Communication Technologies (ICTs) Attract Youth into Profitable Agriculture in Kenya, *East African Agricultural and Forestry Journal, 81(1), 24-33*

[7] McNamara, K., Belden, C., Kelly, T., Pehu, E., & Donovan, K. (2017). Introduction: ICT in agricultural development. In World Bank (Ed.), ICT in agriculture: Connecting smallholders to knowledge, networks, and institutions (pp. 3-12). Washington, DC: World Bank. Retrieved from http://documents.worldbank.org/curated/en/522141499680975973/ICT in-agriculture -connecting-smallholders-to-knowledge-networks-and-institutions

[8] Raabe, K. 2008. "Reforming the Agricultural Extension System in India: What Do We Know About What Works Where and Why?" IFPRI Discussion Paper 775. IFPRI, Washington, DC.

[9] Ramjattan, J. (2017). Factors influencing the use of extension methods, tools and techniques in Trinidad and Tobago (master's dissertation). The University of the West Indies: St. Augustine