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Agricultural Extension Officials and Utilization of Information and Communication Technologies In The Niger Delta, Nigeria

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ABSTRACT

The researcher attempted to determine the level of utilization of information and communication technologies (ICT) for agricultural extension activities by Agricultural Extension officers in Nigeria's Niger Delta region. Data were derived from 120 Agricultural Extension Officers affiliated to public extension agencies, and 40 Agricultural Extension Officers affiliated to private extension agencies. Findings revealed that public extension officers utilized a wider range of ICT (especially the broadcast and print ICT) than their private agency counterparts. Private Extension Officers, however, utilized more of telecommunication / computer ICTs, which are faster means of accessing agro-technological information. T-test statistics revealed the existence of significant differences in the utilization of broadcast /audio visual and print technologies between the two groups of Extension Officers. Recommendations have been to expand the ICT utilization base of extension personnel.

INTRODUCTION

Agricultural extension has been recognized as an essential mechanism for delivery of knowledge (information) and advice, as an input for agricultural development (Jones and Garforth, 1997). Criticisms of the archetypal, passive, top-down, transfer of

technology (TOT) model of agro technology dissemination utilized by extension agencies, have led to an increasing transformation of extensions' traditional roles, to focus more on human resources development. In this case, the focus is on developing the problem-solving and decision-making capacities of farmers (Quamar, 2004) and on improving overall rural livelihood, as opposed to only agricultural production (Richardson, 2005). The essence of the changes above is to reorient extension to play catalytic roles. Narayan (1993) explains this, in terms of seeking to change the prevailing psychological and normative orientation, forge new relations and encourage new ways of thinking and evaluating, as parts of organizational development. Information and Communication Technologies (ICT) are perceived as an important means of achieving such a transformation.

ICT can reach a larger number of dispersed people and yet ensure a higher level of interaction than other forms of media. ICT can also enhance two-way information flow and act as catalysts for improved information sharing and greater participation at the community level, and can bring new services to rural areas, where farmers as users, will have much greater control than before, over current information channels (Zijp, 1994). On the other hand, ICT can help extension officers to gather, store, retrieve and disseminate a broad range of information needed by farmers (Meera et al, 2004).

The primacy of the agricultural extension officer in information dissemination for sustainable agricultural and rural development has been established. There is, therefore, an urgent need for agricultural extension practitioners to align with the present trend of technological changes. Failure to get along may spell doom for agricultural development.

PURPOSE AND OBJECTIVES

It is against this background that this study was conceived, to ascertain the level of utilization of ICTs among extension officers affiliated to public and private extension organization in the Niger Delta region of Nigeria. This is a first step towards a determination of ways and means to assist such extension agents to access tools necessary to enhance their effectiveness. On a specific basis, the researcher attempted to determine the level of utilization of ICTs by extension officers of private and public agencies in the study area. A hypothesis was also tested, to determine whether or not a significant difference existed in the level of utilization of ICT between the two groups of respondents, those in private and those in public agencies.

MATERIALS AND METHODS

The study was conducted between the months of February and April 2006. The population for the study comprised of all serving Agricultural Extension Officers in both public and private extension organizations in the Niger Delta. A multistage sampling procedure (random, purposive, stratified) was utilized to select 160 Extension Officers for the study. Thirty extension officers were picked from each of the Agricultural Development Programmes (ADPs) in four States of Akwa-Ibom, Bayelsa, Delta, and Rivers, making up 120 public extension officers. Twenty extension officers each were sampled from both the Shell Petroleum Development Company Farm (SPDCF) and AGIP Oil Farms (AGF), making up 40 private extension officers. Data collection was with the aid of a pre-tested and validated structured questionnaire. This was complemented by In - Depth Interview (IDI) sessions.

To determine the level of utilization of ICT, an array of available communication technologies and devices was drawn up and then categorized into three broad groups of: (1)

broadcast/audio visual technologies (2) telecommunication and computer technologies and (3) print technologies. Respondents were requested to respond to their Frequency of utilization of ICT with the aid of a 3-point Likert continuum of Never Utilized, Occasionally Utilized, and Frequently Utilized. These were assigned respective scores of "1", "2", and "3". Total and mean scores were thereafter computed for the frequency of utilization level of each itemized ICT, after which a cut-off mean score (\bar{x}) of 2.0 was utilized to demarcate between a Frequently Utilized ($\bar{x} > 2.0$) and Rarely Utilized ($\bar{x} < 2.0$) ICT. Descriptive (means and standard deviation) and inferential (independent t-test) statistical tools were utilized to analyze collated data. Results were tested at the 95% (0.05) and 99% (0.01) levels of significance.

RESULTS AND DISCUSSION

Frequently Utilized ICTs

The ICTs that were frequently used by extension agents fell into three categories. Findings related to each category are presented below.

(1) Broadcast/Audio-Visual Technologies

Table 1 shows that with regards to broadcast/audio-visual technologies, public extension officers were revealed to utilize radio and television programmes and television cameras, on a frequent basis, unlike private extension officers, who scored high only in the frequent utilization of TV programmes for their extension activities. It may be noted that public extension agencies operate on a statewide basis, while private extension agencies are enclave programmes, which cover limited geographical areas, with regards to areas of operation of oil companies. This may account for the limited use of wide-coverage broadcast equipment by private extension agents. A related

finding revealed that private extension agencies utilize the television medium to broadcast general information on their activities and not specifically for agricultural oriented activities. Arokoyo (2003) and the National Agricultural Extension Research and Liaison Services/Programmes Co-ordinating Unit, revealed that the radio and TV had been the major ICTs used in agricultural extension delivery in Nigeria (NAERLS/PCU; 2002).

Table 1: Frequency of Utilization of Broadcast/Audiovisual Technologies by Extension Officers in the Niger Delta, Nigeria, 2006
(n=160)

S/ N	ICT	Private Extension Agents (n=120)		Public Extension Agents (n=40)	
		Mean	Remarks	Mean	Remarks
1	Radio	0.0	RU	2.97	FU
2	Television	2.69	FU	2.95	FU
3	Camera	0.71	RU	2.91	FU
4	Projector	0.96	RU	2.29	RU
5	Video recorder	1.69	RU	2.47	RU
6	Media van	2.13	RU	2.24	RU
7	Cinema	0.0	RU	0.0	RU

RU = Rarely Utilized

FU = Frequently Utilized

(2) Telecommunication / Computer Technologies

With reference to telephone/computer technologies, private extension officers were revealed in Table 2 to utilize frequently the computer and telephone (including GSM) either to access information or communicate with their clientele. Other technologies were rarely utilized for extension activities. Table 3 also shows that public extension agents rarely utilized the itemized

technologies for extension activities. The above reported finding is a worldwide phenomenon. Leary and Berge (2006) revealed that even in the technologically advanced European and American economies, e learning in agriculture fell significantly behind current adoption rates in non agricultural sectors. With regard to the Nigerian situation, Arokoyo (2003) confirmed that current ICT use in extension delivery is extremely low. He also affirms that despite the explosion in the Global System of Mobile (GSM) communication in Nigeria, telephone use in extension delivery was either non-existent or at best, very insignificant.

Table 2: Frequency of Utilization of Telecommunication /Computer Technologies by Extension Officers in the Niger Delta, Nigeria, 2006

(n= 160)

S/ N	ICT	Private Extension Agents (n=120)		Public Extension Agents (n=40)	
		Mean	Remarks	Mean	Remarks
1	Computer	2.5	FU	0.85	RU
2	GSM/Telephone	2.8	FU	0.85	RU
3	e-mail	0.45	RU	1.44	RU
4	CD-ROM	0.15	RU	2.41	RU
5	Radiophone	0.15	RU	0.93	RU
6	Intercom	2.4	RU	0.85	RU
7	Internet	0.22	RU	0.11	RU
8	Fax	1.66	RU	1.69	RU
9	GIS	0.15	RU	0.58	RU
10	Satellite	0.0	RU	0.0	RU

RU = Rarely Utilized

FU = Frequently Utilized

A related finding in the course of this research study revealed reasons for this trend to include (among very many others) lack of ICT readiness, occasioned by lack of exposure to ICT equipment and to training activities on the part of extension officers, and poor infrastructure development, occasioned by lack of funds. The situation in the study area is compounded by the rough, marshy and risky terrain, which therefore skews the skeletal provision of ICT facilities towards only the major cities (Mac-Ikemenjima, 2005). Lack of funds is a recurring decimal in most developmental efforts in developing countries and according to Sangowusi (2003) also affects ICT provision and utilization in the study area.

(3) Print Technologies

Table 3 shows research results on frequency of utilization of print technologies and reveals that public extension officers utilize 6 of the 11 Listed ICTs for extension activities on a frequent basis. The most frequently utilized ICT was revealed to be the pre-prepared and pre-distributed "Calendar of Operations" ($x = 3.96$). Private sector extension officers were revealed to utilize only one item (research bulletin) on a frequent basis. It may be noted that research bulletins are releases from research institutes that possess characteristics of currency and brevity. It was ascertained that managers of private extension organizations have in place a mechanism to acquire detailed information to complement the brevity of research bulletins. It may therefore be inferred that private extension officers easily access current relevant information on agro-technologies for onward transmission to their clientele.

Table 3: Frequency of Utilization of Print Technologies by Extension Officers in the Niger Delta, Nigeria, 2006.

(n=160)

S/ N	ICT	Private Extension Agents (n=120)		Public Extension Agents (n=40)	
		Mean	Remarks	Mean	Remarks
1	Newsletter	1.3	RU	2.87	FU
2	Research bulletin	2.7	FU	2.0	RU
3	Leaflets/handbills	0.85	RU	2.85	FU
4	Posters	0.85	RU	2.09	RU
5	Calendar of operations	0.85	RU	3.96	FU
6	Farm diaries	0.85	RU	2.94	FU
7	Annual reports	1.36	RU	2.7	FU
8	Journals	0.77	RU	1.35	RU
9	Newspapers	0.0	RU	2.08	RU
10	Magazines	0.0	RU	2.51	FU
11	Agric-maps	0.0	RU	0.0	RU

SD = Standard Deviation
FU = Frequently Utilized

RU = Rarely Utilized

It has been revealed that public extension officers utilize more of the print technologies for extension activities. A question mark, however, arises as to the currency of such acquired information. For instance, the most frequency utilized print technology (Calendar of Operations) is prepared well in advance of farming seasons and its focus is to guide extension officers in their fieldwork activities. It does not provide for emergency situations.

As a summary, it may be inferred that public extension officers utilize a relatively wider range of ICTs, specifically the broadcast and print ICTs, on a more frequent basis in their extension activities while private extension officers utilize more of telecommunication / computer ICTs in their extension activities.

Test of Relationship in the Level of Utilization of ICTs by Public and Private Extension Officers in the Niger Delta, Nigeria

An attempt was made to determine the existence or otherwise of a significant difference in the level of utilization of ICTs by private and public agricultural extension officers. T-test result (Table 4) reveals a significant difference (4.94) between private and public sector extension personnel in the frequency of utilization of broadcast / audio-visual ICTs. A similar significant difference (14.5) was revealed to exist between private and public extension officers, with regards to frequency of utilization of print technologies. A non-significant difference (0.54) was recorded however between private and public extension officers, with regards to the frequency of utilization of telecommunication / computer technologies.

In essence, with reference to the hypothesis, it may be inferred that significant differences existed between public and private extension officers' in the frequency of utilization of broadcast/audio visual ICTs and in the frequency of utilization of the print ICTs. A non-significant difference was however recorded between the two groups of respondents' with regard to the frequency of utilization of the telecommunication/computer ICTs.

Table 4: Relationship Between Private and Public Extension Officers in Frequency of Utilization of ICT by Extension Officers in the Niger Delta, Nigeria, 2006. (n=160)

ICTs	Extension Agents	Mean	SD	t-value	t-critical
Broadcast/ Audio visual	Public (n=120)	0.6	0.6	494*	2.6
	Private (n= 40)	2.0	1.5		
Telecommunication Computer	Public (n=120)	0.78	0.4	0.54ns	2.6
	Private (n= 40)	1.07	0.3		
Print	Public (n=120)	0.75	0.5	145**	2.6
	Private (n= 40)	2.72	0.8		

ns = Not significant

* = 5% level of significance

** = 1% level of significance

SD = Standard deviation

CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

Public sector extension officers were revealed to utilize the broadcast /audiovisual ICTs and the print ICTs on a more frequent basis, unlike private sector officers who utilized more frequently the telecommunication / computer ICTs. It was also revealed that while public extension officers had access to a wider range of ICTs than did the private extension officers. The few ICTs to which the private extension agents had access were ones that promoted faster linkage to current agro-technological information.

There is a need for personnel in public and private extension organizations in the Niger Delta to join forces and cooperate in the deployment of personnel and resources for sustained improved agro technology delivery to their farmer clientele.

In the short term, a mechanism should be developed by relevant authorities to institute joint training sessions for public and private extension officers, in order to expand their scope of awareness and access to a wider range of relevant and beneficial ICT, than those being presently utilized. Joint training sessions will also present opportunities for interaction between, and among the two groups of agents and with research scientists. A resultant effect would be increased exchange of information and awareness on local and site-specific agro-ecological practices, with the ultimate aim of helping research scientists to adapt improved technologies to suit local conditions.

In the medium and long term, efforts should be focused on the acquisition of more relevant ICT and exposure of extension agents to their utilization. In this regard, an implication exists that efforts should be targeted at the establishment of Extension Officers' Resource Centers (EORC) in each state of the Niger Delta. It is expected that each proposed resource centre would be equipped with a full complement of relevant ICT. The proposed EORC will provide a meeting point where extension officers may visit at short notice - to acquire relevant up-to-date information and obtain timely solutions to knotty agro-problems. For extension officers whose locations are far removed from such facilities, refresher courses could be organized on a monthly basis - to familiarize them with relevant agro information / technologies.

Efforts should also be targeted at assisting the public extension officers (especially) through credit facilities / subsidized rates to acquire relevant ICT for personal / official use since awareness may not really translate to utilization without personal ownership.

The petroleum-prospecting companies, as part of their community development service could assist to ameliorate funding constraints inherent in the above proposals. They may take a cue from the activities of Statoil a Norwegian Oil prospecting company - that has empowered an NGO called Pro Natura International (PNI) to embark on ICT - based community development activities in both Akassa (Bayelsa State) and Eastern Obollo (Akwa Ibom State).

REFERENCES

- Arokoyo, T. (2003). "ICTs in the Transformation of Agricultural Extension: The Case of Nigeria" [www.cta.in/observatory 2003/ case studies/case-studies-Nigeria, pdf](http://www.cta.in/observatory/2003/case_studies/case-studies-Nigeria.pdf). Accessed 8th Jan. 2007.
- Chamala, S. and P. M. Shingi (1996). "Establishing and Strengthening Farmer Organizations (In) B. E. Swanson et al (eds) Improving Agricultural Extension: A Reference Manual. FAO Rome. Pp. 47-54.
- Jones, G. E. and C. Garforth (1997). "The History, Development and Future of Agricultural Extension" In B. E. Swanson, R. D. Bentz and A. J. Sofranko (eds). Improving Agricultural Extension: A Reference Manual pp 3-12 FAO Rome.
- Leary, J. and Z. L. Berge (2006). Trends and Challenges of e-learning in National and International Agricultural Development. International Journal of Education and Development Using ICT 2(2) 28-34.
- Mac-Ikemenjima, D. (2005). "e-education in Nigeria. Challenges and Prospects". Paper Presented at the 8th UNICT Task Force Meeting. April 13-15 Dublin, Ireland.
- Meera, S. N; A. Jhamtani and D. U. M. Rao (2004) "Information and Communication Technology in Agricultural Development: A Comparative Analysis of Three Projects in India" Agricultural Research and Extension Network Paper No. 135 14pp.
- Extension and Research Liaison Service / Projects Co-ordinating Unit (NACRLS/PCU - 2002). Field Situation Assessment of the Wet Season Agricultural Production in Nigeria. NAERLS/PCU (Kaduna/Abuja) 24pp.
- Narayan, D. (1993). Focus on Participation: Evidence From 121 Rural Water Supply Projects UNDP/World Bank Supply and Sanitation Programme. Washington DC. World Bank.

- Quamar, M. K. (2004). "Agricultural Extension at the turn of the Millinium: Trends and Challenges [http://www.fao.org /DOCREP/003/X925M / x925MI5.htm](http://www.fao.org/DOCREP/003/X925M/x925MI5.htm).
- Richardson, D. (2005). "How Can Agricultural Extension Best Harness ICTs to Improve Rural Livelihoods in Developing Countries" (In) ICT in Agriculture: Perspective of Technological Innovation. E. Gelb and A.O. Offer (eds) Hebrew University of Jerusalem, Centre for Agricultural Economics Research.
- Sangowusi, F. O. (2003). "Problems of Accessing Scholarly Publications by Nigerian Scientists: A Case Study of the University of Ibadan" Journal of Information Science 4 (29) 127-134.
- Zijp, W. (1994). Improving the Transfer and Use of Agricultural Information: A Guide to Information Technology. World Bank Discussion Paper 247. Washington. World Bank