

AVAILABILITY, ACCESSIBILITY AND UTILISATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AMONG EXTENSION WORKERS IN THE IKA SOUTH LOCAL GOVERNMENT AREA OF DELTA STATE

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Abstract

The study investigated the availability, accessibility and utilisation of Information and Communication Technology among extension workers in the Ika South Local Government Area of Delta State. A total of 80 respondents were selected for the study. Data were collected using a structured questionnaire and analysed using descriptive statistical tools (frequency, percentage mean). The grand mean was used to separate the strong constraints from the weak ones, and Pearson Product Moment Correlation was used to test the relationship between extension workers' socio-economic characteristics and the utilisation of ICT facilities for extension service delivery. The ICTs were looked into in three areas (Broadcast/studio visual, telecommunication/ computer and print technology). The result shows that (13.7%) majority accessed and utilised projector (broadcast/studio). The result on telecommunication/computers revealed that a higher proportion (17.5%) accessed and utilised computers available to them for extension service delivery. On print technology, it shows that the majority (93.7%) agreed with the availability, accessibility and utilisation of agricultural

maps. However, the level of personal income (mean=2.83) was the only strong constraint to the use of ICT among extension personnel in the area. Other constraints were regarded as weak because they fell below the benchmark mean of 2.50. The hypothesis tested using a grand mean (1.88) suggests that constraints such as level of personal income (mean=2.83), years of experience at work (mean=2.39) and gender (mean=2.07) were significantly more important in affecting extension agents in the use of ICT compared to other constraints. The result also shows that significant relationship existed between age ($r = 0.175$; $p < 0.05$), education ($r = 0.276$, $p < 0.05$) and job experience ($r = 0.221$, $p < 0.05$). It is therefore concluded that the use of ICT among extension workers has not gained popularity with special reference to broadcast/ studio visual technologies and telecommunication /computer technology. The extensionists are probably relying on personal contact with farmers, which has always been criticised for targeting small farmers. It is recommended that; Special training in the form of seminars and workshops be organised by the appropriate authorities to sensitise extension workers. This will help to build their capacities on the use of appropriate targets.

Keywords: *Information and communication technologies (ICT), agricultural extension, rural development.*

Introduction

Agricultural Extension services are made to enhance farmers' knowledge and skill towards improved yield. Studies of the agricultural development process have proved that education is one of the crucial variables for achieving economic growth and human progress. An extension is seen as part of education meant to enhance farmers; this is because the agricultural extension is an effective means to reach farming households in rural areas (Adekunle, 2013). It is the most important public service with the widest range of responsibilities for agricultural and rural development (Adeyandu *et al.*, 2015). Agricultural

extension is an educational sector that connects the farming communities with innovation centres, thereby improving their production capacity and standard of living. Agricultural information raises farmers' knowledge of farming technologies that can be used for the general growth of agriculture and the improvement of farmers' living standards (Bello *et al.*, 2012). However, recent indices have shown that the agricultural industry has begun to rise slowly but steadily (Oladipo, 2013).

Information and Communication Technology (ICT) can bring innovations to rural areas, giving farmers (end users) more control over existing information channels than ever before. Access to such a fresh new source of information is critical for the farming systems' long-term development. ICT may be extremely beneficial by allowing extension workers to collect, store, retrieve, and transmit a wide range of information that farmers require, thereby changing them from extension workers to knowledge workers (KW). The extent to which information services please users and help in agricultural growth, according to Ozowa (1999) quoted by Uganneya *et al.* (2012), is a source of contention and disagreement. This is because the spread and acceptance of any given piece of information are heavily reliant on the method through which it is distributed, as well as the users, knowledge, and comprehension of the medium through which it is disseminated. However, Narasimba (2013) believes that agricultural input marketing, especially pesticides, fertilisers, seeds and farm equipment marketing, with its peculiarities in terms of widespread customer base, multitier and multi-product distribution system to millions of farmers, can be improved through ICT application.

Agriculture, a discipline, necessitates that its users be aware of and have access to information to better their numerous tasks. Likewise, Durojaiye *et al.* (2013) reported that the creation of awareness and availability of an ICT-enabled agriculture centre (IAC) in rural communities (e.g. adopted villages) in Nigeria by NAGRLS using the internet resulted in farmers being more informed about the development made possible by the use of the internet and other associated ICT facilities in the country. Furthermore, Researchers can communicate directly with farmers and other agricultural information and knowledge system actors. They are well-positioned to use ICT to gain access to expert information or additional information that may be useful to farmers. ICTs can enter underserved areas and improve education through remote learning, as well as support the development of important local requirements such as food, agriculture, health, and water.

Objectives of the Study

The study's broad aim was to assess the availability, accessibility and utilisation of ICT among extensionists. Specifically, the study:

- examine the personal characteristics of the respondent in the study area
- Identify the current ICT tools used in extension delivery services in the study area?
- Assess the availability, accessibility and utilisation level of ICT facilities by the extension agents (worker).
- Identify and examine the key factors militating against the effective use of ICTs in the area.
- examine the relationship between extension worker socio-economic characteristics and the utilisation of ICT facilities

Hypotheses of the Study

H₀₁: There is no significant relationship between extension workers' socio-economic characteristics and the use of ICT in extension service delivery.

Methodology

The study covers the availability, accessibility and utilisation of ICTs facilities by extension workers in the Ika South Local Government Area, the perception of extension workers in the usage of ICT facilities and their competency in the use of ICT facilities. The focus was on the socio-economic characteristics of the respondents, the current ICT tools used in extension delivery services, access to facilities by the extension agents, factors militating against effective use of ICTs as well as the relationship between extension workers' socio-economic characteristics and the use of ICT in extension service delivery. Data were collected from the primary source, extension agents, and subject matter specialists (SMS) who are N-power (Need for Power) in the study area through a questionnaire. Multi-stage random sampling was used in selecting respondents (Table 1). The first stage was the purposive selection of the Delta North Agricultural zone out of the three Agricultural zones in the state. The criteria for selection were; the level of farming activities taking place in the zone and proximity (Nearness to the respondents). Secondly was the purposive sampling of Ika South out of the nine (9) Local Government Area in Delta North Agricultural zone, finally was a random selection of 80 Agricultural Extension Agents (respondents) for the study.

Table 1

Senatorial District LGA Extension Personnel	Number of Respondents
Delta North Ika south ADP (Agricultural Development Program)	40
SMS (subject matter specialist) and N-power (need for power)	40
Total	80

Method of data analysis

The data collected were analysed using descriptive statistics (frequency, percentage, mean), grand mean (used to separate the strong constraints from the weak ones) and Pearson Product Moment Correlation was used to test the relationship between extension worker socio-economic characteristics and the utilisation of ICT facilities for extension service delivery.

Results and Discussion**Socio-Economic Characteristics****Table 2 Socio-Economic Characteristics**

Categories	Frequency	Percent	Mean	
Age Distribution				
30-34	11	13.9	41	
35-39	15	19.0		
40-44	37	46.8		
45-49	7	7.6		
50 and above	10	12.7		
Educational Qualification				
NCE/OND	11	13.9	13	
HND/ B.Sc.	42	51.9		
M.Sc./Ph.D.	27	34.2		
Job Experience				
Less than 5	11	13.9		
5 – 9	10	12.7		
10-14	32	39.2		
15-19	10	12.7		
20-24	11	13.9		
25 and above	6	7.6		
Marital Status				
Single	10	12.7		
Married	65	81.0		
Widowed/widower	5	6.3		
Official Designation				
Extension supervisors	11	13.9		
Subject matter specialist	5	6.3		
Extension Agents	58	72.2		
N-Power	6	7.6		

Source: Field survey data

Table 2 shows that the majority (46.8%) of the respondents fell between the ages of 40-44 years, (19.0%) were of the age bracket of 35-39 years, 13.9% fell into the age of 30-34 years while 12.7% and 7.6% fell into the age brackets of 50 years and above and 45-49 respectively. The average age of extensionists was 41 years. This suggests that the respondents had some experience in extension activities which places them in a better opportunity to value the use of ICT in agricultural extension service delivery.

The table also revealed that a higher percentage (51.9%) had HND/B.Sc., 34.2% had M.Sc/PhD. In contrast, 13.9 percent had NCE/OND, which indicates that the extension personnel have the requisite education to carry out effective extension service.

The average year of experience of the respondents was 13 years which implies that they have gathered some level of expertise that could enhance their ability to work with farmers using ICT. The majority (81.0%) were married, 10% were single, while 6.3% were widows/widowers. That majority of the respondents were married suggested a good sense of family responsibility, which can positively influence the state of mind of the extension workers

to deliver extension services to yield good results effectively. The majority of the respondents (72.2%) were extension agents, 13.9% were extension supervisors, while 7.7% and 6.3% were N-power and subject matter specialists, respectively. This denotes a good official designation distribution as extension agents mostly involved in farmers' contact being the majority. This will therefore promote effective delivery of extension services in the study area.

Availability, Accessibility and Utilisation of ICT Facilities among Extension Workers

Broadcast/Studio Visual Technologies

Table 3: Broadcast/Studio Visual Technologies among Extension Personnel

Broadcast/Studio Visual Technologies	Frequency	Percentage
Projector	11	13.7
Camera	10	12.5
Video Recorder	8	10
TV Camera	2	2.5
TV programme	2	2.5
Radio recorder	2	2.5

Multiple responses

Source: Field survey data

The result from the above table indicates that 13.7% of the respondents accessed and utilised a projector available to them, 12.5% have accessed and utilised a camera, and 10% have accessed and utilised a video recorder. In comparison, 2.5% each have accessed and utilised a TV Camera, TV programme and Radio recorder. This result shows that the level of availability, accessibility and utilisation of broadcast/studio visual technology among extension personnel in the area was low, given the various percentage responses provided by the respondents.

Table 4: Telecommunication /Computer Technology among Extension Personnel

Telecommunication/computer technologies	Frequency	Percentage
Computer	14	17.5
Email	12	15
CD Rom	8	10
Telephone(calls, whatsapp, etc)	4	5
Radio	2	2.5

Multiple responses

Source: Field survey data

This indicates that a higher proportion (17.5%) of the respondents have accessed. Utilised computers available to them for extension service delivery, 15% of the respondents accessed and utilised email, and 10% accessed and utilised CD Rom. In comparison, 5% and 2.5% of the respondent accessed and utilised telephone and Radio, respectively, for extension work delivery. The result suggests that the extension personnel in the study area have not sufficiently utilised telecommunication facilities for extension service delivery.

Table 5: Print Technology among Extension Personnel

Print technologies	Frequency	Percentage
Agric. Map	75	93.7
Poster	32	40
Research bulletin	23	28.7
Magazines	8	10
Newspapers	5	6.2

Multiple responses

Source: Field survey data

The result shows that the majority of the respondents (93.7%) agreed to the availability, accessibility and utilisation of the agric map, 40% agreed to the availability, accessibility and utilisation of the poster, and 28.7% agreed to the availability accessibility and utilisation of research bulletin. In comparison, 10% and 6.2% agreed to the availability, accessibility and utilisation of magazines and newspaper in that order. This result suggests that extension personnel in the study area are more positively disposed to the use of print technologies in delivering extension services. This could be attributed to the fact that print technologies are more popular in the study area. As such, the extension personnel are more exposed to these technologies.

Constraints Associated with the Use of ICT among Extension Personal

The constraints associated with using ICT among extension personnel in the study area are presented in Table 6. From the table, constraints with a mean ≥ 2.50 were regarded as strong constraints below 2.0 were regarded as weak constraints. The result suggests that level of personal income of the respondents (mean=2.83) was the only strong constraint to the use of ICT among extension personnel in the study area. Other constraints such as years of experience in work (mean=2.39), gender (mean=2.07), level of education (mean=1.74), work status (mean=1.58), availability of ICT facilities (mean=1.41) and age (mean=20) were regarded as weak constraints because they fell below the benchmark mean of 2.50.

Table 6: Constraints associated with the use of ICT

	Very Strong		Strong		Weak		Very weak			
Constraints	Freq	%	Freq	%	Freq	%	Freq	%	Mean	SD
Level of personal income	32	40.5	16	20.3	15	19.0	15	19.0	2.83*	1.16
Year of experience in work	20	25.3	21	26.6	0	0.0	32	40.5	2.39	1.29
Gender	15	19.0	0	0.0	12	15.2	26	32.9	2.07	1.28
Level of education	5	6.3	16	20.3	0	0.0	42	53.2	1.74	1.09
Work status	5	6.3	0	0.0	22	27.8	36	45.6	1.58	.85
Availability of ICT facilities	0	0.0	53	67.1	0	0.0	42	53.2	1.41	.81
Age	2	2.6	5	6.3	6	7.6	67	84.8	1.20	.54

*Mean ≥ 2.50 =Strong constraints

Source: Field survey data

Problems Encountered in the three areas of ICT usage among Extension Personnel

Problems Encountered in the Use of Broadcast/Audio Visual Facilities

The indicated that the major problems as rated by the respondents were; it requires the gathering of people (60.8%), lack of radio listening groups (46.8%), high charges paid for TV and Radio programmes (46.8%) and high cost of equipment (46.0) with the least being no room for interactive communication (34.2%).

Table 7: Rating of Problems Encountered by Extension Personnel in the Use of Broadcast/Audio Visual Facilities

Problems	Frequency	Percentage	Rank
Requires gathering people	48	60.8	1
Lack of radio listening groups	37	46.8	2
High charges paid for TV and radio programmes	37	46.8	2
High cost of equipment	37	46.0	3
Lack of TV viewing centers	32	40.5	4
Lack of access to the road to move equipment	25	34.2	5
Do not address an emerging problem	27	34.2	5
No room for interactive communication	27	34.2	5
Low coverage of the population	26	32.9	6
Lack of electricity	21	26.6	7
Requires expert to motion pictures	15	19.0	8

Source: Field survey data

Rating of Problems Encountered by Extension Personnel in the Use of Telecommunication/Computer Technologies

The respondent's rating of the problem encountered in the use of telecommunication technologies, as presented in Table 8, revealed that major problems with the use of telecommunication technologies among extension personnel in the study area were poor telecommunication network (53.2%) and the exorbitant nature of telecommunication services (20.09%) with the least problem being that it takes time for calls to go through (13.9%). Telecommunication is one of the fastest means of communication to drive the needed agricultural development. However, the provision of internet connectivity is very expensive and would require commitment from the side of government.

Table 8: Rating of Problems Encountered by Extension Personnel in the Use of Telecommunication Technologies

Problems	Frequency	Percentage	Rank
Poor telecommunication network	41	53.2	1
High cost of telecommunication services	18	20.9	2
Fax and Email services not popular	12	14.0	3
Take time to get a call through	11	13.9	4

Source: Field survey data

Rating of Problems Encountered by Extension Personnel in the Use of Print Technologies

Respondents' rating of the problems encountered in using print technologies among extension personnel is presented in Table 9. The result indicates that the most serious factor involved with the use of print technologies as rated by the respondents were; no opportunity to ask questions (55.4%) and circulation limited (35.9%), with the least problem being low literacy level among farmers (12.0%).

Table 9: Rating of Problems Encountered by Extension Personnel in the Use of Print Technologies

Problems	Frequency	Percentage	Rating
No opportunity to ask questions	51	55.4	1
Circulation is limited	33	35.9	2
Newspapers and magazines are expensive	29	22.7	3
Low literacy level	11	12.0	4

Source: Field survey data

The grand mean was used to ascertain the differences among the constraints faced by extensionists in the study area in using ICT. Using a grand mean of (mean=1.88), the result suggests that constraints such as level of personal income (mean=2.83), years of experience in work (mean=2.39) and gender (mean=2.07) were significantly more important in affecting extension agents in the use of ICT compared to constraints such as level of education (mean=1.74) and work status (mean=1.58).

Table10: Difference in the Constraints faced by Extension Workers in the Use of ICT

Constraints	Mean
Level of personal income	2.83*
Years of experience in work	2.39*
Gender	2.07*
Level of education	1.74
Work status	1.58
Availability of ICT facilities	1.41
Age	1.20

Grand mean=1.88, df=6

Source: Field survey data

Table 11. Relationship between extension worker socio-economic characteristics and the utilisation of ICT facilities

Independent variable	The utilisation of ICT facilities		
	Coefficient (r)	Prob. level	Decision
Age	0.175	0.010	S
Education	0.276	0.000	S
Marital status	0.046	0.501	NS
Job experience	0.221	0.001	S
Official designation	0.094	0.169	NS

S= Significant at $P < 0.05$ level, NS= Not Significant at 0.05 level

Pearson Product Moment Correlation was used to test the relationship between extension worker socio-economic characteristics and the utilisation of ICT facilities for extension service delivery (Table 11). The result shows that significant relationship existed between age ($r = 0.175$; $p < 0.05$), education ($r = 0.276$, $p < 0.05$) and job experience ($r = 0.221$, $p < 0.05$). Variables such as marital status ($r = 0.046$, $p < 0.05$) and official designation had no significant relationship with the use of ICT among extension workers in the study area.

Discussion

The majority (46.8%) of the respondents fell between the ages of 40-44 years, with an average age of 41 years which implies that they had some experience in extension activities and that places them in a better opportunity to value the use of ICT in agricultural extension service delivery. A similar result was reported by Belonwu (2011), who reported a mean age of 42 years for extension personnel in Delta state.

A higher percentage (51.9%) had HND/B.Sc which is an indication that the extension personnel have the requisite education to carry out effective extension service, and it is good for effective extension service delivery in the state as Agbamu (2011) had stated that insufficiently qualified, inexperienced and poorly trained personnel cannot do much to improve the quality of extension service offered to farmers.

The average year of experience of the respondents was 13 years which implies that they have gathered some level of experience that could enhance their ability to work with farmers using ICT. The result was similar to the report of Belonwu (2011), who reported a mean job experience of 12 years for extension personnel in Delta State.

Most of the married respondents suggested a good sense of family responsibility. This can positively influence the state of mind of the extension workers to deliver extension services to yield good results effectively.

Most of the respondents (72.2%) were extension agents, and 13.9% were extension supervisors. In comparison, 7.7% and 6.3% were N-power and subject matter specialists, respectively, which denotes a good official designation distribution as extension agents who are mostly involved in farmers' contact majority. This, therefore, will promote the effective delivery of extension services in the study area.

13.7% of the respondents accessed and utilised a projector available to them, 12.5% accessed and utilised a camera, and 10% accessed and utilised a video recorder. In comparison, 2.5% each have accessed and utilised a TV Camera, TV programme and Radio recorder. This shows that the availability, accessibility and utilisation of broadcast/studio visual technology among extension personnel in the area was low, given the respondents' various percentage responses.

There is also an indication that (17.5%) of the respondents have accessed and utilised computers available to them for extension service delivery. The percentage suggests that the extension personnel in the area have not sufficiently used telecommunication facilities for extension service delivery. But this is contrary to the findings of Salau and Saingbe (2008). They reported that 56.22% of the sampled extension workers used ICT items such as telephones, internet, radio, television, video films/camera and PowerPoint for agricultural extension activities.

The Findings also show that the majority of the respondents (93.7%) agreed with the availability, accessibility and utilisation of agric maps. This suggests that extension personnel

in the study area are more positively disposed to the use of print technologies in delivering extension services, and this could be attributed to the fact that print technologies are more popular in the area. As such, the extension personnel are more exposed to these technologies.

The level of personal income (mean=2.83) was the only strong constraint to the use of ICT among extension personnel in the study area. Other constraints were regarded as weak because they fell below the benchmark mean of 2.50.

It was observed that "it requires the gathering of people (60.8%)," and others were the major problems encountered in the Use of Broadcast/Audio Visual Facilities

Poor telecommunication networks (53.2%) and the exorbitant nature of telecommunication services (20.09%) were the major problems in telecommunication. Telecommunication is one of the fastest means of communication to drive the needed agricultural development. However, the provision of internet connectivity is very expensive and would require commitment from the side of government

The most serious factor involved with the use of print technologies as rated were; no opportunity to ask questions (55.4%) and circulation limited (35.9%), with the least problem being low literacy level among farmers (12.0%). This justifies the findings of Isiaka *et al.* (2009). They opined that most extension workers were unaware that ICT devices such as computers, the internet and GSM can be used to accomplish numerous functions in extension service delivery efficiently. As indicated by Wijekon and Newton (2000), efficient utilisation among extension workers may not be realised without appropriate grounding in communication technology potentials.

Using a grand mean of (mean=1.88), the result suggests constraints such as level of personal income (mean=2.83), years of experience in work (mean=2.39) and gender (mean=2.07) were significantly more important in affecting extension agents in the use of ICT compared to others. This agrees with the finding of Alampay *et al.* (2003). They ascertained that the cost of buying and using mobile phones and other gadgets in rural areas of Africa is very expensive. A single call can cost as much as half the daily wage of an agricultural worker. Arokoyo (2005) also listed poverty as a major constraint to ICT utilisation

Pearson Product Moment Correlation was used to test the relationship between extension worker socio-economic characteristics and the utilisation of ICT facilities for extension service delivery. The result shows that significant relationship existed between age ($r = 0.175$; $p < 0.05$), education ($r = 0.276$, $p < 0.05$) and job experience ($r = 0.221$, $p < 0.05$). Variables such as marital status ($r = 0.046$, $p < 0.05$) and official designation had no significant relationship with the use of ICT among extension workers in the study area.

Conclusion

The study concludes that:

- The use of ICT among extension workers in the area has not gained popularity with special reference to broadcast/ studio visual technologies and telecommunication /computer technology. The extension workers are probably relying on personal contact with farmers, which has always been criticised for targeting a small population of farmers.
- Extension workers in the area lack the needed improved broadcasting/studio visual facilities to carry out extension services; this may further threaten the effectiveness of extension service delivery.

- Extension agents may be unaware of the skills involved in utilising broadcast/ studio visual and telecommunication/computer technologies. Hence its utilisation becomes impossible, or the appropriate authority is not providing the facilities.
- Significant relationship existed between age ($r = 0.175$; $p < 0.05$), education ($r = 0.276$, $p < 0.05$) and job experience ($r = 0.221$, $p < 0.05$) use of ICT among extension workers in the study area

Recommendations

Based on the observation of the study, it was recommended that:

- Special training in the form of seminars and workshops be organised by the appropriate authorities to sensitise extension workers on the broadcast/ studio visual technologies and telecommunication/computer technologies. This will help to build their capacities on the use of broadcast/ studio visual technologies and telecommunication/computer technologies.
- Appropriate agencies in charge of providing equipment for extension agents should provide the needed facilities for broadcast/ studio visual communication and telecommunication/computer facilities; this will speed up learning among extension workers in the study area.

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