



Information and Communication Technology Facilities Access and Utilization in Delivering Extension Service amongst Agricultural Extension Workers in Gombe State

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Abstract

This study examined the access and the use of ICT facilities by Agricultural Extension Workers (AEWs) in delivering extension services to farmers in Gombe state. A survey research design was used in this study. Systematic sampling technique was used to select 200 AEWs in the state to serve as respondents of the study. Structured Questionnaire was used as instrument of data collection. Data collected were analyzed using descriptive statistics of percentage, mean and standard deviation. The result in table I on the Access of ICTs facilities by the AEWs indicated that majority of the AEWs access the ICT facilities from different sources where they mostly get the facilities from Agricultural special projects like Sassakawa Global, Fadama Projects with 63.5%. These projects mostly supply the facilities to the AEWs in discharging their activities. They also access internet (56%) and Mobile phone (41%) through ADP. The major constraint militating against the use of ICT in Extension delivery by the AEWs are unstable power supply (\bar{X} - 3.61) and interrupted extension radio or television extension programmes (\bar{X} - 3.54) The study therefore recommended among others that ICT facilities should be provided by the ministry for efficient extension service and special consideration should be given to the AEWs to conduct radio and television programmes to disseminate agricultural innovations to farmers.

Keywords: Agricultural extension, Information and Communication Technology

Introduction

Agriculture industry requires massive information flow in its activities from land clearing to the final stage of consumer utilization. Such information in today's world is seriously accelerated by the use of Information and communication technology (ICT) facilities which enhance the growth and development of individuals and the society in general. These facilities are used by agricultural extension workers in disseminating extension services to farmers more especially in rural areas. However, with ICTs, rural communities can acquire the capacity to improve their living conditions. ICTs have the potential to penetrate under-serviced areas and enhance education through distance learning, facilitate development of relevant local content and faster delivery of information on technical assistance and basic human needs such as food, agriculture, health and water. ICT have significant role in rural development and poverty reduction in developing countries due to increase in farmers need in obtaining information for sound decision making particularly in farming business. In Nigeria, extension agents still depend heavily on traditional extension methods of communication (Oyinbo, Chamberlin, and Maertens, 2020) ^[13]. This is no longer effective for the time bound research discoveries and the high farmer extension agent ratio in the new millennium. The extent to which the extension agents effectively carry out all important function of communicating with the farmers leaves much to be desired. The ICT facilities provides a link between scientist and the researchers working in different aspects of agriculture and the farmers on the field who implement the various research findings to improve the production and processing of agricultural produce.

Furthermore it helps to improve the livelihood of farmers and contributes to the development of rural communities (Alabi, 2021) ^[1].

The application of Information and Communication Technology (ICT) across different sectors of the global economy has become a game changer in boosting work efficiency and productivity. Observed that in recent years, ICTs had become one of the main driving tools used by farmers to manage the essential factors of production (land, labour, capital, and soil) in agriculture. ICT applications have the potential to identify and find solutions to some of the numerous problems faced in the field of agriculture, which includes prolonged droughts, pest and disease outbreaks, seasonality and spatial dispersion of farming; high transaction costs and information asymmetry (Anh *et al.*, 2019) ^[2]. ICT also has the potential to resolve the challenges faced by governments, farmers, and other land users in valuation, registration, and taxation of land. The application of ICT in agricultural activities across the globe is not only gaining popularity but also transforming the sector's businesses. According to Suchiradipta, B., and Saravanan, R. Asserted that the extent of the application of ICT tools in extension service depends mostly on the targeted audiences, level of ICTs infrastructural development and its accessibility and affordability.

Ibe, M. N., Edet, A. I., Ajaero, J. O., and Godson-Ibeji, C. C. (2023) ^[7] stated that use of ICT facilities in delivering extension services among AEWs makes a significant shift in the modernization of farming practices. ICT access encompasses the availability and reach of technology infrastructure such as internet connectivity, mobile devices and computer systems. ICT facilities are used to disseminate agricultural services, knowledge, provide training and facilitate communication between AEWs and farmers. According to Nyako and Kozan, (2021) ^[11], ICT facilities play a crucial role in modernizing and enhancing agricultural extension service. It also provides farmers with access to valuable agricultural information such as weather forecast, market prices, best farming practices, pest and disease management techniques. These types of information empower farmers to take important decision leading to increased productivity and profitability.

O'Dea (2020) ^[12] ICT facilitate the dissemination of agricultural services to remote and rural areas through mobile phones, internet platforms and other digital tools. Through the use of ICT, extension worker can reach a large number of farmers effectively and cost effectively. ICT also enables continues learning and capacity building among AEWs and farmers online training programmes, webinar and educational videos help farmers acquire new skills and knowledge to improve their farming practices. Nyako, and Kozan, (2021) ^[11], The use of ICT also is now indispensable for improving agricultural extension services by providing access to information, enhancing extension outreach, building capacity, facilitating marketing access, enabling monitoring and evaluation and promoting sustainability in agriculture. It is also essential for driving rural development, alleviating poverty and achieving food security goals. According to Eze (2020) ^[5] various types of ICT facilities are used in extension services are mobile phone, Internet use, projector, radio recorders and television, printers, computers, flash drive, print media such as magazine, pamphlets etc. these ICT facilities are used by agricultural extension

workers depending on their access and the type of farmers the extension worker is dealing with. With a large number of farmers per EA the applications of ICT will enable people to communicate effectively thus overcoming the limitations of time and space in extension service. This is a viable solution to the problem of reaching plenty farmers at a time.

Despite the importance of ICT facilities in delivering message to a large number of beneficiaries at a time, their access and utilization tend to be a problem to Agricultural extension workers. In most developing countries, Nigeria inclusive however, the extension system does not have a modern mechanism likewise ICT to acquire and deliver information to farmers (Mapiye, O., Makombe, G., Molotsi, A., Dzama, K., & Mapiye, C., 2021) ^[10]. The agricultural extension worker may have the ability and training in the use of ICTs facilities in extension delivery, but where they are not available or difficult to accessed, their potentiality will not be achieved. In line with the above, the study was to determine ICTs facilities access and utilization among AEWs in delivering Extension services in Gombe State. The specific objectives were to:

1. Determine the sources of ICT facilities for agricultural extension workers in the study area.
2. Determine the level of the use of the ICT facilities by the agricultural extension workers in the study area
3. Determine the constraints faced by the Agricultural extension workers in the use of Information and communication technology facilities in the study area

Methodology

The study was carried out in Gombe state located in the north east Nigeria. The state has 11 local government areas and 3 senatorial districts. A multi stage sampling technique was used in selecting the respondents of the study. In the first stage, the state was divided into the 3 Senatorial districts. Secondly, 70 Agricultural Extension Workers (AEWs) were randomly selected from the Northern and Southern senatorial districts and finally 60 AEWs were also randomly selected from the Central senatorial district of the state (with only 2 local government areas) to give a total of 200 AEWs to serve as the respondents of the study. A structured questionnaire was design by the researcher for data collection. A four rating scale of Frequently, more often, often and not used in determining the use of the ICT facilities by the AEWs in the study area. Frequency, percentage and mean were used in analyzing the data obtained.

Results and Discussions

After collecting the data through the questionnaire, 200 questionnaires were correctly filled and returned which the research used for the analysis. The result in table I on the Access of ICTs facilities by the AEWs indicated that the AEWs access the ICT facilities from different sources where they mostly get the facilities from Agricultural special projects like Sasskawa Global, Fadama Projects with 63.5%. These projects mostly supply the facilities to the AEWs in discharging their activities. They also access internet (56%) and Mobile phone (41%) through ADPs. This is line with the assertion of Enwelu, I A., *et al.* (2017) ^[4] that Extension workers had high access to mobile phone and radio set but had low access to computer based ICTs and multimedia projector.

Table 1: Responses in percentages on the access of ICT facilities by the AEWs (N=200)

ICTs Facilities	ADP	%	Special Projects	%	AEWs	%	Self Frq	%	Farmers/Groups	%
Mobile Phone	83	41.5	44	22.2	31	15.5	42	21	-	-
Radio / Recorder	25	12.5	127	63.5	--	--	48	24	--	--
Television	22	11	46	23	-	-	114	57	18	9
Cassette Recorder/Player	35	17.5	72	36	31	15.5	35	17.5	27	13.5
Printers	97	48.5	80	40	17	8.5	--	--	6	3
Internet Connected Computer	112	56	47	23.5	-	--	41	20.5	--	--
Projector	126	63	49	24.5	13	6.5	3	1.5	7	3.5
Flash Drive	20	10	47	23	24	12	109	54.5	--	--
Print Magazine/Pamphlets	124	62	65	32.5	11	5.5	--	--	--	-

Source: Field survey 2024

The result on the use of ICT facilities in Table 2 shows that the AEWs use the ICT facilities differently. It shows that the AEWs use mobile phone frequently with the highest mean of 3.04 while printers, Cassettes Recorders/Players and projectors has the lowest mean of 1.22 and 1.89 respectively meaning they are frequently used in delivering extension

services in the study area. This is in line with a study of (Kiapene, 2022) ^[9]. Who found out that most of the AEWs noted that the poor level of use of ICT facilities is attributable to the lack of administrative support in provision of ICT and low or non-inclusion of ICT in their pre-service training.

Table 2: Responses on the use of ICT facilities by the AEWs in the study area (N=200)

ICTs Facilities	frequently	More often	Often	Not use	Mean	Rank
Mobile Phone	83	57	44	161616	3.04	1 st
Radio / Recorder	25	57	77	41	2.33	4 th
Television	22	18	126	34	2.14	5 th
Cassete Recorder/Player	32	28	72	68	2.12	6 th
Printers	18	36	67	79	1.97	8 th
Internet Connected Computer	26	45	105	24	2.37	3 rd
Projector	21	23	69	87	1.89	9 th
Flash Drive	17	41	62	80	1.98	7 th
Print Magazine/Pamphlets	61	54	45	40	2.68	2 nd

Source: Field survey 2024

The result in table 3 indicated that the AEWs have all agreed that the problems listed in the instrument are the constraints hindering the effective use of these facilities to deliver extension services to farmers in the study area. Among the

constraints faced by the AEWs in the study area are inadequate power supply have the highest mean of (\bar{X} =3.61), poor network (\bar{X} =2.93), inadequate training (\bar{X} =3.12) and Farmers background with lowest mean of (\bar{X} =2.55).

Table 3: Mean score of the Respondents on the constraints faced by the AEWs in using the Information and communication technology (ICT) facilities in the study area (N=200)

Items	Mean \bar{X}	Remark
1. Inadequate Power Supply	3.61	Agreed
2. Poor network	2.93	Agreed
3. Inadequate internet service	3.08	Agreed
4. Farmer's Background	2.55	Agreed
5. Farmers engagements	3.06	Agreed
6. Inadequate training	3.12	Agreed
7. Inadequate Facilities	3.23	Agreed

Source: Field Survey, 2024

Discussion of findings

The result on the Access of ICTs facilities by the AEWs indicated that the AEWs access the ICT facilities from different sources where they mostly get the facilities from agricultural special projects like Sasskawa Global, Fadama Projects etc. These projects mostly supply the facilities to the AEWs in discharging their activities. This is line with the assertion of Enwelu, I A., *et al.* (2017) ^[4] that Extension workers had high access to mobile phone and radio set but had low access to computer based ICTs and multimedia projector.

The result on the use of ICT facilities in Table 2 shows that the AEWs use the ICT facilities differently. Some are used frequently like mobile phone while others are not even used. It shows that the AEWs use mobile phone frequently with the

highest mean of 3.04 while printers, Cassettes Recorders/Players and projectors has the lowest mean of 1.22 and 1.89 respectively meaning they are not frequently used in delivering extension services in the study area. This result is in line with the assertion of Khondokar *et al* who stated that mobile phone is now the major ICT facility utilized by AEWs in delivering extension services such as research innovations and technologies down to the farmers to enhance their productivity and improve their livelihood.

The result in table 3 indicated that the AEWs have all agreed that the problems listed are the constraints hindering the effective use of these facilities to deliver extension services to farmers in the study area. Inadequate power supply have the highest mean of (3.23) and Farmers background with lowest mean of (2.55). This is in conformity with the report

of Hung who reported that despite the availability of ICT facilities for agricultural extension services, their utilization is limited by inadequacy, Poor power supply and internet service, literacy level of farmers and inadequate training to the AEWs on how to them in delivering extension services to their clients.

Conclusion and Recommendation

The application of Information and Communication Technology (ICT) across different sectors of the global economy has become a game changer in boosting work efficiency and productivity. It has the potential to resolve the challenges faced by governments, farmers, and other land users in valuation, registration, and taxation of land. The application of ICT in agricultural activities across the globe is not only gaining popularity but also transforming the sector's businesses. AEWs use different ICT facilities to deliver extension services to farmers in order to enhance their productivity and livelihood in general. They access these facilities from different sources such as Fadama project, Sassakawa global ADPs, farmer groups and even from their colleagues to use in discharging their responsibility. Ministries of Agriculture through their extension departments, ADP, Non-Governmental Organization (NGOs) should assist in providing such facilities to the AEWs for them to perform their function effectively. Adequate power supply should be provided to ensure the effective use of the facilities by the AEWs.

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