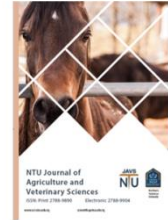




P-ISSN: 2788-9890 E-ISSN: 2788-9904

NTU Journal of Agricultural and Veterinary Sciences

Available online at: <https://journals.ntu.edu.iq/index.php/NTU-JAVS/index>



## Information and Communication Technologies (ICTs) - Readiness of Extension Agents in Kwara State, Nigeria

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### Article Informations

**Received:** 20-08- 2023,  
**Accepted:** 05-09-2023,  
**Published online:** 18-10-2023

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**Key Words:**  
keyword1, ICTs,  
keyword2, Digital Devices  
keyword3, Readiness,  
keyword4, Extension Agents.

### ABSTRACT

The ICT-readiness of extension agents involves assessing their familiarity, skills, availability, access and usage of technology tools that can enhance extension service deliveries. This study assessed the ICTs-Readiness of agricultural extension agents in Kwara State, Nigeria. One hundred and five Agricultural extension workers were randomly selected for the study. Description statistics such as frequency count, percentage and mean were used for the study. The result revealed that about 65 % of the respondents had low level of usage of ICTs/Digital devices. About 86.7% of the extension agents were somewhat ready for the use of ICTs/digital devices for agricultural extension services. This study therefore recommends that there should be continuous training of extension agents on the various digital devices so as to enhance extension services deliveries to the farmers in the study area.



## Introduction

Agricultural extension is a method of communication and education that seeks to share the latest knowledge, techniques and innovation with farmers, with the purpose of imparting novel information and technology that can enhance agricultural productivity, profitability, and sustainability. So, extension agents are expected to be well informed so as to meet the needs of the farmers. Extension agents are expected to provide information on new farming techniques to the farmers. Agricultural extension is a platform that provides services that enhance the productivity, income and livelihoods of farmers and other rural people through educational and communication methods [1]. Extension service links the farmers and rural people to innovation. Therefore, it is important that the extension agents have access to Information and Communication Technologies (ICTs) in information gathering and dissemination to the farmers and other end users.

The use of ICTs and digital devices are fast gaining grounds in developing countries, and is being applied in several fields of human endeavor including agricultural extension services. The use of ICTs has helped in solving several agricultural related problems such as site measurement and access to electronic information on production practices [2]. [3] defined ICTs as a range of electronic technologies which when converged in a new configuration are flexible, adaptable, enabling and capable of transforming organizations and redefining social relations. Information communication technologies (ICTs) are set of activities that enable the capturing, storage, processing, transmission and display of information by electronic means [4].

The ICTs for agricultural extension services have made information/data gathering and dissemination easier for the extension personnels [5,6]. Application of modern communication technologies and digital devices to agricultural extension service deliveries could enhance the productivity of the extension agents through provision of accurate, timely and relevant information to the farmers. This will result in enhancing the output and livelihoods of farmers.

The concept of ICTs-readiness is concerned with the rate of use of Digital devices with internet penetration among the individuals or within an organisation. ICTs-readiness is the degree to which an individual, community or economy is prepared to participate in the digital world

[7]. It was also defined as the degree to which a community is prepared to participate in the information age i.e. the networked world [6].

The digital/ICTs readiness of extension agents refers to their level of preparedness to effectively utilize

electronic resources and technology for their work. This includes access to the necessary hardware, software, and digital tools, as well as their ability to navigate and use online platforms and communication channels. Their Readiness also involves evaluating their digital literacy, skills in using digital resources, and their overall comfort with technology.

Digital and ICTs devices which include laptops, smart phones, mobile devices and applications, and GPS provide extension agents with updated information. According to [8], some of the ICTs applications includes internet and mobile based technology dissemination system and community radio. However, access, availability and use of these ICTs for extension services has remained a challenge. Assessment of their digital and ICTs-readiness will help to identify areas where there are gaps, which provision of training and support to their needs can enhance their Digital and ICTs-Readiness and enable them to leverage electronic

resources for more efficient and impactful extension service deliveries.

This study is important as [9] reported that there are huge gaps between the information sources and the information users in developing countries. Also, [10] reported that effective communication between various stakeholders of the extension system is essential for increasing agricultural productivity.

Several studies have been conducted on Readiness of Extension personnels, such as the study of [11] which assessed the E-readiness level of extension personnel in Enugu State, Nigeria. However, there is paucity of information on the ICTs-Readiness of Agricultural Extension Agents in the study area. Therefore, there is the need to assess the ICTs-Readiness of Extension agents in Kwara State, Nigeria. The specific Objectives were to: 1) Determine the level of use of digital and ICTs Devices in the study area, 2) Examine the ICTs-Readiness of Extension agents in the study area.

## Methodology

The study was carried out in Kwara State, Nigeria. The state is one of the 36 states of the Federal Republic of Nigeria that was created in 1967. The state has a land area of 32,500 square Kilometers (that is 5,250,000 hectares) with a population of about 2.3million people [12]. The State has 16 local government areas (LGAs). The state is predominantly agriculture based. The arable crops grown in the state include rice, cassava, beans, yam, and maize. One hundred and five extension agents were randomly selected for the study. The extent of use of ICTs/digital devices for agricultural extension services was measured on a 3 – point likert typed scale where never = 1 Occasionally=2 and Always =3. The ICTs/Digital – readiness of agricultural extension workers was determined through the

measurement of four readiness variables which are physical readiness, economical readiness, psychological readiness and technological readiness as developed by [13]. The ICTs/Digital – readiness of agricultural extension workers was measured on a 5 – point likert typed scale where strongly disagreed = 1, disagreed = 2, Neutral = 3, Agreed = 4 and strongly agreed = 5. The level of ICTs–Readiness was categorized into not ready, barely ready, somewhat ready and fully ready. The statistical tools used to analysed the data were frequency count, percentages and mean.

## Result and Discussion

### Level of use of the digital devices

The result in Figure 1 showed that majority (65 %) of the respondents had low level of usage of ICTs in the study area. This result indicated that not all the extension agents were effectively using digital devices in disseminating agricultural information in Kwara State, Nigeria.

### Physical-Readiness of Agricultural Extension Workers

The result in Table 1 showed that ICTs experts are available within areas covered as extension worker (mean=3.30) ranked first, there is good Internet service available here (mean=3.19) ranked second and there are sales outlets around my station where digital devices are sold (mean=2.95) ranked third. This result implies that ICTs expert are available in the area of courage is the most important physical readiness statement.

### Technological-Readiness of Agricultural Extension Workers

The result in Table 2 showed that the technological readiness statement that extension agents can do group messaging (mean=4.13) ranked first, can do networking through the use of social media-facebook, Whatapp, etc. (mean=4.12) and can send information using differs platforms (mean=4.12) ranked second respectively. This implies that the extension agents are technologically ready as the possess the competency to operate digital devices for agricultural activities.

### Psychological-Readiness of Agricultural Extension Workers

The result in Table 3 showed that the psychological readiness statement that Digital/ICTs devices are necessity of life (mean=4.47) was ranked first. Digital/ICT devices can enhance dissemination of innovation to the farmers on time (mean=4.30) was ranked second. There should be compulsory training on how to operate the Digital/ICT devices for all the operators (mean=4.30) was ranked third. This result shows that Digital/ICTs devices are necessity of life was the most important psychological readiness statement.

### Economical-Readiness of Agricultural Extension Workers

The result in Table 4 revealed that the economic readiness statement that the use of digital devices makes online transaction faster and easier (mean=4.52) was ranked first, costs of maintenance/repair of Digital/ICT devices are too costly (mean=4.07) ranked second and Digital/ICT devices are very expensive (mean=4.04) ranked third. This result implies that the respondents have knowledge of the use of ICTs for economic purposes and the cost implications of using Digital devices in the study.

### The ICTs-readiness Aggregate Total Mean Score

The result in table 5 showed that averagely the extension agents were technologically ready (mean=3.88), psychologically ready (mean=3.62) and Economically ready (mean=3.92). This result implies that the extension agents in the study area are technologically ready, psychologically ready and economically ready for the use of ICTs for agricultural extension activities.

### The Level of ICTs-Readiness of the Extension Agents

The result in Figure 2 indicated that about 3.8% of the extension agents were barely ready, 87.6 % were somewhat ready, while only 8.6 % were fully ready. This finding indicates that most of the extension agents in Kwara State were somewhat ready to explore their digital potentials in disseminating agricultural information. Similar finding of extension personnel readiness to use digital tools was found in India [14].

## Conclusion

According to the findings of the study. The study concluded that the level of ICTs and digital devices usage for majority of the extension activities was low. Majority of the extension agents were somewhat ready for the use of ICTs. The aggregate mean score showed that extension agents were technologically, psychologically and Economically ready. Based on conclusion drawn from the findings, the following recommendations were made:

- I. Extension agents should be empowered to be able to have access and use the various ICTs for agricultural extension activities as they were somewhat ready.
- II. There should be continuous training of extension agents on the various digital devices so as to enhance extension services deliveries to the farmers in the study area.
- III. There should be regular provision of digital devices to the extension agents so as to enhance their work productivity.

## Acknowledgments

I thank everyone who cooperated with us in completing the research.

### **Conflict of Interest**

The authors declare that they have no conflict of interest.

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**Table 1:** Distribution of respondents by Physical Readiness

Physical Readiness	SD	D	N	A	SA	Mean	SD	Rank
ICT experts are available within areas I covered as extension worker	2(1.9)	25(23.8)	23(21.9)	49(46.7)	6(5.7)	3.30	0.96	1 <sup>st</sup>
There is good Internet service available here	6(5.7)	21(20.0)	33(31.4)	37(35.2)	8(7.6)	3.19	1.03	2 <sup>nd</sup>
There are sales outlets around my station where digital devices are sold.	14(13.3)	26(24.8)	23(21.9)	35(33.3)	7(6.7)	2.95	1.18	3 <sup>rd</sup>
There is availability of Digital/ICT repair centers around my station	6(5.7)	40(38.1)	20(19.0)	33(31.4)	6(5.7)	2.93	1.08	4 <sup>th</sup>
The download speed is sufficient.	2(1.9)	37(35.2)	44(41.9)	22(21.0)	0	2.82	0.78	5 <sup>th</sup>
There is availability of electricity to use the digital/ICT devices.	24(22.9)	46(43.8)	9(8.6)	13(12.4)	13(12.4)	2.48	1.31	6 <sup>th</sup>
Digital/ICT devices are freely provided for the Extension workers to enhance their productivity	28(26.7)	49(46.7)	19(18.1)	6(5.7)	3(2.9)	2.11	0.96	7 <sup>th</sup>
Average mean						2.80		

Sources: Field Survey, 2023. Strongly Disagreed (SD) = 1 Disagreed (D) = 2, Neutral (N) = 3, Agreed (A) = 4 and Strongly Agreed (SA) = 5

**Table 2:** Distribution of respondents by Technological Readiness

Technological Readiness	SD	D	N	A	SA	Mean	SD	Rank
Can do group messaging	2(1.9)	4(3.8)	5(4.8)	61(58.1)	33(31.4)	4.13	0.82	1 <sup>st</sup>
Can do networking through the use of social media- facebook, Whatapp, etc.	4(3.8)	2(1.9)	3(2.9)	64(61.0)	32(30.5)	4.12	0.86	2 <sup>nd</sup>
Can send information using differs platforms	2(1.9)	4(3.8)	8(7.6)	56(53.3)	35(33.3)	4.12	0.85	2 <sup>nd</sup>
Can install, Uninstall and Update Applications	2(1.9)	6(5.7)	14(13.3)	57(54.3)	26(24.8)	3.94	0.89	4 <sup>th</sup>
Can conference calling	2(1.9)	8(7.6)	8(7.6)	71(67.6)	16(15.2)	3.87	0.83	5 <sup>th</sup>
Can use internet applications (goggle search, Email, etc.) without any Assistance	4(3.8)	25(23.8)	0	53(50.5)	23(21.9)	3.63	1.18	6 <sup>th</sup>
Can operate most of the Digital/ICT devices without several training and assistance.	5(4.8)	26(24.8)	6(5.7)	57(54.3)	11(10.5)	3.41	1.12	7 <sup>th</sup>
Average mean						3.88		

Sources: Field Survey, 2023. Strongly Disagreed (SD) = 1 Disagreed (D) = 2, Neutral (N) = 3, Agreed (A) = 4 and Strongly Agreed (SA) = 5

**Table 3:** Distribution of respondents by Psychological Readiness

Psychological Readiness	SD	D	N	A	SA	Mean	SD	Rank
Digital/ICT devices are necessity of life	0	0	1(1.0)	54(51.4)	50(47.6)	4.47	0.52	1 <sup>st</sup>
Digital/ICT devices can enhance dissemination of innovation to the farmers on time	0	1(1.0)	4(3.8)	62(59.0)	38(36.2)	4.30	0.59	2 <sup>nd</sup>
There should be compulsory training on how to operate the Digital/ICT devices for all the operators	0	2(1.9)	0	67(63.8)	36(34.3)	4.30	5.74	2 <sup>nd</sup>

Digital/ICT devices enhances the productivity of extension workers	0	0	1(1.0)	77(73.3)	27(25.7)	4.25	.455	4 <sup>th</sup>
Digital/ICT devices helps to avoid constant visits to the clientele (farmers, rural people).	0	17(16.2)	6(5.7)	70(66.7)	12(11.4)	3.73	.869	5 <sup>th</sup>
Digital/ICT devices easily gets spoilt	5(4.8)	12(11.4)	14(13.3)	63(60.0)	11(10.5)	3.60	.986	6 <sup>th</sup>
Digital/ICT devices are too fragile to be handle can anybody	4(3.8)	35(33.3)	24(22.9)	36(34.3)	6(5.7)	3.05	1.032	7 <sup>th</sup>
Use of Digital/ICT devices causes slows down the work and pace of extension workers	15(14.3)	56(53.3)	4(3.8)	30(28.6)	0	2.47	1.057	8 <sup>th</sup>
Digital/ICT devices are not repairable when spoilt	23(21.9)	41(39.0)	27(25.7)	5(4.8)	9(8.6)	2.39	1.139	9 <sup>th</sup>
Average mean						3.62		

Sources: Field Survey, 2023. Strongly Disagreed (SD) = 1 Disagreed (D) = 2, Neutral (N) = 3, Agreed (A) = 4 and Strongly Agreed (SA) = 5

**Table 4:** Distribution of respondents by Economic Readiness

Economic-Readiness	SD	D	N	A	SA	Mean	SD	Rank
Use of Digital devices makes online transaction faster and easier.	0	0	2(1.9)	46(43.8)	57(54.3)	4.52	.539	1 <sup>st</sup>
Costs of maintenance/repair of Digital/ICT devices are too costly	1(1.0)	4(3.8)	4(3.8)	74(70.5)	22(21.0)	4.07	.697	2 <sup>nd</sup>
Digital/ICT devices are very expensive	0	2(1.9)	8(7.6)	79(75.2)	16(15.2)	4.04	.553	3 <sup>rd</sup>
All Digital/ICT devices requires payments for subscription for it to work	1(1.0)	10(9.5)	9(8.6)	68(64.8)	17(16.2)	3.86	.837	4 <sup>th</sup>
Several unforeseen charges are taken by the service providers	9(8.6)	4(3.8)	11(10.5)	65(61.9)	16(15.2)	3.71	1.054	5 <sup>th</sup>
Most of the tariff plans of Digital/ICT devices are affordable	6(5.7)	19(18.1)	20(19.0)	56(53.3)	4(3.8)	3.31	1.003	6 <sup>th</sup>
Average mean						3.92		

Sources: Field Survey, 2023. Strongly Disagreed (SD) = 1 Disagreed (D) = 2, Neutral (N) = 3, Agreed (A) = 4 and Strongly Agreed (SA) = 5

**Table 5:** The respondents' ICTs-readiness Total Mean Score

Areas of ICTs-readiness	Aggregate mean score	Rank	Remark
Physical readiness	2.80*	4	Not Ready
Technological readiness	3.88**	2	Ready
Psychological readiness	3.62**	3	Ready
Economic readiness	3.92**	1	Ready
Threshold score	3.55		

Sources: Field Survey, 2023. Any Variable  $\geq 3.55$ - Ready\*\*, Any Variable  $\leq 3.55$ - Not Ready\*,

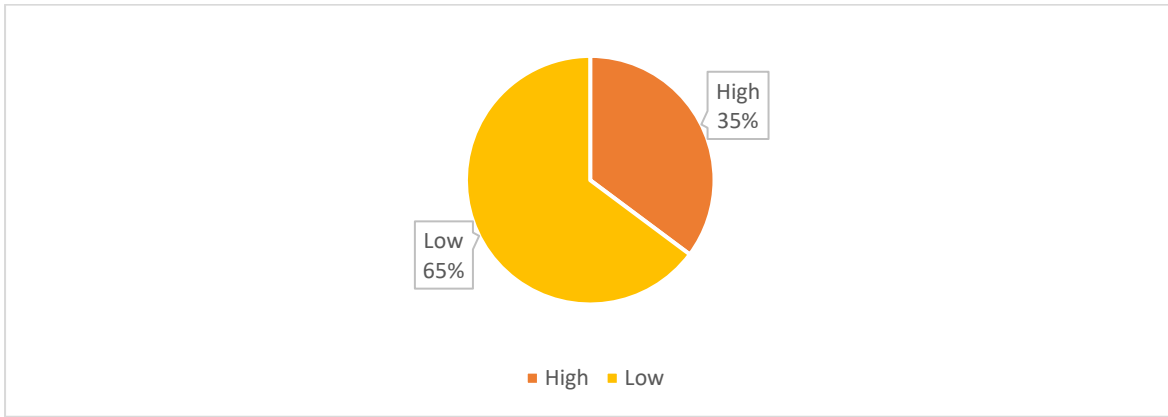


Figure 1. Level of Usage of Digital/ICTs

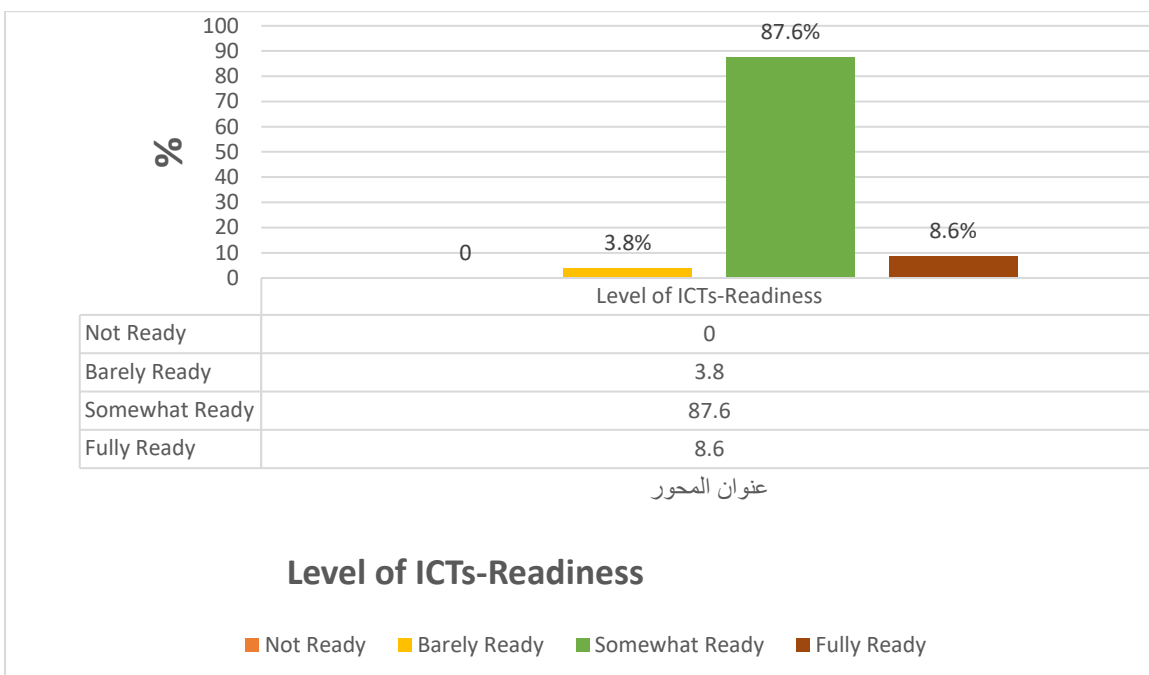


Figure 2. Level of ICTs-readiness of the respondents