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Constraints to the use of ICT tools in Anambra State, Nigeria

Obinna Christian Efobi [1,*], Udeanya Hyacinth Nwalieji [1] and Chinwendu E. Ahaneku [2]

[1] *Department of Agricultural Economics and Extension, Chukwuemeka Odumegwu Ojukwu University, Igbariam, Anambra State, Nigeria.*
[2] *Department of Agricultural Economics and Extension, Nnamdi Azikiwe University, Awka. Anambra State, Nigeria.*

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Abstract

The study investigated whether there are some constraints to the use of Information and Communication Technologies (ICTs) by rice farmers in Anambra State, Nigeria. Multi-stage, purposive and random sampling techniques were used to select 120 rice farmers for the study. The data was collected with a well-structured questionnaire, and analyzed with descriptive statistics and mean scores from the 5-point Likert scale. The results revealed that the majority (60%) of the respondents were males with a good level of education and a mean age of about 49 years among other socioeconomic profiles. With regards to information needs, the study found that the majority (90.80%) of the farmers needed information on pests and disease management, followed by information on appropriate planting dates and techniques (87.50%), among others. Major sources of agricultural information among the rice farmers were fellow farmers or progressive farmers (98.30%), extension agents (87.50%), and mobile phones (84.20%). However, farmers preferred channels for receiving information are through fellow farmers and extension agents. Haven found that the major constraints to the effective use of ICTs are inadequate funds, the high cost of acquiring ICT tools, irregular power supply, and inadequate time for farmers. The study recommends that key stakeholders should be encouraged to provide affordable credit facilities to farmers to reduce the financial burden of acquiring and maintaining certain ICT devices.

Keywords: ICT tools; Rice Farmers; Constraints; Anambra State; Nigeria

1. Introduction

Anambra State is one of the states in Nigeria where rice is grown in sufficient quantities through the effort of smallholder farmers in the rice-producing agroecological areas of the state [1]. This information is supported by the assertion of Obianefo *et al.* [2] who allude that rice production in Anambra State is in the hands of smallholder farmers who are resource-poor. Hence, rice production is one of the major primary sources of income for many smallholder farmers in Anambra State, Nigeria [3]. Given the importance of rice as a staple food in Nigeria coupled with the nation's growing population, boosting rice production has been accorded high priority by the government in the past few years [4]. The Price and Water Corporation (PWC) noted that Nigeria's rice statistics suggested that there is an enormous potential to increase production which has yet failed to meet up [5]. This has been associated with a number of factors, which have impeded rice production such as; poor access to and use of relevant agricultural information which has resulted in low productivity of rice and has also contributed to the demand and supply imbalance in the domestic market, and increased dependence on importation of rice [6-7].

To address this issue, on how to solve the abundant information needs of farmers, availability, accessibility, and utilization of ICT tools have emerged among researchers as a viable solution to help rural people to break traditional barriers to development, by improving access to information, expanding market base and enhancing employment opportunities [8]. Though the study by Onah *et al.* [9] eulogized the benefits of ICTs to the agricultural sector such as

* Corresponding author: Obinna Christian Efobi

cost-effectiveness, serving the stakeholders beyond technology transfer, developing an efficient feedback mechanism with wider coverage than the traditional system, empowering small and marginal farmers, facilitate better information access, supplement inadequate technical manpower, ensure gender equality in technology transfer, expand knowledge resources, strengthen research extension - client system, and accelerate agricultural growth.

However, despite the importance of these ICT tools in agriculture, their application in Nigeria has remained minimal [10]. ICTs adoption and use among rural farmers where rice production is dominant have not made any significant impact on farmers' production status [11-12]. Similarly, Anunobi and Anunobi reiterated that though ICT-driven extension service has eased the difficulties of traditional services, it is not without its own drawbacks associated with third-world countries like Nigeria, which include; erratic power supply, high illiteracy of the information users, poor maintenance of ICT infrastructure, poor policy implementation, limited use of computers and internet in rural areas and limited coverage of radio stations and mobile phone network [13]. All these challenges combine to create an information deficit society and this gap remains a challenge for extension practitioners even today. It is against this backdrop that this study was designed to investigate the constraints to ICTs use in Anambra State. As a contribution to existing research, the author(s) therefore, finds the need to:

- Describe the socio-economic characteristics of the rice farmers;
- Identify the information needs of the rice farmers;
- Determine the sources of information used by the rice farmers; and
- Identify constraints to the effective use of icts among rice farmers.

2. Material and methods

2.1 The Study Area

The study was carried out in Anambra State, Nigeria. The State is divided into 21 Local Government Areas (LGAs), 177 autonomous communities, and four (4) Agricultural Zones (AZs) namely, Aguata, Anambra, Awka and Onitsha agricultural zones. The State is located in the South East region of Nigeria between longitude 6° 37'E and 7° 23E and latitude 5° 42' N and 6° 47'N. The major crops grown in the area among others include rice, cassava, maize, okra, yam, cocoyam, and a variety of fruits and vegetables. The major rice-producing areas in the state are Anambra East and West, Orumba North and South, Awka North, Ogbaru, and Ayamelum LGAs [14]. The state has a population of 19, 418 registered rice farmers [15].

2.2 Population and Sampling Procedure

The target population of the study comprised all rice farmers in Anambra State, Nigeria. Multi-stage, purposive and simple random sampling techniques were used to select the total sample size of 120 rice farmers. Stage one involved a purposive selection of three agricultural zones namely; Onitsha, Anambra, and Aguata from the four agricultural zones that exist in Anambra State. This is because they have the largest areas of arable land suitable for rice production and are notable for rice production activities in the state. In Stage two, two extension blocks were selected from each of the selected zones using a simple random sampling technique to give a total of six (6) blocks for the study namely; Ayamelum, Anambra East, Orumba North, Orumba South, Ogbaru and Ihiala. This selection is to give a full representation of rice farmers in the area. Stage three involved the random selection of two extension circles from each of the selected six (6) blocks thus making a total of twelve (12) extension circles. Finally, in Stage 4, ten (10) rice farmers were randomly selected from each of the selected circles to give a total sample size of 120 rice farmers used for the study. Primary data for the study was collected using a well-structured interview schedule administered to the rice farmers.

2.3 Method of Data Analysis

The data obtained from the questionnaires were cleaned, organized, coded, and entered into the computer for analysis using the Statistical Package for Social Sciences (SPSS) version 23. Descriptive and inferential statistics were adopted to analyze the data collected. Objectives one to three were achieved with descriptive statistics and objective four was achieved using mean score and ranking.

3. Results and discussion

3.1 Socio-Economic Characteristics of Rice Farmers

Data presented in Table 1 show that the majority (40.83%) of the respondents were within the age range of 41-50 years, followed by those between the age range of 51-60 years (33.33%). Similarly, 16.67% were within the age range of 31-40 years and 9.17% were within the age range of 60 and above years. The mean age of the respondents was 48.75 years (approximately 49 years). This result implies that most farmers were still within a productive and active working age and have the capacity to search for relevant information required to do well in their agribusiness. The mean age of the farmers is in line with the findings of Ebido *et al.* who observed that the mean age of rice farmers in Anambra State is 48 years [16]. Also, the mean age may have significant implications on the use of ICTs since young farmers are getting involved in using ICT services for agricultural information which is in contrast to the elderly who prefer oral communication channels which are less efficient [17]. The study also revealed that the majority (60%) of the respondents were male while 40% were female. This implies that both males and females were involved in rice production in the study area but a greater percentage of the male indicates a dominance of the male population in rice farming in the study area. This male dominance could be because of the intense and time-consuming nature of rice farming or because women are more involved in household activities than their male counterparts. This is in line with the findings of Ajani and Agwu [18] who reported that agricultural production in Anambra State is male-dominated.

Table 1 reveals that the majority (56.67%) completed secondary education while 30% completed primary education. 8.33% of the respondents did not receive any formal education while 5% of the respondents completed tertiary education. This finding implies that there is a high level of literacy among the farmers which might enhance their ability to adopt and use ICTs and also appreciate its benefits in enhancing rice productivity in the study area. This finding aligns with the study conducted by Adetimehin *et al.,* [6] which reported that educated farmers can easily access and comprehend information from various sources and are open to the adoption of new agricultural innovations and practices. Equally, the marital status of the respondents as shown in Table 1 reveals that the majority (59.17%) were married while 22.50% are single, and 11.67% and 6.67% of the respondents were widowed and divorced respectively. This implies that married people are more engaged in rice production activities in the area. This finding corroborates the findings of Olayinka and Alfred [19] who reported that married people were more involved in rice production in Nigeria. Also, the predominance of married people suggests that the majority of the respondents had a stable family and responsibility thus they are disposed towards using ICT tools such as mobile phones to stay in touch and communicate more. This view is supported by the findings of Ajijola *et al.* [20] who reported that marital status was positively related to ICT use.

The results also indicate that a greater proportion (60.8%) of the respondents had a household size of between 6-10 persons while 39.2% had a household size of 1-5 persons. The mean household size was 6 persons which is in agreement with the report of Chikaire *et al.,* [8] who also found a mean household size of 6 persons in their study area. This implies that the household size is large therefore members of the household can provide family labour and may also help to increase access to agricultural information. The data presented in Table 1 shows that the majority (40.83%) of the respondents had a farm size between the range of 1-2 hectares. About 26.67% had a farm size of less than 1 hectare while 20.00% and 8.33% had between 3-4 hectares and 4-5 hectares respectively. 2.5% and 1.67% had the least farm size between the range of 4-5 and above 5 hectares respectively. The mean farm size was 1.74 hectares. This confirms that the respondents were mostly small-scale farmers and further suggests limited output of rice thus people may rely on rice importation to cover the production-consumption gap. This result aligns with the findings of Ebibo *et al.,* [16] who reported in their study that the majority of the rice farmers had a farm size between 0.1-1.5 hectares with a mean farm size of 1.1 hectares thus indicating a dominance of small-scale farmers involved in rice production in Anambra State.

The results of the annual income of the respondents reveal that a greater proportion (38.33%) of the respondents earned between the range of ₦201, 000-₦300, 000 followed by 23.33% and 16.67% and 8.33% who earned between the ranges of ₦101, 000-200, 000, ₦301, 000-₦400,000 and 501, 000-₦600, 000 respectively. Also, 6.67% earned between ₦401, 000-₦500, 000 while 4.17% and 2.5% earned between the ranges of less than or equal to ₦100, 000 and above ₦600, 000 respectively. The mean per annum income of the respondents was ₦283, 800. This implies that rice production is a profitable venture in the area and suggests that farmers will be able to afford ICT tools while taking care of their families and other responsibilities. This finding corroborates the finding of Chikwendu and Nwalieji [21] and Ebibo *et al.* [16] who reported a mean income of ₦289, 683.33 and a mean net production income of ₦141, 163 thus proving that rice production in Anambra State is a profitable and high-income yielding. Furthermore, the results in Table 1 show that the majority (47.50%) of the respondents had between 11-20 years of farming experience. Likewise, 34.17%, 12.50%, and 5.83% had 1-10 years, 21-30 years, and 31-40 years of farming experience respectively. Their

mean farming experience was 14.5 years. This indicates that most of the farmers are highly experienced in rice production as such they should be equipped with better knowledge of rice farming, especially with more access to information through the use of ICTs. This finding is corroborated by the findings of Anim-Dankwa [22] and Onyeneke [23] who reported that farmers with more years of experience were most likely to use ICTs and that long farming experience is an advantage for increased rice production. Finally, the study found that the majority (89.20%) of the respondents the study belonged to different cooperative societies while 10.80% do not belong to any cooperative society. The high percentage of cooperative membership in the study area may be attributed to increased awareness created by intervention programs such as the World Bank-assisted Fadama III additional financing project, as well as other training organized by the ADP and the numerous advantages such as access to loans, input and sharing ideas which are enjoyed by being in cooperatives or farmer groups. This also implies that the high membership of cooperatives could serve as an avenue to obtain agricultural information and other information about the benefits of using ICT tools. This finding strengthens the report of Chikaire *et al.,* [8], Onyeneke [23] and Mbah *et al.,* [24] who found that majority of respondents in their study were members of cooperative societies.

Table 1a Socio-Economic Characteristics of the respondents

Variables	**Frequency (n = 120)**	**Percentage (100%)**	**Mean/Mode**
Age (Years)			
31-40	20	16.67	
41-50	49	40.83	48.80 ≈ 49years
51-60	40	33.33	
60 and above	11	9.17	
Gender			
Male	72	60	Male
Female	48	40	
Educational Level			
No Formal Education	10	8.33	
Primary Education	36	30.00	Secondary Education
Secondary Education	68	56.67	
Tertiary Education	6	5.00	
Marital Status			
Single	27	22.50	
Married	71	59.17	
Divorced	8	6.67	Married
Widowed	14	11.67	
Household Size			
1-5	47	39.2	
6-10	73	60.8	6 persons
11-15	0	0	
Farm Size (Hectares)			
Less than 1	32	26.67	
1-2	49	40.83	
2-3	24	20.00	1.74 hectares
3-4	10	8.33	
4-5	3	2.50	
Above 5	2	1.67	

Table 1b Socio-Economic Characteristics of the respondents

Variables	Frequency (n = 120)	Percentage (100%)	Mean/Mode
Income Level (₦)			
Less than 100,000	5	4.17	
101,000-200,000	28	23.33	
201,000-300,000	46	38.33	
301,000-400,000	20	16.67	283,800 naira
401,000-500,000	8	6.67	
501,000-600,000	10	8.33	
Above 600,000	3	2.50	
Farming Experience (Years)			
1-10	41	34.17	
11-20	57	47.50	
21-30	15	12.50	14.5 years
31-40	7	5.83	
Membership in a Cooperative society			
Yes	107	89.20	
No	13	10.80	Members
Extension Contact (per year)			
1-4	82	68.33	
5-8	30	25.00	3.97 ≈ 4 visits
9 and above	8	6.67	

3.2 Information needs of the respondents

Table 2 shows the results of the analysis of the respondents' area of information needs. The results indicated that the majority (90.80%) needed information on pests and disease management, appropriate planting date and technique (87.50%), weather conditions and early flood warnings (84.20%), use of farm equipment and machine (74.20%), access to Agric. loan/credit facilities (70.80%), current and future market price forecast (64.50%), available market outlet (67.20%), current and future market price forecast (64.50%) and use of improved seed variety (60.00%). The result implies that rice farmers in the study area are most in need of information on how to handle insects, pests, and diseases and also where to purchase and how to use improved farm equipment (power tillers, etc) which could improve their productivity. This corroborates with the findings of Moagi and Oladele [25] who reported that the majority of Nigerian farmers required information on pesticides and farm implements. Results of the study also showed that farmers had high information needs for appropriate planting dates and techniques; current information on weather conditions and early flood warnings. This may be associated with climate change and global warming which has resulted in unpredictable weather conditions which have made farmers uncertain as to the right time to plant and harvest their crops. This finding is in consonance with Benard *et al.* [26] who noted that access to relevant information on weather conditions and its timely communication to farmers can greatly reduce the risk and uncertainty in rainfed agriculture. Similarly, the result of the study revealed that most farmers lacked access to information on agric loans and credit facilities, marketing information such as available market outlets, current and predicted prices of commodities, and information on improved seed varieties in the study area. This agrees with the findings of Benard *et al.,* [26] and Adetimehin *et al.,* [6] who pointed out that access to information on market prices, quantities traded, and low-cost credits is very important to small and marginal farmers, particularly in developing countries. However, this information rarely reaches these rural farmers. Results also showed that farmers need information on improved seed varieties. This could be due to a lack of awareness of the existence of such varieties or insufficient capital to acquire the improved seeds. This corroborates with the findings of Benard *et al.,* [26] who pointed out that most farmers in their study lacked

knowledge of improved seeds hence they stick to the economically inefficient preferred varieties. This is also supported by the level of farming experience of the farmers shown in Table 1 which suggests that older farmers are likely to rely on experience rather than seek new knowledge.

Other information needs mentioned by the farmers include; reliable sources of input and prices (56.00%), time and technique for harvesting (50.83%), and improved storage techniques (50.83%). Areas of low information needs of the respondents include; improved weed control (3.33%), transportation facilities (6.70%), current government policies (9.20%), recommended irrigation facilities (14.20%), and improved storage methods (20.83%). Farmers' low need for information on irrigation methods, storage facilities, and government policies could be a reason for the strong presence of intervention programs such as Fadama III AF and the International Fund for Agricultural Development (IFAD) Value Chain program which has constructed several irrigation and storage facilities in the study area such as double pivot system irrigation, gated water canals, distribution of water pumps and construction of aggregation centers for storage of grains [27].

Table 2 Information needs of the respondents

Information Needs	**Frequency (n=120)**	****Percentage (100%)**	**Rank**
Information on pest and disease management	109	90.80	1
Appropriate planting date and technique	105	87.50	2
Weather condition and early flood warning	101	84.20	3
Use of farm equipment/machines	89	74.20	4
Access to agric loans and credit facilities	85	70.80	5
Current and future market price forecast	81	67.50	6
Available market outlets	77	64.20	7
Use of improved seed varieties	72	60.00	8
Reliable sources of input and prices	66	55.00	9
Improved modern processing	61	50.83	10
Time and techniques of harvesting	61	50.83	11
Appropriate fertilizer application	43	35.83	12
Mechanical land preparation	36	30.00	13
Improved storage techniques	25	20.83	14
Recommended irrigation method	17	14.20	15
Current government policies	11	9.20	16
Transportation facilities	8	6.70	17
Improved weed control	4	3.33	18

Source: Field Survey, 2020. Note: **Multiple responses

3.3 Information sources used by the respondents

The result of the analysis of sources of agricultural information among the respondents in the study area shown in Table 3 reveals that major sources of information were fellow farmers or progressive farmers (98.30%), extension agents (87.50%), mobile phones (84.20%), family and friends (81.70%) and personal experience (76.70%). This implies that most of the farmers relied on interpersonal and informal contacts with progressive farmers and other family and friends as sources of agricultural information. This could be a result of their steady availability coupled with their frequent and regular interactions and probably because they are the cheapest means of acquiring information without much effort. This result agrees with the findings of Benard *et al.,* [26]; Adetimehin *et al.,* [6], and Olayinka and Alfred [19] who asserted that agricultural information comes from interpersonal sources such as friends, family members, and neighbours due to their credibility, reliability and because they are trusted, community members. The majority (87.50%) of farmers sourcing information from extension agents indicates an active extension service within the study

area. Other sources of information include radio (62.50%), input suppliers (56.70%), and cooperative societies (44.10%). This implies that they were useful sources of obtaining information in the study area. This is supported by Boateng *et al.,* [28] who noted that farmers receive important agricultural information through the radio provided that the programs fit their schedule. Also, they noted that as input supplies sell inputs to farmers, they advise them on the use of such inputs, especially agrochemicals.

Results in Table 3 also show that the least used sources of information include the internet (2.50%), research institutes (19.20%), television (20%), and newspaper and pamphlets (29.10%). This implies that television and the internet as some of the least sources of information could be because of inadequate power supply, poor network signal, and lack of awareness of the role of the internet in the provision of agricultural information to farmers. This finding disagrees with the result from the study conducted by Moagi and Oladele [25] who reported that television was the most common source of information utilized by farmers in their study area. However, the results of this study also agree with that of Olayinka and Alfred [19]; Roland *et al.,* [29], and Moagi and Oladele [25] who reported that the internet, pamphlets, and newspapers were low sources of information in developing countries. This was attributed to the reluctance of farmers to use advanced technology such as the internet in obtaining information due to a lack of awareness of its benefits, poor ICT skills, and difficulties in using ICT tools. Also, low literacy level and the cost of buying newspapers was attributed to the low usage of pamphlets and newspaper as sources of agricultural information.

Table 3 Information sources used by the respondents

Information Sources	**Response**	
	Frequency (n=120)	****Percentage (%)**
Fellow farmers	118	98.30
Extension agents	105	87.50
Mobile phones	101	84.20
Family and friends	98	81.70
Personal experience	92	76.70
Radio	75	62.50
Input suppliers	68	56.70
Cooperative societies	53	44.10
Newspaper/pamphlets	35	29.10
Television	24	20.00
Research institutes	11	19.20
Internet	3	2.50

Source: Field survey, 2020. Note: **Multiple responses

3.4 Preferred channels of information

It is relevant to determine farmers' preference for information channels in order to understand the choices they make in the midst of diverse information channels Boateng *et al.,* [28]. Table 4 shows the result of further investigations to determine farmers' preferred information channels. The results show that farmers in the study area indicated that their most preferred channel of receiving agricultural information was through fellow farmers (91.6%), extension agents (90.8%), personal experience (84.20%), family and friends (80.83%) and input supplies (79.20%). This implies that respondents of this study perceive fellow farmers, extension agents, their personal experience, family and friends, and input suppliers as easily available and accessible credible channels through which agricultural information can be shared in a timely and easy-to-use manner. This is supported by the findings of Boateng *et al.,* [28] and Benard *et al.,* [26] who reported that farmers in their study prefer interpersonal sources of information such as fellow farmers, extension agents, family and friends, and input suppliers because they are perceived as credible sources of information and also an easy method of sharing experiences with each other, therefore improving their agricultural production. Results in Table 4 also show that other preferred channels of information are radio (49.2%), cooperative societies (47.5%), and mobile phones (36.7%). This implies that farmers may have access to radio, and mobile phones and be members of different cooperative societies but do not prefer them as sources of information because information

received through these channels is general and not specific to their needs therefore, they cannot influence the kind of information they want to receive. This agrees with the findings of Storer, *et al.* [30] who observed that farmers' preference for information sources is dependent on credibility and level of control over the channel. Boateng *et al.,* [28] also support the findings of this study by showing that though farmers have access to radio, they have no control over the programs broadcasted by the radio stations and even the broadcast time. The least preferred sources of information include newspapers/pamphlets (23.3%), television (10.8%), research institutes (6.7%), and the internet (2.5%). Research institutes as the least preferred information source imply weak research to farmer extension linkage in the study area. Also, the findings of this study are contrary to the findings of Roland *et al.,* [29] who reported that television and radio were the most preferred sources of information in their study because almost every house had a television or radio which they used as a source of agricultural information.

Table 4 Preferred channels of information

Information Channels	**Preferred Channel of Information**		
	Frequency (n=120)	****Percentage (%)**	**Ranking**
Fellow farmers/progressive farmers	110	91.6	1st
Extension agents	109	90.8	2nd
Personal experience	101	84.2	3rd
Family and friends	97	80.8	4th
Input suppliers	95	79.2	5th
Radio	59	49.2	6th
Cooperative societies	57	47.5	7th
Mobile phones	44	36.7	8th
Newspaper/pamphlets	28	23.3	9th
Television	13	10.8	10th
Research institutes	8	6.7	11th
Internet	2	2.5	12th

Source: Field Survey, 2020. Note: **Multiple responses

3.5 Constraints to effective use of ICTs

The result in Table 5 revealed that the major constraints to the effective use of ICTs faced by respondents in accessing agricultural information were inadequate funds (M=3.21), High cost of acquiring ICT tools (M=3.25), irregular power supply (M=3.22), lack of awareness of ICT tools (M=2.81), lack of ICT skills (M=2.78), poor network coverage (M=2.66), high cost of maintenance of ICT tools (M=2.55), high cost of charge on phone calls (M=2.51), and poor training on ICTs use (M=2.50). The implication is that these constraints serve as obstacles that prevent farmers from taking full advantage of ICT tools to access information that will improve their productivity. This result agrees with earlier studies carried out by Okeke *et al.,* [31]; Oke *et al.,* [10]; Adetimehin *et al.,* [6], and Chikaire *et al.,* [8] who have reported that various challenges constrain farmers from effectively using ICT tools to access agricultural information, particularly in rural areas. Some of the major constraints identified by the respondents revolve around inadequate funds for acquiring ICT tools, maintenance of ICT tools, and poor training on ICTs use. This supports the assertion of Benard *et al.,* [26] who noted that due to financial problems, some farmers cannot afford to buy information sources or attend important agricultural workshops/seminars and demonstrations where they can be trained on ICTs use and gain knowledge of available information sources. Similarly, Oke *et al.,* [10] opined that rural people mostly live in scantily populated areas and would make provision for infrastructure and public utilities such as electricity, health facilities, and some modern ICT services such as ATMs, mobile banking, and cyber cafes difficult to deploy in rural areas. Importantly, the provision of certain ICT services requires electricity, technical skills, and strong network coverage which are difficult to find in most rural communities. On this note, Anim-Dankwa [22] asserted that poor electrification in rural areas has always been a common problem that has restricted development in important aspects of life such as information access and sharing among farmers.

Other minor constraints identified by the respondents were poor educational background (M=2.19, 10th), inadequate time for farmers (M=1.90, 11th), poor government policies (M=1.81, 12th), unavailability of ICT centers in rural areas (M=1.74, 13th), language barrier (M=1.61, 14th) and Poor relationship with extension agents (M=1.31, 15th). This implies that these were not serious constraints and they had a limited effect on the farmers' effective use of ICTs in the study area. This is a confirmation of results in Table 5 which showed that respondents in this study had a good educational level therefore; constraints such as poor educational background and language barrier had no serious effect on ICTs use because the majority attained secondary education and so can read and understand English. This is contrary to the findings of Ume *et al.* [32] who reported that language barrier, poor access to information services, and inadequate time for farmers were the most severe constraints to access information by the respondents in their study. Poor relationship with extension agents was the least ranked constraint (15th), this reaffirms the findings reported in Table 5 that extension agents are one of the most available and preferred information sources/channels used by the rice farmers in Anambra State. This further indicates a strong extension to farmer linkage in the study area.

Table 5 Constraints to effective use of ICTs

Constraints	Mean Score	Standard Deviation	Rank
Inadequate funds	3.21	0.35	1st
High cost of acquiring ICT tools	3.25	0.38	2nd
Irregular power supply	3.22	0.43	3rd
Lack of awareness of ICT tools	2.81	0.51	4th
Lack of ICT skills	2.78	0.27	5th
Poor network coverage	2.66	0.65	6th
High cost of maintenance of ICT tools	2.55	0.70	7th
High cost of charge on phone calls	2.51	0.75	8th
Poor training on ICT use	2.50	0.78	9th
Poor education background	2.19`	0.82	10th
Inadequate time for farmers	1.90	0.88	11th
Poor government policies	1.81	0.95	12th
Unavailability of ICT centers in a rural area	1.74	1.12	13th
Language barrier	1.61	1.26	14th
Poor public relations with extension agents	1.31	1.32	15th

Source: Field Survey, 2020. Note: **Multiple responses. Decision rule: Serious constraint (mean ≥ 2.50) Not a serious constraint (mean ≤ 2.50).

4. Conclusion

The results presented in the results and discussions section were evident for a logical conclusion. The study, therefore, concludes that rice farmers have various information needs and timely delivery of this relevant and appropriate information will increase their productivity. To increase farmers' access to these ICT tools, measures must be taken to address the issues of inadequate funds and irregular power supply and the high cost of acquiring ICTs among other challenges the farmers are faced with in accessing ICT information. On this note, the study recommends that the government needs to proffer lasting solutions to epileptic power supply, particularly in rural areas and financial institutions should be encouraged to provide affordable credit facilities to farmers to ease the burden of acquiring and maintaining ICT tools.

Compliance with ethical standards

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This research did not receive any funding, which means that the results are not exposed to third-party opinion. The author(s) therefore thanked all the respondents that participated in data collection.

Disclosure of conflict of interest

The author(s) have declared no conflict of interest.

Statement of informed consent

Not applicable.

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