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Assessment of Information and Communication Technology (ICT) Utilization among Rural Women Rice Farmers in Ayamelum Local Government Area of Anambra State, Nigeria

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Abstract **– The study assessed Information Communication Technology (ICT) utilization among rural women rice farmers in Ayamelum Local Government Area of Anambra State, Nigeria. Multi-stage sampling technique was used to select 51 respondents used for the study while data was collected using structured questionnaire. Descriptive statistics such as mean, percentages, and frequency were used to analyze the objectives. The study shows that majority (66.7%) of the rural women rice farmers were between the ages of 31 and 40 years, 68.8% were married, 82.4% had one form of education or the other while 74.5% had household size of between 6 and 10 persons. More so, 74.6% had farming experience of between 1 and 10 years and majority (52.9%) financed their farming activities through their personal savings. On types of ICT tools available for the women rice farmers, majority (98.0, 96.0 and 94.1) of the respondents identified mobile phone, radio and television respectively. ICT tools such as mobile phones ($\bar{x}$ = 2.9), radio ($\bar{x}$ = 2.6), television ($\bar{x}$ = 2.03), camera ($\bar{x}$ = 2.1) and newspaper ($\bar{x}$ = 2.0) were frequently utilized by the women rice farmers. On the other hand, the women identified high cost of ICT tools ($\bar{x}$ = 3.01), inadequate capital ($\bar{x}$ = 2.81), complexity in the use of ICT tool ($\bar{x}$ = 2.70), inadequate knowledge on ICT tools ($\bar{x}$ = 2.44), inadequate power supply ($\bar{x}$ = 2.41), poor network reception ($\bar{x}$ = 2.27), high cost of internet subscription ($\bar{x}$ = 2.21), high cost of charges on calls ($\bar{x}$ = 2.11) and poor educational background ($\bar{x}$ = 2.08) as major constraints to ICT utilization in the area. It was recommended that efforts should be made by the service providers to improve network coverage in the study area through Information Communication Technologies and efforts should be made to educate the rural women rice farmers on the use of ICT tools.**

Keywords **– Information, Communication, Technology, Utilization, Women, Rice Farmers.**

I. INTRODUCTION

In all works of life, information has played out to be the most fundamental element, especially in developmental processes. Against this background, agriculture has proven to be an information-driven industry that draws upon infinite sources of widely dispersed contextualized knowledge and considerable research materials (1). Many information communication technologies (ICTs) have been developed, tested and launched around the world, with varying degrees of success recorded. Some of these technologies were born out of the need to help farmers improve their livelihoods through increased agricultural productivity and income, or by reducing risk factor inherent in crop and animal production (2; 3). Information and communication technologies have become the world's most common way of transmitting voice, data and services in the developing world (4). They provide the most affordable ways for millions of people to access information, markets and finance and governance systems previously unavailable to them.

According to Ogiagah and Ofule (5), information and communication technologies refers to digital technology used for gathering, production, storage, processing, manipulation, management and transmission or reception of information. It is an umbrella term for any communication device or application such as; radio,

television, mobile phones, computers, television, emails, instant message, E-book readers and networks, hardware and software, satellite systems as well as various other services (6). ICT is an extension term for Information Technology (IT) which emphasizes the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage and audio (7). More so, Ohaka *et al* (2) defined information and communication technologies (ICTs) as a collection of media technologies that are used for collecting, storing, editing and passing on (communicating) information in various forms to the ones who access it.

Ajala and Gana (8) highlighted that rice is the seed of the grass species of *Oryza sativa* and *Oryza glaberrima* of the grass family *Gramineae*. As a cereal grain, it is a crop that cuts across regional, religious, cultural, national and international boundaries with very high demand. According to Kadiri, Eze, Orebiyi, Lemchi, Ohajianya and Nwaiwu (9), rice is an increasingly important crop in Nigeria. It is relatively easy to produce and grown for sale and home consumption. In terms of comparative advantage, rice can be grown in flooded and non-flooded soils because it has both lowland and upland varieties that can adapt to different agro-climatic and soil conditions (10). It is a staple food in several African nations and constitutes a bigger portion of the diet regularly. Aside a handful of nations that enjoy self-sufficiency in rice cultivation, rice consumption surpass production and substantial amount of the crop are imported to sustain local demand at the expense of hard-earned foreign currency reserves (11).

In Nigeria, small-scale farming families play a critical role in increasing food production for our future food security. Yet, they are often constrained in their access to markets, knowledge, new technology and skills, new inputs, emerging value chains and other opportunities (12; 13). Hence, achieving improved and sustainable agricultural production and productivity growth largely depends on the advancement of agricultural research and its effective applications at farmer's fields through the transfer of improved technology and innovation. Information Communication Technologies holds great promises and are our stock of weapons in the fight against hunger and in feeding the billions. According to Umar and Bakare (14), the development and use of information and communication technologies (ICTs), in particular the internet, has caused an enormous change in the life of people living in industrialized countries, which have led to a process of transition from *an industrial* society to *information*. Information and communication technologies (ICT) usage in Nigeria has gone a long way but despite its existence, there seems to be limited access and utilization of it among farmers, especially those in the rural areas in the southeast of Nigeria (15).

Particularly, some of the challenges that rice farmers encounter include: poor farm produce data collection, poor record-keeping for farm input expenses, expenditure on farm chemicals as well as receiving information from other stakeholders (16; 17). However, available literature has indicated that little or no study has been done on the utilization of information and communication technology among rural women rice farmers in Ayamelum local government area of Anambra State of Nigeria. As such, providing information on the utilization of information and communication technology among rural women rice farmers will increase the farmers' knowledge of production, marketing, and sales and subsequently improve the national economy. Hence, having recognized the importance of information and communication technologies and the need for its effective dissemination and utilization, it, therefore, becomes pertinent to investigate the level of ICT utilization among rural women rice farmers in Ayamelum local government area, Anambra State, Nigeria. The specific ob-

-jectives of the study were to:

i. Determine the socioeconomic characteristics of the women rice farmers;

ii. Identify the various types of ICT tools in the study area;

iii. Determine the level of ICT utilization among the women rice farmers and

iv. Identify constraints militating against ICT utilization among the women rice farmers.

II. METHODOLOGY

The study area was Ayamelum Local Government Area of Anambra State, Nigeria. Ayamelum Local Government Area is made up of eight communities: Umueje, Omasi, Igbakwu, Umumbo, Anaku, Umuolom, Omor and Ifite Ogwari with its administrative headquarter at Anaku. Ayamelum is one of the major food baskets of the state, hence a larger percentage of the people are predominantly farmers and depend solely on agriculture for their livelihood. The topography and climatic vegetation of the area make it suitable for agricultural activities while the existence of rivers, lowlands and swampy fields makes the area conducive for rice production. The most important geographical feature of the study area is Ezu River located in the west transverse of the local government, Obina River located in the northern transverse, Omabala and the natural spring water, Owusi in Omor community, which serves as a source of irrigation for vegetable crops during the dry season.

The study was delimited to only rural women rice farmers in the local government area. Multi-stage and simple random sampling techniques were used to select 51 respondents for the study. The first stage involved the purposive selection of three communities (Anaku, Omor and Umumbo) out of the eight communities in existence based on the largest area of rice fields in these areas. Stage II involved a random selection of 17 rice farmers from each of the three selected communities to give 51 respondents for the study. Data for the study were obtained from the primary source through the use structured questionnaire. The objectives were achieved using descriptive statistics such as the mean score, percentages, and frequency.

III. RESULTS AND DISCUSSION

Socioeconomic Characteristics of the Respondents

Table 1 shows that 66.7% of the rural women rice farmers were between the ages of 31 and 40 years, 19.6% were within the age range of 20 - 30 years while 13.7% were between the age of 41 and 50 years with a mean age of 45.6 years. This indicates that the three groups of respondents were predominantly in their middle ages and as such, the rural women rice farmers can be said to be in their productive age. This aligns with the findings of Onumadu and Osahon (18) who indicated that 80% of their respondents were within the age range of 30 and 50 years of age. The majority (68.8%) of the women rice farmers were married, 19.7% were single, 9.8% were widowed, and the remaining 1.9% of them were divorced. The greater percentage of married women as indicated in the study may have been attributed to the fact that most married women are into the rice farming because of their family upkeep and as such, can get assistance from their partners and family members in terms of manpower and financial assistance.

The distribution of the respondents according to their educational attainment as shown in Table 1 equally ind-

-icates that a greater percentage (82.4%) had formal education while 17.6% had no formal education. Out of the pooled percentage (82.4%) of those that had a formal education; 45.2% attended primary school, 23.5% attended secondary school and 13.7% attended tertiary institutions. This implies that the majority of the rural women rice farmers' attained one form of educational level or the other. Hence, most of them can be classified as literate farmers as they can read and write. As such, it is expected that rural women rice farmers in the study area are likely to be more efficient in the use of ICT tools. On the distribution of rural women rice farmers according to their household size, the result indicated that 38 out of the total respondents, accounting for 74.5% had household size of between 6 and 10 persons; 21.6% had household size of between 1 and 5 persons, while 3.9% had household size of between 11 and 15 persons. This implies that the majority of the respondents have a larger number of household size who support them with labour. It is worthy to note that large household size has significant roles to play in agricultural production, especially in an extensive system such as rice farming since a larger household size will guarantee availability and supply of labour for farming activities.

The distribution of respondents by their years of farming experience as indicated in Table 1 reveals that 74.6% of the sampled rural women rice farmers had a farming experience of between 1 and 10 years, 17.6% had between 11 and 20 while 7.8% had 21 and above years of farming experience. From the analysis, the average farming experience of the rural women rice farmers was 10.7 years. In consideration of women in rice farming, the result of this analysis implies that rice farming in the study area is in the hands of rural women who have spent 10 years and above in rice farming. The result indicates that the majority of the rural women rice farmers are highly experienced and as such, it is expected that a high level of farming experience should have a positive impact on their crop yield. More so, the majority (52.9%) of the rural women rice farmers financed their farming activities through their savings, 31.4% obtained loans from their co-operative societies while 15.7% got their business financed through friends and family aid.

Table 1. Percentage distribution of the respondents according to their Socioeconomic Characteristics.

Socio-economic characteristics	Frequency	Percentage (%)	Mean ($\bar{x}$)
Age (years)			
20 – 30	10	19.6	
31 – 40	34	66.7	45.6 years
41 – 50	7	13.7	
Marital status			
Single	10	19.7	
Married	35	68.6	
Divorced	1	1.9	
Widowed	5	9.8	
Education level			
No formal education	9	17.6	
Primary education	23	45.2	
Secondary education	12	23.5	

Socio-economic characteristics	Frequency	Percentage (%)	Mean ($\bar{x}$)
Tertiary	7	13.7	
Household size			
1 – 5	11	21.6	
6 – 10	38	74.5	6.06 persons
11 – 15	2	3.9	
Farming experience			
1 – 10	38	74.6	
11 – 20	9	17.6	10.7 years
21 and above	4	7.8	
Sources of fund			
Personal savings	27	52.9	
Friends and relatives	8	15.7	
Isusu/co-operatives	16	31.4	

Types of ICT Tools Available to the Rural Women Rice Producers in the Study Area

Table 2 indicates ICT tools available to the rural women rice farmers in the study area. The result revealed that majority (98.0, 96.0 and 94.1) of the women rice farmers identified mobile phone, radio, and television respectively, as the most available information communication technology tools in the study area. A greater percentage (58.8%) of the respondents reported that the camera was available to them whereas, 54.9% equally identified newspaper as one of the available ICT tools in the area. However, majority of the respondents reported limited or unavailability of ICT tools such as projector (64.7%), video recorder (68.6%), internet (70.6%), e-mail (72.4%), audiocassette (74.5%), telegram (78.6%) and computer (80.4%). While the majority (100%) of the respondents said, that remote sensing was not in existence in the area. The limited availability of some of these ICT tools as indicated in the study may be a result of limited financial capacity to have access to some of these ICT tools. The significance of farmers' financial capacity is quite paramount in the acquisition of farm implements and equipment and payment of labour.

Table 2. Distribution of respondents according to the types of ICT tools available in the Area.

ICT Tools	Available		Not Available	
	Frequency (n = 51)	Percentage (%)	Frequency (n = 51)	Percentage (%)
Mobile phone	50	98.0	1	2.0
Radio	49	96.0	2	4.0
Television	48	94.1	3	5.9
Camera	30	58.8	21	41.2
News paper	28	54.9	23	45.1
Projector	18	35.3	33	64.7

Video recorder	16	31.4	35	68.6
Internet	15	29.4	36	70.6
E-mail	14	27.6	37	72.4
Audio cassette	13	25.5	38	74.5
Telegram	11	21.6	40	78.6
Computer	10	19.6	41	80.4
Remote sensing	0	0.0	50	100

Level of ICT Utilization among the Women Rice Producers

The result of the analysis on the level of ICT utilization among the rural women rice farmers as indicated in Table 3 shows that ICT tools such as mobile phones ($\bar{x}$ = 2.9), radio ($\bar{x}$ = 2.6), television ($\bar{x}$ = 2.03), camera ($\bar{x}$ = 2.1) and newspaper ($\bar{x}$ = 2.0) were frequently utilized in the study area. Others such as the projector, video recorder, internet, e-mail, audiocassette, telegram, and computer were underutilized. This implies that the majority of the farmers will find it difficult to access and utilize vital agricultural information and materials which can be found, accessed and utilized through the internet. The rural women's dependent on mobile phone, radio and television, camera and newspaper may be as a result of the various advantages attached to the said ICTs tools or because of the limited availability of other forms of ICT tools in their locality. This finding is in agreement with Nenna (1) who reported that farmers recorded a high level of usage of conventional ICT tools such as mobile phones, radio, and television among cassava farmers in Anambra State, Nigeria. The level of internet utilization as indicated in the study equally agrees with the finding of Olaniyi (19). The findings indicate low ICTs utilization among the rural women rice farmers in the study and as such, one would expect slow agricultural development processes in the area.

Table 3. Distribution of respondents by the level of ICT Utilization.

ICT Tools	**Mean ($\bar{x}$)**	**Rank**	**Remark**
Mobile phone	2.9	1st	Often utilized
Radio	2.6	2nd	Often utilized
Television	2.4	3rd	Often utilized
Camera	2.1	4th	Often utilized
Newspaper	2.0	5th	Often utilized
Projector	1.7	6th	Not often utilized
Video recorder	1.6	7th	Not often utilized
Internet	1.4	8th	Not often utilized
E-mail	1.3	9th	Not often utilized
Audio cassette	1.2	10th	Not often utilized
Telegram	1.1	11th	Not often utilized
Computer	1.0	12th	Not often utilized

Constraints to ICT utilization among the women rice producers

The women rice farmers in the study area identified nine constraints as major constraints militating against the utilization of ICT tools. These include high cost of ICT tools ($\bar{x}$ = 3.01, 1st), inadequate capital ($\bar{x}$ = 2.81, 2nd), complexity in the use of ICT tool ($\bar{x}$ = 2.70, 3rd), inadequate knowledge on ICT tools ($\bar{x}$ = 2.44, 4th), inadequate power supply ($\bar{x}$ = 2.41, 5th), poor network reception ($\bar{x}$ = 2.27, 6th), high cost of internet subscription ($\bar{x}$ = 2.21, 7th), high cost of charges on calls ($\bar{x}$ = 2.11, 8th) and poor educational background ($\bar{x}$ = 2.08, 9th). Whereas, lack of training (1.80, 10th), poor maintenance of ICT tools (1.60, 11th), inadequate radio station for programme presentation (1.54, 12th), absence of cyber-café in the rural area (1.34, 13th) and language barrier (1.21, 14th), were not identified as the major constraints militating against ICT utilization in the study area. This agrees with the findings of Adekunmi and Awoyemi (20) who indicated in his study that the majority (61.7%) of the respondents were unable to afford available ICT tools.

Table 4. Distribution of constraints to the use of ICT by the Farmers.

Constraint to ICT Utilization	Mean ($\bar{x}$)	Rank
The high cost of ICT tools	3.01	1st
Inadequate capital	2.81	2nd
Complexity in the use of ICT tool	2.70	3rd
Inadequate knowledge of ICT tools	2.44	4th
Inadequate power supply	2.41	5th
Poor network reception	2.27	6th
High cost of internet subscription	2.21	7th
High cost of charges on calls	2.11	8th
Poor educational background	2.08	9th
Lack of training	1.80	10th
Poor maintenance of ICT tools	1.61	11th
Inadequate radio station for programme presentation	1.54	12th
Absence of cyber-café in the rural area	1.34	13th
Language barrier	1.21	14th

IV. CONCLUSION AND RECOMMENDATIONS

The majority of the rural women rice farmers had a formal education, which reflected on their level of ICT utilization. However, the rural women rice farmers identified so many challenges such as high cost of ICT tools, inadequate capital, and complexity in the use of ICT tool, inadequate knowledge of ICT tools, inadequate power supply and poor network coverage. Hence, to checkmate the issue of poor network coverage as one of the major challenges; efforts should be made by the service providers in the study area to improve farmers' access to Information Communication Technologies; computers and other ICTs should be used in adult education programmes and training to boost farmers' knowledge on the use. It is worthy to note that constant power supply to the study area will boost ICT usage and as well, tackle the issue of inadequate power supply. As such, the

government, non-governmental organizations, and stakeholders in the state are encouraged to invest more in rural electrification.

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