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Analysis of the Roles of Information and Communications Technologies in Rural Women Farmers' Empowerment in Rivers State, Nigeria.

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Abstract

Information and Communication Technology is a potent force in the developing world for social, economic and educational transformation of individuals, agencies and institutions. This study examined the veritable roles of ICT in empowering rural women farmers in Rivers State. The specific objectives were to examine the demographic characteristics of the respondents, identify ICT devices in use by the respondents; information needs of the respondents, the roles of ICTs in rural women empowerment and constraints to the use of ICT devices by the respondents. Structured questionnaire was used to elicit information from respondents and oral interview where necessary. The respondents were 120 rural women farmers purposively selected from the farmers list obtained from the ADP (Agricultural Development Project) Office in the Area. The results indicate that 54.2% of the respondents are married, 57.5% with secondary education, 52.5% hold a farm size of 0.25 – 1 hectare of land. ICT devices in use include mobile phones, television, radio and other devices. They need information on inputs, prices, markets, produce demand, new practices and technologies. ICT play various roles in empowering the women such as offering entrepreneurial opportunity, breaking isolation, providing linkages to inputs and markets, assisting small and medium size business, reducing poverty, and illiteracy and improving income and savings of rural women. The problems affecting use of ICT devices include absence and erratic supply of electricity, lack of ICT skills, low level of awareness etc. Government should provide basic amenities to the rural dwellers to improve their socio-economic well-being.

Key words: ICTs, empowerment, agriculture, rural, women.

Introduction

Information and Communication Technology (ICT) is a wonderful tool which benefits all spectrums of people in the world and reach millions of people every day. It is the communally and economically marginalized, predominantly women in those countries, who do not bring in the benefit of it. Recent developments in the fields of information and communication technology are undeniably revolutionary in nature. Information has become the principal determinant of the progress of nations, communities and individual (Nagamani and Veni, 2016).

Information and communication have always mattered in agriculture. Ever since people have grown crops, raised livestock, and caught fish, they have sought information from one another. What is the most effective planting strategy on steep slopes? Where can I buy the improved seed or feed this year? How can I acquire a land title? Who is paying the highest price at the market? How can I participate in the government's credit program? (World Bank,2011). Producers rarely find it easy to obtain answers to such questions, even if similar ones arise season after season. Farmers in a village may have planted the "same" crop for centuries, but over time, weather patterns and soil conditions change and epidemics of pests and diseases come and go. Updated information allows the farmers to cope with and even benefit from these changes. Providing such knowledge can be challenging, however, because the highly localized nature of agriculture means that information must be tailored specifically to distinct conditions.

Agriculture is the mainstay of most African economies and occupies a pivotal position in the development of the continent. Despite the importance of agriculture, improvements in this sector have been uneven and on the whole disappointing, with a current development growth rate of 1.7% (Diom 1996). This slow rate of development has been compounded in the recent past by recurrent crop failures, a high human population (expected to reach 300

million by 2000 (Diom 1996) economic recession, and escalating external debt. These factors — coupled with agricultural mismanagement, escalating costs of production, and difficulties with the structural-adjustment programs of the World Bank and the International Monetary Fund — have led to food scarcity and insecurity. All this implies an urgent need to address the issues retarding agricultural production in Africa, especially in sub-Saharan Africa (SSA). This requires an understanding of how the farming systems work in practice.

In any farming system, it is important to recognize the various roles of men, women, youth, and children. In Africa, women constitute 70% of the agricultural workforce and produce 80% of the region's food (Gellen 1994; Blumberg, 1994). Their important contribution to local and national economies is not, however, reflected in the resources allocated to the peri-urban and rural female food producers. Female and male farmers in Africa face similar problems, but they affect the female farmer more adversely. The major problems include weak extension services; non adoption of technologies; low status (and therefore non involvement) in decision- and policy-making; varied and heavy workloads; poor access to credit; and lack of access to education, training, agricultural inputs, supportive policies, or information to improve farming.

Information is essential for facilitating agricultural and rural development and bringing about social and economic change. Unfortunately, most African countries have not devoted adequate attention to providing their citizens with access to information, especially in rural areas, where 70-80% of the African population lives (Youdeowei et al. 1996). Information initiatives should, therefore, be geared to strengthening the grass roots, with special emphasis on women, and be developed in places without public libraries or other information resources. This may be achieved by setting up functional, integrated information systems in rural and peri-urban

communities, which would bring in new and diverse resources to enable women to access information.

Traditional and modern ICTs can be used concurrently to speed up the circulation of information. In many African countries, ICTs are used to greater and lesser degrees in drama, dance, folklore, group discussions, meetings, exhibitions, demonstrations, visits, farmers' field schools, agricultural shows, radio, television, video, and print. Solar, satellite, and fibre-optic technologies are now in use for computers, telephones, and facsimile. Telecentres have been established in villages, where appropriate, rural female farmers can tap these resources and access information using the new ICTs, such as e-mail, the World Wide Web, electronic networks, teleconferencing, and distance-learning tools. Information can empower rural female farmers to participate in decision-making, exchange ideas with others in developed and developing countries, and improve the quality of life of the people of Africa.

ICTs have changed education, training, service delivery, and people's lives in the more wealthy nations and in the research sectors of some developing nations, which pioneered the use of ICTs in less wealthy nations. In South Africa, Senegal, Uganda, and other countries, ICTs are in use in rural communities where they have created employment, helped to develop telecommunication and networking opportunities in rural areas, and acted as delivery vehicles for distance training and education. Sadly, the situation is different in Nigeria and the study area where most rural women farmers are poor, live in rural villages and with low education level. There is dearth of information on use of ICTs to empower these individuals and the benefits to users. The study therefore becomes necessary. The specific objectives are to: (a) describe the socioeconomic characteristics of the respondents; (b) identify ICT devices in use by respondents; (c) ascertain agricultural information

needs of respondents; (d) describe ICT roles in empowering the respondents and (e) identify problems of ICT use respondents.

Methodology

This study was carried out in Rivers State of Nigeria. The state is bounded on the South by Atlantic Ocean, on the north by Imo state and Abia state, on the east by Akwa Ibom state and the west by Bayelsa and Delta state. Rivers State which is in the Niger Delta has topography of flat plains with a network of rivers and tributries. These include new Calabar, Orashi, Bonny, among other Rivers. Rivers State lies between latitude five (5^{o}N') North and mid-way between longitude five (5^{o}s') South of the Greenwich meridian (**RSADP,2000**). The state is divided into 3 agricultural zones as show in table 1, by the Rivers State Agricultural Development Project (RISADP), and **Zone I (CROP ZONE**) made up of 8 local government areas was chosen for the study. Rural women farmers in the zone constituted the population for the study. A multi-stage random sampling technique was used to select respondents. In stage one, five **major** crop producing LGAs were purposively selected from zone 1. In stage two, two (2) communities were also randomly selected from each of the five LGAs to give a total of ten (10) communities. In stage three, twelve registered ICT user women farmers were then purposively selected from each of the ten communities. This gave a sample size of 120. The data for this research were collected from the primary and secondary sources and analysis of data was done using descriptive statistical tools such as percentages, frequency and presented in tabular forms

Table 1: Agricultural Zones in Rivers State

Zones I – Crop Zone Headquarters: Bori	Zone II – Fishing Zone Headquarters: Andoni	Zone III – Crop/Livestock Zone Headquarters: Omuma.
Port Harcourt	Abua/Odual	Ahoada East
Obio/Akpor	Akuku-Toru	Ahoada West
Khana	Andoni	Emohua
Gokana	Asari-Toru	Etche
Oyigbo	Degema	Ikwerre
Tai	Wakirike	Ogba-Egbema-Ndoni
Eleme	Opobo/Nkoro	Omuma
Ogu-Bolo	Bonny	

Source: Rivers State Agricultural Development Programme Annual Report (2000)

Results and Discussions

Socioeconomic Characteristics of Respondents

Table 2 reveals the socio-economic characteristics of respondents. The table shows that majority of the farmers (38.3%)) are within the age bracket of 51 – 60 years. They are followed by 27.5% who are above sixty years. Akubulo (2008) posited regarding age that older farmers usually have fixed ideas. It is generally believed that such farmers can be persuaded to adopt new practices. To succeed, it is usually advisable to start with the felt needs of the people. In this case, the farmers have information needs on agriculture as will be seen later. ICT use for rural farmers empowerment becomes necessary. On marital status, 54.2% of the respondents are married, 37.5% are widows, while 8.3% have separated from their mates. Education play a veritable part in use and non use of innovations. The table shows that 57.5%

of the respondents have secondary education, primary education (27.5%) and tertiary education 15%. Education also empowers a farmer. Farmers who have had formal education are more receptive to new ideas than those who are illiterate.

Majority (52.5%) of the respondents have 0.25 – 1 hectare of land for farming, 29.2% had 1.5 – 2 hectares, 12.5% has 2.5 – 3 hectare while 5.8% has more than 3.5 hectares of land. Again, 58.3% has between 6 – 10 dependents, while 37.5% also have 1 – 5 dependents. Majority has been in farming (56.7%) business for over 12 years. They are followed by 61.7% who belong to 2 organizations, 22.5% has one association they belong, while 15.8% has three membership of organization. This means that a farmer who belongs to social organization will tend to adopt innovations more than his counterpart who belong to no. social organization. Little wonder the rural women respondents here are happy for the transformation witnessed by use of ICT devices.

Table 2: Socioeconomic Characteristics of Respondents

Attribute	Frequency	Percentage
Age		
31 – 40	12	10
41 – 50	29	24.3
51 – 60	46	38.3
61 and above	33	27.5
Marital Status		
Married	65	54.2
Widow	45	37.5
Widower	10	8.3
Education Level		
Primary	33	27.5
Secondary	69	57.5
Tertiary	18	15.0
Farm size		
0.25 – 1	63	52.5
1.5 – 2	35	29.2
2.5 – 3	15	12.5
3.5 and above	7	5.8
Household Size		
1 – 6	45	37.5
6 – 10	70	58.3
10 and above	5	4.2
Farming Experience (years)		
1 – 6	25	20.8
7 – 12	68	56.7
12 years and above	27	22.5
Membership of Organization		
1	27	22.5
2	74	61.7
3	19	15.8

Field survey,2016.

ICT Devices used by Respondents

There are major devices used by respondents for communication and exchange of ideas, innovation and techniques. All the respondents (100%) used radio for communication. The second major device used by respondents is the television (97.5%) and mobile phones (88.5%) which is seen everywhere today. Other ICT devices in use are video (45.8%), computer (25%), cameras (12.5%), CD-ROMS (12.5%), the interest 8.3% and email (8.3%). It can be seen that the respondents use the popular traditional ICT devices – radio, television. According to Akubuilo (2008), television is a powerful as well as a fast method of communicating information to rural people. With the television, the clientele see and hear and consequently, their interest is sustained for a longer time. Furthermore, messages broadcast over the radio reach all classes of people and the message can be transmitted in the local languages. Radio is useful at the awareness stage. In another vein, Okon (2013) said the Federal Ministry of Agriculture in Nigeria now uses the cell phone in distributing inputs to farmers in rural areas. Although, the internet has opened new communicating channels that brings new knowledge and information resources to rural communities, traditional communication channels are still being used successfully to reach all types of people. The radio, for instance has been very effective for disseminating information to all types of audiences despite its inability to allow much interaction between uses and unfavourable broad casting times for most people.

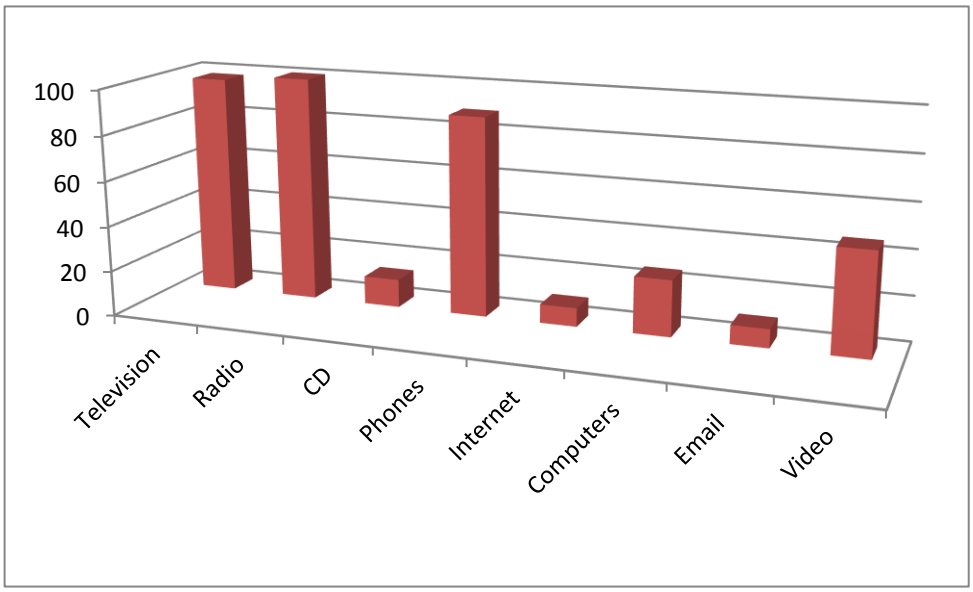

Fig 1-ICT Devices used by Respondents

Information Needs Area of Respondents

Information is power. A well-informed farmer will avoid risks and bargain better for sale of his produce. Table 3 shows the area rural women farmers need information most. Farmers need information on food processing and preservation (98.3%) under the most hygiene conditions to avoid food poisoning and contamination. They also need information on new agricultural technologies (90.8%) and production practices (95.8%), new markets (93.3%), produce demands (81.6%), markets prices (87.5%), trade laws (54.2%), and production trends (72.5%) and potential of certain agricultural produce (45%).

Women in rural areas have very little access to information. They are mostly poor illiterate, and unable to afford even the very most basic forms of ICTs, such as radios and telephones. Nevertheless, rural women actively seek and disseminate information. So ICTs must be appropriate to enable women

to gain access to information efficiently and cost-effectively (Munya, 2000). The lack of reliable and comprehensive information for rural female farmers is a major hindrance to agricultural development.

Mittal et al., (2010), shows that of the range of information that farmers required, small farmers prioritized weather, plant protection (disease and pest control), seed information and market prices. Information about market prices is valuable not only in deciding where and when to sell, but also in deciding the cropping pattern. Weather information is particularly important for most small farmers. Rainfall information is critical at certain key junctures of the cropping cycle – during planting, for timing the application of fertilizer/pesticide, and during harvesting/storage. Information on how to diagnose and treat disease is important for farmers. Plant disease, which could wipe out the entire crop, is one of the biggest challenges that farmers face. According to farmers, getting an accurate diagnosis and timely cure remains a major challenge. In some cases, farmers had access to pesticide company specialists or agricultural extension workers who would visit farmers in the field, but this was not consistently true.

Three kinds of information on pesticides and other inputs were cited as highly valuable to farmers – they need to know what inputs to use for their specific requirements, how best to apply these inputs, and where they can find the specified inputs. This need for information covers seed varieties, fertilizer, pesticides, weed killers and other plant remedies. While farmers are interested in other categories of information such as the best cultivation practices and crop choice, these are not usually crucial information requirements.

Women also need to exchange indigenous knowledge. However, most available local information is packaged in a raw form and therefore difficult to access or use (Paquot and Berque 1996). The situation is compounded because women do not know where to find this information. Moreover,

current mass media and communication systems have not been used to maximum effect in development. Information should be accessible to female farmers at selected sites, with various ICTs to facilitate easy access to relevant information and information exchange.

Table 3: Information Needs of Rural Women Farmers

Information Needs	Frequency	Percentage
Agricultural inputs	76	63.3
Market prices	105	87.5
Trade laws	65	54.2
Product potentials	54	45.0
Trends in food production	87	72.5
New production practices	115	95.8
New agricultural technologies	109	90.8
New Markets	100	83.3
Food processing and preservation	118	98.5
Produce demand	98	81.6

* Multiple response

Role of ICTs in Women Empowerment

Information and Communication Technology can play a veritable role in empowering women. Table 3 shows the valuable contributions of ICTs to rural women empowerment. ICT improves the income of rural women as shown by 97.5% response. ICT has the ability to break and reduce poverty among uses (95%), breaks systematic discrimination and violence against women and provide access to financial markets (91.6%) respectively. It offers entrepreneurial opportunity for rural women (85.8%), enhance decision making and ability to participate in development programmes (90.8%). Other roles are ability to break isolation of rural women (80.%), provides linkages

for small scale enterprises (70%), builds skill and capacity of women (77.5%), assist small and medium size enterprises (50%), transformation of the traditional roles of women (80.8%), opens economic opportunity from informal to formal sector (72.5%). Personal business development and growth (61.6%), help women overcome illiteracy (87.5%). During oral discussion with the respondents, it was also said that they have been able to set up business centres and call centres where people gather to make their calls. This has improved their income and savings.

According to UNDAW (2002), ICTs provide unique opportunities for economic growth and human development. They can shape and enhance a wide range of development applications — from electronic commerce to access to financial markets; from generating employment to providing opportunities for investment to entrepreneurs, in particular small and medium-sized enterprises; from improved agricultural and manufacturing productivity to the empowerment of all sections of society; from long-distance education to telemedicine, from environmental management and monitoring to prevention and management of disasters (UNDAW, 2002). The potential to help foster sustainable development, empower people – women and men, the young and old, build capacities and skills, assist small- and medium-sized enterprises, reduce poverty, and enhance participation and informed decision-making at all levels is enormous (UNDAW, 2002).

ICT offer economic opportunities (both in salaried employment and entrepreneurship, in the ICT sector itself, and in jobs enabled by ICT in all sectors) at all levels. In developing countries there are growing possibilities for outsourced service-sector jobs. Globally IT-enabled communications businesses offer possibilities of entrepreneurial opportunities for women. The technology inherently makes possible flexibility in time and place that offers great possibilities for women in view of their multiple roles (UNDAW,

2002). The sector also gives the possibility for women everywhere, despite their location, of connection to the global economy through e-commerce as producers and distributors of goods and services. For this, women need management capability, trade infrastructure, credit, and an enabling policy environment. ICT-enabled information access can break the isolation of rural women, giving them the knowledge to make decisions to improve their economic situation. ICT provides virtual space and linkages that favour small-scale enterprises, where women's entrepreneurship is more frequently found.

Information is a prerequisite for empowerment (World Bank, 2002), and participation drives empowerment by encouraging people to be active in the development process, to contribute ideas, take initiative, articulate needs and problems and assert their autonomy (Ascroft and Masilela, 1994). ICT is the latest in the series of continuing technological revolutions, and is argued to have significant influence on gender empowerment (van Ark et al, 2002). Informed citizens according to World Bank report (2002) are better equipped to take advantage of opportunity, access services, exercise their rights, and hold state and non- state actors accountable. Social influences on women's relationship to technology affect their attitudes toward ICTs.

There is therefore the need for greater concentration on the use of ICT for gender empowerment in Nigeria. For instance, United Nations Millennium Declaration (2005) has resolved to ensure that globalization becomes a positive force for all the world's people and to promote gender equality and empowerment of women as effective ways to combat poverty, hunger and disease and to stimulate development that is truly sustainable, and to ensure that the benefits of new technologies, especially information and communications technologies, are available to all. Women's full and equal access to ICT-based economic and educational activities supports women's

contributions in both business and home-based activities and improves women's socioeconomic status, strengthens the family, and provides access to information, communication, freedom of expression, and formal and informal associations. ICTs also provide options for women, including overcoming illiteracy, creating opportunities for entrepreneurship, allowing women to work from home and care for their families, accessing ICTs from rural locations, and enhancing and enriching their quality of life.

ICTs are often viewed as near-magic solutions to problems. They are extremely powerful tools that have proven useful in many areas of Nigeria. Traditional media and new ICTs have played a major role in diffusing information to poor living in rural communities. Obayelu and Ogunlade, (2006) posited that there are great potentials of ICTs as tools for enhancing peoples daily lives whether by increasing access to information relevant to their economic livelihood, better access to other information sources; healthcare, transport, distance learning or in the strengthening of kinship. The result from study conducted by Obayelu and Ogunlade (2006) showed that, the most common of the ICTs related to poverty alleviation programs in Nigeria are telephone and radio. While other commonly uses of traditional media include: Print, video, television, films, slides, pictures, drama, dance, folklore, group discussions, meetings, exhibitions and demonstrations (Munyua, 2000). The use of computers or the Internet is still restricted to very few people living in urban centres. ICTs have the potential to broaden and enhance access to information and communication resources for remote rural areas and poor communities, to strengthen the process of democratization and to ameliorate the endemic problem of poverty (Norrish, 2000).

Table 4: ICT Roles in Women Farmers Empowerment

ICT Roles	Frequency	Percentage
Offers entrepreneurial opportunity for women	103	85.8
Ability to break isolation of rural women	96	80.0
Provision of linkages for small scale enterprises	84	70.0
Building capacity and skills of rural women	93	77.5
Assist small and medium size enterprises	60	50.0
Reduction of poverty	114	95.0
Enhance participation and decision making	109	90.8
Provision of access to financial markets	110	91.6
Transformation of traditional gender roles	97	80.8
Opens way from informal sector to formal sector	87	72.5
Improves income of rural women	117	97.5
Personal business development and growth	74	61.6
Help women overcome illiteracy	105	87.5
Break systematic discrmination and gender violence	110	91.6

* Multiple response

Constraints to Effective Use of ICTs by Respondents

Table 5 reveals that the respondents are constrained by many factors in their use of ICT devices. Language barrier is a major problem of the respondents as indicated by 100% response. This is as a result of the common use of English Language by the providers of ICT information as advise. Again, information is not transmitted in their local language. High cost of services (99.2%), poor and expensive connectivity (94.2%), erratic power supply (90.8%), absence of electricity (81.6%) are all factors constraining the effective use of ICT devices in the study. In an interview with some women

leaders, it was said that absence of power supply and erratic power supply prevents them from charging their phone battery and other devices requiring power. Again, low level of awareness on the important roles of ICT (70%), high cost of ICT devices (76.6%), low level of education (81.6%) poor information sharing culture (72.5%) and lack of ICT skills are other constraints to the use of ICT devices. During discussions with the respondents, it was said that recharging their devices with money (buying airtime) discourages them from using their devices and also the cost of getting a strong and reliable phones a problem to content with. The above findings are trice to Okon (2013) who posited that in Nigeria, cellular telephones though constrained by poor network in rural areas, are no longer considered extravagant luxuries in development work and are now even object of micro business and micro credit loan policies.

Odiaka (2011) in his own view said a presumed major setback in using ICT development is that people in most rural areas are at the very bottom of the pyramid and so development efforts should make the most difference in the sector. It is believed that ICTs have the potential to multiply development effects and are thus also meaningful in the rural area. However, introducing ICTs in these areas is likely to be costly due to lack of infrastructure, no power, no running water, illiteracy, hunger and abject poverty.

Table 5: Constraints to Effective Use of ICTs by Respondents

Constraints	Frequency	Percentage
Absence of electricity	98	81.
Erratic power supply	109	90.8
Lack of ICT skills	65	54.2
Low level of awareness of ICT roles	84	70.0
High cost of ICT device	92	76.6
High cost of services	119	99.2
Low level of education	98	81.6
Poor information sharing culture	87	72.5
Poor and expensive connectivity	113	94.2
language barriers	120	100

* Multiple response

Conclusion

The development and use of ICTs have facilitated the dissemination of knowledge and information useful for empowerment of people irrespective of sex, age, education and the rest. ICTs, when properly utilized and managed, has the capacity to raise the living standard of users. The study confirmed that the importance of ICTs are legion ranging from income and savings improvement to provision of entrepreneurial opportunity for growth and development of people. From poverty reduction to breakage of social and economic isolation, enhancement of decision making and participation in programme planning. ICT therefore has the potentials to uplift people.

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