GENDER ANALYSIS: INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) ADOPTION AMONG RURAL FARM DWELLERS IN OYO STATE, NIGERIA

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Abstract

The high illiteracy level in most rural communities of Nigeria is not representative of positive impacts that Information and Communication Technologies (ICTs) have had on Nigerian rural agriculture in terms of productivity, growth and development. The study investigated the adoption of ICTs among rural farm dwellers in Iseyin Local Government Area of Oyo state, Nigeria, using gender analysis. A well-structured interview schedule was employed to elicit quantitative information from 60 male and 60 female rural farm dwellers from Serafu, Ado-awaye and Osoogun in Iseyin Local Government Areas, using the two stage random sampling procedure. Results showed that 55% of the male respondents and 46.7% of the female respondents adopted various selected ICTs in general. Analysis of Variance (ANOVA) at <0.05 level of significance resulted that a significant difference exists in the adoption of the ICTs of both male and female respondents (F= 4.198). The findings revealed that at <0.05 level of significance, significant difference existed in the level of income of the male and female respondents (F= 4.079). The study revealed that male farmers adopted ICTs more than their female counterparts, and there were significant gender gaps in ICT adoption among rural farm dwellers in Nigeria. Therefore, in order to bridge the gender gap in the level of adoption of ICTs, among rural dwellers, it was recommended that various ICTs should be made available for rural dwellers at subsidized rate because larger percentage of them are aware of the importance and benefits of ICTs but lack the financial capacity to acquire them. The government should formulate policy that will enhance continuous development, dissemination, and utilization of gender responsive ICTs for farming activities and for development of rural livelihood, in Nigeria.

BACKGROUND TO THE STUDY

Agriculture is the backbone of Africa's economy. About 70% of Africans and roughly 80% of the continent's poor live in rural areas and depends on agriculture for their livelihood.The sector accounts for about 20 % of Africa's GDP, 60% of its labour force and 20% of all merchandise exports. Agriculture is the main source of income for 90% of rural populations in Africa but the gaps in the adoption of information and communication technologies has hindered the actors along the marketing chain from enjoying the maximum benefits agriculture could offer. In Nigeria, some of the earlier methods used for communication have been visual and audio in the form of gestures, traditional drums, works of ancient arts and others but technology today has transformed these sounds and gestures to produce speech, striped videos, animated videos, films, posters, theatres, social media, phone apps and others. The evolution of these different media has opened up a vast potential for communication. The successful transmission of information through a common system of symbols, signs, speech, writing, or signals among rural dwellers takes a medium of writing on paper, air, wire, person-to-person-contact or rural dweller-to-rural dweller and extension agents-to-farmers and vice-versa in Nigeria. Historical sayings account that rural farmers sell their agricultural produce by putting those produce beside the road-side and add number of stones representing the selling price of the commodity. It was a form of indigenous communication, this happened in the pre-colonial, colonial and early post-colonial era.

Information is vital for rural and agricultural development. The use of information is a critical and key issue in the information age. The main challenge of our age is not producing information or storing information, but getting people to use information. Timely availability of relevant information is vital for effective performance of managerial functions such as planning, organizing, leading, and controlling, in the operation and management of organizations, which is also relevant to agribusiness and rural farmers. According to Maningas *et al*., information within the hands of the rural dwellers means empowerment through control over their resources and decision-making processes. It was noted that being an effective and efficient delivery system of essential information and technology services, it facilitates the clients' critical role in decision-making towards improved agricultural production, processing, trading, and marketing. Information is very important for rural development because improving the incomes of smallholder farm families will depend crucially upon raising agricultural productivity. However, the information media reaching the rural dwellers in the various rural areas may be dynamic, characterized by changes from time to time or from rural dwellers to another depending on the degree of location of the rural area to urban area or information source. Numerous studies have highlighted the short-comings of traditional print- and library-based methods of providing information to rural dwellers and rural community who are generally illiterate and relatively remote from formal sources of information (e.g. extension stations, libraries) [9;10].

Information source is an institution or individual that creates or brings about a message, and the characteristics

of a good one include; relevance, timelessness, accuracy, cost effectiveness, reliability, usability, exhaustiveness and aggregation level [11]. According to Oladele [12], the efficiency of technologies generated and disseminated depends on effective communication which is the key process of information dissemination. Oladele's research backed up the necessity to facilitate the usage of right ICT for agricultural and rural development.

With regards to social inequalities in Nigeria and other parts of the world, 'Gender analysis' refers to the variety of methods used to understand the relationships between men and women, their access to resources, their activities and the constraints they face relative to each other, which provides information that recognizes that gender and its relationship with race, ethnicity, culture, class, age, disability and/or other indicators of status, are important for understanding the different patterns of involvement, behaviour and activities that women and men have in economic; social and legal structure. An analysis of gender relations provides information on their different condition that females and males face, and the different effect that policies and programmes may have on them, such information can inform and improve policies and programmes, and this is essential in ensuring that different needs of both females and males are met. This means that the analysis of the use of ICTs by rural dwellers based on gender will bring to limelight various challenges confronting each dweller and this will be a useful tool in formulating policies to correct them.

The development of agricultural technologies requires among other inputs, a timely and systematic transmission of useful and relevant agricultural information (messages) through relatively well educated technology dissemination (extension) from formal technology generation system (research) via various communication media (channels) to the intended audience – rural dwellers. For effective technological development, adequate consideration should be given to gender equality principles that will enhance the genders responsiveness of the information technology. The use of ICT equipment has been a major issue against agricultural development especially in the rural areas where majority of the farmers live, in Nigeria. According to Jegede only 5% of Nigeria's population can access online internet based materials, majority (70%) of the population live in rural areas and this group has no access to telephone facilities, computer or internet base services. On the long run, ICTs has positively influenced Agriculture in areas where it can effectively be used. It provides information that will enhance efficient and high production in the following ways: prompt access to information, creation of employment opportunities, providing medium for marketing of agricultural product and encouraging economic development.

The dynamism of ICT is thought to provide fundamental change in all aspects of life, including knowledge dissemination, social networking, economic and business practices, political engagement, and in the areas of education, health, leisure, and entertainment. It is also believed that ICTs are useful either as tangible goods in their own right or as value-adding services and they therefore assist the development efforts made by governments. Meanwhile, production is completed only when the goods or commodities gets to the final consumer. However, lack of an effective communication linkage between rural dwellers and potential buyers has given room for middlemen exploiting the rural dwellers. This challenge has posed a great threat to food security such as instability in price of farm produce, scarcity of food in urban areas, leading to high cost of food in major cities in Nigeria. ICT provides a mechanism through which information (instructions) can be obtained on markets, opportunities, regulations and constraints. In addition, ICT are potentially a way in which producers in developing countries can improve their share of the value being generated by the production and consumption of agricultural commodities through what Gibbon and Ponte called 'upgrading' which means "…improving what they are doing and or how they are doing it."

However, despite the attempt at technological innovation transfer, the wide gap between the levels of production which research contends is attainable and that which rural dwellers achieve suggests a missing link, that is, despite the increase and improvement in some communication media such as television, internet, radio, newspaper and telephones, which serve as most reliable and effective source of information-some rural dwellers cannot still afford to buy them and consequently, this lead to lack information that could enhance their agricultural production and general livelihoods.

The significance of this research will help in proper accessibility and policy making in these various ways: to determine means of passing agricultural information as well as its influences on rural dwellers in Iseyin Local Government of Oyo State; it will also help in programme planning towards execution of a model or adoption process in agricultural extension as well as help the government to make policies. It is also expected that the recommendations of this study will serve as panacea to the challenges of ICT usage in Nigeria, at large. The specific objectives were to assess the level of adoption of selected ICTs among men and women rural dwellers; examine the gender differences in socio-cultural constraints associated with ICTs usage; and identify the perceived benefits of the ICTs by men and women in rural dwellers. The study hypothesized that there was no significant difference between the adoption level of men and women respondents and that there was no significant difference between men and women adopters' socio-economic characteristics.

METHODOLOGY

The study was conducted in rural communities namely; Ado-awaye, Osoogun and Serafu Villages; of Iseyin Local Government area of Oyo State. Iseyin is a town in Oyo state, southwestern Nigeria, at the intersection of roads from Oyo to Iwere and from Abeokuta to Okaka. The town is the headquarters of a local government council and has several Christian-sponsored secondary schools and a hospital. It is geographically located within latitude 7, 9667 (758'0.012"N) and longitude 3, 6000 (336'0.000"E), with a population of 256,926 people [20]. A traditional centre for cotton spinning and weaving, Iseyin is best known for its dyeing (using locally grown indigo as well as imported dyes) of heavy, imported cloth. The town's Yoruba inhabitants cultivate tobacco and teak, as well as cotton and vegetable dyes, for export; most of their cassava (manioc), yam, corn (maize), and peanut (groundnut) crops are consumed locally. Although Iseyin was formerly a centre for opencast mining and the making of pig iron, its blacksmiths now depend upon

imported iron for their metalworking.
The conventional believe is that rural communities on the major roads should be more exposed to many activities and benefit from interventions than those located in the forest, on the foot paths. The rural communities chosen for the study are located far from the capital of the local government and they are found on the major roads that interlink cities like Ogun State and Osun State. Covering about 50% of the research location, the study areas selected are located on two of the four major roads that lead to the local government from cities. Also, the characteristics of these communities suit Ekong definition of rural communities in Nigeria; which comprise a population less than 20,000 people that are agrarian and filled with adults.

Sampling Technique and Data Analysis
A two stage random sampling procedure was used as a framework in selecting the respondents for the study. The first stage involved a random selection of three villages from the list of villages in Iseyin Local Area based on the degree of *rurality,* while in the second and final stage, 40 farmers (20 male and 20 women) were randomly selected from each of the villages. An interview schedule containing both closed ended and open-ended questions was used to collect data from a total of 120 respondents used for the study. Their responses were analyzed and summarized using simple descriptive and inferential statistics— Analysis of Variance (ANOVA).

RESULTS AND DISCUSSION (see attached appendices for statistical tables)
Demographic characteristics of rural dwellers
The data presented in Table 1 shows that equal number of male (50.0%) and female respondents (50.0%) were sampled for the study. About 3.3% of male respondents were below 15 years, 35.0% of male and 36.6% of female were found between 16 and 30 years, 40.0% of male and 30.0% of female were within the age group of 31-45 years. Also, about 13.3% of male and 26.6% of female were within the age range of 46-50 years, just 6.7% of male and 6.8% of female were found within the age of 61-75 years while very few (1.7%) and male and none of the female respondents were found above 75 years. The mean age of the male respondents was 36.1±15.4 years and that of the female was 37.8±13.8 years. The findings revealed that female farmers in the study area were slightly older than their male counterparts. This could be as a result of the fact that older women involved more in farming than men in Iseyin Local Government Area. More so, table 1 reveals that 50 %, 46.7 % and 3.3% of the male respondents were Christian, Islamic and Traditional worshipers respectively. Also, 66.7%, 33.3% and 0% of the female respondents were Christian, Islamic and Traditional worshipers respectively. This indicates that the respondents were highly religious however their various religious beliefs may have influence on their adoption of ICTs.
The data in Table 1 reveals that about 32.2%, 61% and 6.8% of the male respondents were single, married and divorced respectively. While about 26% and 74% of the female respondents were single and married respectively, but there is no unmarried female respondent. This indicates that early marriage is common among the female than male. While about 52.4% and 47.6% of the female respondents were from monogamous and polygamous family background respectively. This might have no serious implication on their level of ICTs usage. The ratio of the difference in the number of children (0-14) and aged persons (65 and over) divided by the number of adults of working age (15-64); the relative dependency ratio calculated from Table 1 is 10.2. This shows that for every 100 persons of working age (15-64) there are 10 children and elderly persons who depend upon them.
Level of participation in farming
The data in Table 2 reveal that about 83% of the male respondents participated in farming activities while about 76.7% of the female respondents participated in farming activities. This indicates that majority of the female engaged in other none farming activities like other domestic work.
Level of awareness
The data in Table 2 show that about 90% and 31.1% of the male respondents that are aware and not-aware respectively of the listed ICTs. While about 85% and 15% of the female respondents were aware and not-aware respectively of the said ICTs. The high rate of unawareness of these listed ICTs in the area could be as a result of poor rural development, and or high rate of illiteracy among the rural dwellers.
Level of adoption
The most adopted of the listed ICTs are Mobile phone, television, video and radio. The data in Table 2 shows that about 55% of the male respondents have ICTs and 45% of them have-not. While about 46.7% of the female respondents have ICTs, 48.3% of them “have-not”. This indicates that male make use of the ICTs more than female. However, in the course of interviewing these rural dwellers, the researcher composed his question to test whether the respondent has passed the level of trial of the adoption process. The “have” question signifies the respondent is having and using the ICTs indicated while “have-not” signifies lack of interest in the ICTs in some ICTs indicated.
Socio-cultural constraints
The data in Table 3 show that 14.9%, 2.1%, 0%, and 4.3% of the male respondents were constraint by religion, gender, age and taboo respectively. While 80.7% were not constraints. In the female category, about 2.7%, 2.7%, 12.3% and 0% were constraint by religion, gender, age and taboo respectively. While 83.3% were not constraints. This indicates that male experience more of the constraint than female.

Benefit of effective usage
The data in Table 3 shows that about 21.7%, 15%, 20%, 21.7%, 5% and 28.3% of the male respondents agreed that ICTs helped to receive information quickly, make work easier, save time, improve production, easily affordable, and weather forecast respectively. While in the female respondents about 21.4%, each respectively agree that ICTs help receive information quickly, make easier and save time, while 19.0% and 16.7% said that it improve level of agric and were easily affordable respectively.
Perception
The data in Table 3 reveals that, about 19.7%, 35.8%, and 9.6% of the male respondents were strongly agreed, agreed and undecided respectively. While about 22.8% and 11.1% were disagreed and strongly disagreed respectively. However in the female categories, about 20.5%, 35.7% and 14.3% were strongly agreed, agreed and undecided respectively, while about 20.5% and 5.1% were disagreed and strongly disagreed respectively.
Level of income
Majority of the rural dwellers, both male and female earns highest between #10, 000 and #70,000 annually from Table1; it shows 48.3% of males and 71.7% of females at this boundary. Figure 3 shows that on average 60% of the respondents earns between #10,000 and #70,000 annually.
Level of Cosmopoliteness
This was based on whether respondents only visits nearby communities (low), other states (medium), and other countries (High). The male has 86.7%, 11.7%, and 1.7% as low, medium and high respectively while the females are; 85.3%, 11.7% and 0% for low, medium and high respectively.

RESULT OF TESTED HYPOTHESES
Hypothesis 1: There is no significant difference between the adoption level of men and women respondents
The results in table 4 reveal that at 0.05 level of significance, there was significant difference in the level of adoption of the ICTs between male and female respondents (F= 4.198).
Hypothesis 2: There is no significant difference between men and women adopters’ socio-economic characteristics
The results in tales 5 and 6 below reveal that there is no significant difference exists in both Age and Family Size in comparison with sex of the rural dwellers. The F-value for Age was 0.391 and that of the family size was 2.229. The result in table 7 reveals that there was significant difference in the level of income of the male and female respondents (F= 4.079).

CONCLUSION
Majority of the rural dwellers in Iseyin Local Government area of Oyo State, involved in the adoption of ICTs (both male and female) are within the age range of 40-59 years. The women spend more readily than their spouses on basic necessities, while the males are largely self-dependent and unmarried youths showed higher declination in farming activities than married. The major socio-cultural constraints to the usage of ICTs by both male and female were found to be finance and unawareness. The study also showed that both male and female respondents agreed to all the benefits associated with ICTs. The analyses revealed that the respondents showed high positive attitudes towards ICTs but the major problem associated with the use of ICTs in the selected communities is poor ICTs development that suite their communities.

RECOMMENDATIONS

In view of the above analysis, various ICTs should be made available and subsidized at grassroots level for the use of the rural dwellers. Gender-sensitive ICTs policies should be implemented in the rural area, and integrate ICTs into the secondary school curriculum to bring about effective teaching and impartation of skill on each individual. Adult ICTs training schools as well, should be established at various local governments to reduce high rate of illiteracy among the rural dwellers, in Nigeria. From the overview of the recommendation received from the farmers about improvement to their means of information, many are willing to get better information and affiliations that could improve their livelihoods but in short supply of electricity to aid their most adopted ICT, radio. Hence, there should be rural electrification and subsidy in the cost of ICTs to make them accessible to all poor rural farmers.

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APPENDICES

Table1: Demographic characteristics of rural dwellers

Variable	**Male**		**Female**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Age				

15 and below		2		3.3			
0	0						
16-30		21		35			
22	36.6						
31-45		24		40			
18	30						
46-60		8		13.3			
16	26.6						
61-75		4		6.7			
4	6.8						
75+		1		1.7		0	
0							
Mean				36.12			
37.78							
Standard deviation			15.387				
13.762							
Religion							
Christian		30		50			
40	66.7						
Islam		28		46.7		20	
33.3							
Traditional		2		3.3			
0		0					
Marital status							
Single		19		32.2		16	
26							
Married		36		61			
44	74						
Divorced		4		6.8			
0		0					
Family Nature							
Monogamy		29		48.3			
36	60						
Polygamy		31		51.7		24	
40							
Level of Cosmopoliteness							
Low		52		86.7		53	
88.3							
Medium		7		11.7			
7		11.7					
High		1		1.7			
0		0					
Income level							
< N10000		1		1.7			
0		0					
N 10001-70000		29		48.3		43	
71.7							
N70001-130000		14		23.3		9	
15							
N130001-190000		9		15			
31		5					
N190001-250000		4		6.7			
5		8.3					
N250001+		3		5			
0		0					
Mean				97170			
73450							
Standard Deviation			72617.585				
54800.230							

Source: Field Survey, 2013

Table 2: Distribution of respondents by the level of participating in farming, level of awareness and adoption.

Variable	**Male**		**Female**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Level of Participation in farming				
High	55	83	46	76.7
Low	10	16.7	14	23.3
Level of Awareness				
Aware	54	90	51	85
Not Aware	6	10	9	15
Level of Adoption				
Have	33	55	28	46.7
Have not	27	45	29	48.3

Source: Field Survey, 2013

Table 3: Distribution of the respondents by socio-cultural constraint, benefit of effective usage, perceptions and reasons for non-usage.

Variable	**Male**		**Female**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Socio-cultural Constraint				
Religion	7	14.9	2	2.7
Gender	1	2.1	2	2.7
Age	0	0.0	9	12.3
Taboo	2	4.3	0	0
Benefit				
Receive info quickly	21	21.7	27	45
Make work easier	9	15.0	16	26.7
Save time	12	20.0	34	56.7
Improve production	13	21.7	15	25
Easily affordable	3	5.0	15	25
Weather forecast	18	28.3	17	28.3
Perception				
Strongly Agree	11.8	19.7	12.3	20.5
Agree	21.5	35.8	21.4	35.7
Undecided	5.7	9.6	8.6	14.3
Disagree	13.7	22.8	12.3	20.5
Strongly Disagree	6.7	11.1	3.1	5.1
Reasons for Non-Usage				
Poor Power supply	21	35	2	35
Price of fuel	12	20	18	30
Geographical Barrier	10	16.7	2	3.4
Finance	16	34	31	43.1

Source: Field Survey, 2013

Table 4: Analysis of Variance showing the difference between men and women farmers level of adoption of ICTs

Variable	Sum of square	df	Mean squares	F test	Sig.
Between groups	53.333	1	53.333	4.198	0.043
Within groups	1499.033	118	12.704		
Total	1552.367	119			

Level of Significance: 0.05 level of significance

Source: Field Survey, 2013

Table 5: Analysis of Variance showing the difference between men and women rural dwellers Age

Variable	Sum of square	df	Mean squares	F test	Sig.
Between groups	83.333	1	83.333	.391	.533
Within groups	25142.367	118	213.071		
Total	25225.700	119			

Level of Significance: 0.05 level of significant

Source: Field Survey, 2013

Table 6: Analysis of Variance showing the difference between men and women rural dwellers Family size

Variable	Sum of square	df	Mean squares	F test	Sig.
Between groups	343.408	1	343.408	2.229	0.138
Within groups	18183.183	118	154.095		
Total	18526.592	119			

Level of Significance: 0.05 level of significant

Source: Field Survey, 2013

Table 7: Analysis of Variance showing the difference between men and women rural dwellers level of income

Variable	Sum of square	df	Mean squares	F test	Sig.
Between groups	1.688E10	1	1.688E10	4.079	0.046
Within groups	4.883E11	118	4.138E9		
Total	5.052E11	119			

Level of Significance: This hypothesis was tested at 0.05 level of significant

Source: Field Survey, 2013

Biography

Angie holds professional qualifications as a Registered Integrated Marketing Communicator of Nigeria with the Certified Marketing Communications Institute of Nigeria (CMCIN) and an Associate Member of the Advertising Practitioners' Council of Nigeria (APCON). She served as a cub reporter and interviewer with the print media organization known as New Nigeria Newspaper (NNN) Ltd in 2004; she also worked with the broadcast media organization known as Africa Independent Television (AIT), in 2008, where she was involved in preparing, proofreading and editing news reports for on-air transmission. Angie possesses the gift of gab with good writing and editing skills. Some of the undergraduate courses taught include *speech communication & rhetoric*, *broadcast station management & programming*, *foundation of broadcasting*, *announcing & presentation*, et cetera. She is an up-and-coming whiz kid in the field of Health Communication whose ongoing Ph.D. research focuses on the mass media and safe motherhood.

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Biography

Ifeoma Faith Kalu is a B.Sc degree holder in the Department of Mass Communication, Covenant University. Her main areas of specialization are broadcast and film.

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Notes/Comments:

It will be greatly appreciated if we are beneficiaries to travel grants and conference registration waivers you make available. Thank you.