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Utilisation of Information Communication Technologies among Male and Female Rural Dwellers of Southwestern Nigeria

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Abstract

The study assessed the utilisation of Information Communication Technologies among rural dwellers of Southwestern Nigeria. A multistage sampling procedure was used to select 240 respondents using an interview schedule. Data collected on socioeconomic characteristics, use, purpose, benefits, constraints, disposition to ICT utilisation, and the difference between the use of ICT among males and females were analysed with percentages, mean, Chi-square, and Pearson's Product Moment Correlation at α 0.05. The results showed that most of the respondents were members of a social group (82.9%) who mostly used mobile phones (WMS=1.64); for networking among males (98.5%) and female (100.0%). Respondents' most derived benefit from ICT use was network facilitation (WMS=0.87); with females (M=13.06±3.90) benefiting than males (M=12.73±3.97). However, the most realised constraint to ICTs use was inadequate funds (WMS=0.60) affecting females (M=9.46±3.90) more than males (M=8.27±4.05); with males (M=85.75±10.80) being favourably disposed to ICTs use than females

(M=85.69±10.05) respondents. Marital status ($\bar{x}$=0.047), years of formal education (r=0.000), and non-formal education ($\bar{x}$=0.018) significantly influenced the use of ICTs. The study shows that respondents' constraints and perceptions of ICTs limit the benefits derived.

Introduction

Information and communication technology whose role in development has been multi-faceted is a universal information source that disseminates, transmits, and displays data electronically both in developed and developing nations like Nigeria (Nisansala, 2019). ICT has been a user-friendly tool that is compatible with people's way of life irrespective of culture, race, tribe, age, country of origin, and gender since communication and information are key basic concepts of life (Aminuddin et al., 2022). The role it plays as social infrastructure in national development cannot be overemphasised even as the world has been said to increasingly been transformed into a global village. Hence, the ICT sector has been indispensable to various segments of the economy for individual, family, community, governmental and non-governmental establishments. The reason behind this is not far-fetched as there are various information needs of an individual, family, and clan which necessitate the need for direct or indirect reliance on the ICTs sector for timely and up-to-date information from other sectors of the economy like health, education, commerce, and e-government (Yahaya et al., 2019; Javeed et al., 2020).

According to Bhusanar & Singh (2019), ICTs help rural dwellers to have better access to adequate and timely information that can improve their livelihoods, and standard of living by transforming all their activities. Hence, ICTs have been an information conduit that has boosted and enhanced the livelihood of individual or corporate bodies as they support the general information-seeking behaviour of people including rural dwellers. Therefore, Information has been said to be a resource that is key to growth and development which enhances sustainable development. Studies have shown that the commonly used ICT in the rural community includes Radio, mobile phone, and television (Javeed et al, 2020; Bhusal et al*,* 2021 & Adeniyi, 2020). There is a geometric increase in the nation's teledensity which was 119% as of July 25, 2023, as affirmed by Adedapo (2023); this assertion stands to affirm the rapid growth of the mobile phone and other ICTs in the nooks and crannies of the country (Adeniyi & Yekinni, 2023)

ICTs have been used for several interventions in developing nations with great benefits for its user, for instance, its utilization by rural dwellers of Bangladesh for Grameen Bank's village phone (VP) programme has boosted the income generation and social security of poor women (Meyenn & Lawson, 2018). Also, the rural-urban digital divide of the Wireless IP project for multipurpose community telecentre (MCT) in Uganda brought hope to the marginalised societies in the villages. In the same vein, ICT used in India for Akashganga ''the Milky Way'' programme enhances the milk collection and evaluation process, boosting income for rural milk producers. ICT information centres in the district of Bokin Burkina Faso offered women information on water hygiene and provided capacity building and empowerment on healthy water sources (Japan International Cooperation Agency (JICA), 2022). Summarily, ICTs have helped to improve access to education and health

care; and promote food security, nutrition, save time, and gender equality, especially in developing nations (Yahaya et al., 2019 & Deepak, 2021).

Gender plays a substantial role in rural telecom services, especially in the use of mobile communication for voice and short messages services for various purposes as affirmed by Akindola, 2019, hence, this study embraced the gender stratification theory in which emphasis was placed on women's position to men in the degree of production resources control, access to power, information, time, energy, and prestige which can inform the perception of both gender to the use of ICTs especially information resources for enhanced livelihood and quality of Life (Meyenn & Lawson, 2018 & TriumphIAS, 2021).

However, the utilization of ICTs for developmental information dissemination depends on many factors such as literacy level, income, education, available resources accessibility, availability, the user's right perception of the ICT tool, and the challenges encountered in the use of ICT-based tools (Geist and Myers, 2020 & Umukoro *et al,* 2022); while the circumstances that could influence the perception of rural dwellers of the developing nations for ICT access and utilisation include; affordability, insufficient skill, insufficient human resources, gender inequality among others (Bhusanar & Singh, 2019). According to Umukoro *et* al, (2021), the perception of the use of ICTs is the bedrock for its usefulness in society, especially among the genders of rural communities with diverse cultural diversity. The factors that could propel the right perception of ICTs utilization include the constraints to use, the benefits of use, the purpose of use, and the prevailing culture guiding gender and generation behaviours (International Telecommunication Union (ITU), 2020; Bhusal et al, 2021). The purpose for which rural dwellers deploy ICTs for include access to market information, and financial services, reducing rural-urban migration, and promoting gender equality (Javeed et al, 2020 & Ramana, 2020). To this end, this study assessed the gender perspectives of ICT use among the rural dwellers of southwestern Nigeria. The study investigated the extent of ICT utilization by respondents, ascertained the purpose of ICT use, determined the benefits of ICT utilization, identified the constraints to the use of ICTs, and assessed the respondents' perception of ICT utilization. The study hypothesized the difference between male and female use of ICTs; and the relationship between the selected variable and the extent of ICT use

Methodology

Southwestern Nigeria comprises Oyo, Osun, Ogun, Ondo, Ekiti, and Lagos states with longitudes 30^0 and 7^0 East and latitudes 4^0 and 9^0 North. Multi-stage sampling procedure was employed to select 240 rural households for the study using an interview schedule. In the first stage, a simple random sampling technique was employed to select 33% of the southwestern states to give two states; Ekiti and Ogun. In the second stage, 11% of the local government areas in Ekiti (16) and Ogun (20) were selected using a simple random sampling technique giving rise to two LGAs from each of the selected states. The third stage involved a simple random selection of 20% of the 10 or 11 wards in the selected LGAs; to produce two wards in each selected LGA with eight wards in all. In the fourth stage, systematic random sampling of two villages from each of the eight selected wards gave sixteen (16) villages. In the fifth stage, a systematic random selection of fifteen (15) households from each of the 16 villages yielded 240 respondents.

Respondents' use of ICT was measured with 12 ICT tools classified into old and new ICTs; with response options of always (3) occasionally (2), rarely (1), and not at all (0). The weighted mean score was used to rank the respondents' ICTs used in descending order. Thereafter, the index of old ICT, new ICTs, and index of ICTs used by males and females were computed to ascertain the level of use by gender. The purpose of ICT use was captured with six (6) possible usages with responses of yes (1) and No (0). The frequency of the purpose items was used for males and females to rank it in descending order. Ten (10) possible benefits of the respondents' use of ICTs were captured using the response option of to a large extent (2), To a lesser extent (1), and to no extent (0). The weighted mean score was calculated and was employed to assign positions to the benefits in descending order., while the index of the benefit derived was used to categorise the respondents into low and high use using below and above the mean criterion. Thereafter, the index of ICT benefits by male and female were computed to ascertain the level of benefits by gender. Nine (9) possible constraints faced in the use of ICTs were measured with the response options of severe (2), mild (1), and not a constraint (0). The weighted mean score was calculated and was employed to assign positions to the limitations in order of severity. The index of the constraints to ICT use was derived and used to categorise the respondents into low and high use using below and above the mean criterion. Thereafter, the index of ICT constraint by male and female was computed to ascertain the level of constraint by gender

The perception of respondents' uses of ICTs was measured from a list of 25 statements; using a five-point Likert-type scale with response options of "Strongly agreed", 'agreed', "undecided" "disagreed" and "strongly disagreed". The scores were assigned in a descendant order of 5, 4, 3, 2 and 1 for all positive statements and in the reverse for negative declarations. The perception table was reported with the agreement responses, which were collapsed and used to report the items on the scale. An index of perception of the use of ICTs was derived by adding all the responses. The mean obtained was used to categorise the respondents into favourable and unfavourable using the 'above and below the mean. Thereafter, the index of ICT perception by males and females was computed to ascertain the level of perception by gender. Socioeconomic characteristics such as age, education, membership of the social group, and marital status among others were measured accordingly. The data were analysed with percentages, mean, Standard deviation, Chi-square, and Pearson's Product Moment Correlation at α 0.05

Results and Discussion

Extent of use of ICTs

The result in Table 1 shows that the respondents' most utilised new ICTs was mobile phone calls (WMS=1.64), followed by e-mail addresses (WMS=1.02) with the least new ICTs utilised being the internet (WMS=0.13). However, the most utilised old ICTs were Radio (WMS=1.32) and Television (WMS=1.22) with the least old ICTs used being Landline Telephone (WMS=0.003). The highest rank of the mobile phone might be due to an increase in Nigeria's active telephone numbers (222 million) which has made communication via mobile phones more popular as the teledensity in Nigeria increased

from 103.79% to 116.6% between January and December 2022 as revealed by Nigeria Communication Commission (The Guardian, 21st January 2023). However, it should be noted that the use of landline telephones was becoming obsolete while Radio and Television ranked 2nd and 3rd among the ICTs utilised by the respondents. This implies that the respondents put to use the relevant ICTs for information dissemination, irrespective of the generation of the ICTs. The trend in the use of the tools was in tandem with the results of the study carried out by Adeniyi 2020 in southwestern states. The result in Table 1 further reveals that the use of the ICT tool was at a low level for both male (WMS=60.6%) and female (58.3%) respondents; as the respondents put the old ICTs (M=6.982±2.35) to use more than the new ones (M=6.82±2.02) though with higher use from male respondents (M=11.17±4.60). This implies that the extent of use of ICTs across the gender is low which might be due to the constraints encountered in the use of the tools. The higher index of use by males might be due to the type and purpose of ICTs utilised by the respondents as revealed in Table 2; furthermore, family pressure and socio-cultural norms might be inhibiting women from accessing and utilising ICTs thereby making it difficult for them to better improve their welfare (International Telecommunication Union (ITU), 2020).

Table 1: Extent of ICT use

ICT	WMS	
New ICTs		
Mobile phone call	1.64	
e-mail address	1.02	
Computer	0.14	
Internet	0.13	
Old ICTs		
Radio	1.32	
Television	1.22	
Magazine	0.24	
Bulletin	0.22	
Newsletter	0.18	
Fax	0.02	
Landline telephone	0.003	
Level of ICT use (%)	**Male**	**Female**
Low	60.6	58.3
High	39.4	41.7
ICTs use parameters (Mean)		
Old ICTs	6.982±2.35	6.82±2.02
New ICTs	4.20±2.80	3.93±2.55
Index of ICTs use	11.17±4.60	10.75±3.97

Purpose of use

Table 2 reveals the use of the ICTs by the male (98.5%) and female (100.0%) respondents was for networking which was closely followed by access to government information (male=97.5%; female=94.4%) and access to financial services the least reason for the use of ICTs by both genders (male=57.6%; female=61.1%). It was observed that male respondents have a higher value than female respondents except for networking (male=98.5%; female=100.0%), transportation (male=79.5%; female=89.8%), and finance sourcing information (male=57.6%; female=61.1%). The result of this study was in line with Umukoro et al, (2021) that there are differences in the use of ICTs between males and females. This suggests that female networking via ICT conduit might be stronger than their male counterparts; while the reverse is the case with accessing government information. It is worth noting that, despite both genders' least sourcing financial services information using their ICTs, women's rate of sourcing financial services using ICT platforms is higher when compared with males. This suggests that males' motives and intensity of use of ICTs were not the same as females in some aspects of life. However, the networking identified by the respondents might be to connect with colleagues, friends, and family as established by Bhusanar & Singh (2019).

Table 2: Purpose of ICT use

Purpose of ICT use	Percentage (n=240)	
	Male	Female
Networking	98.5	100.0
Access to government information	97.7	94.4
Price information	90.2	86.1
Market information	88.6	86.1
Transport information	79.5	89.8
Access to financial services	57.6	61.1

Benefits accrued from the use of ICTs

The result in Table 3 shows that the most benefits derived by the respondents in the use of ICTs was on network facilitation (WMS=0.87), followed by the time-saving ability of ICTs (WMS=0.77); with the least benefits derived been the ability to be gainfully employed via the use of ICTs (WMS=0.14). The network facilitation identified as the most benefit-derived corroborates the result of this study (Tabe 2) that the main purpose of respondents' use of ICTs was for networking which was in line with the outcome of the study. The result of this study suggests that the networking done by the respondents via the tools used might facilitated the time saved in carrying out some activities by the respondents which is in line with the research outcomes of Ramanna, 2020; Yahaya *et al*., 2019 & Deepak, 2021. Nevertheless, the result further suggests that the networking of the respondents via the ICTs use might not always be for employment as this was the least benefits derived from the ICTs utilization. This might further suggest that the respondents are satisfied with their current livelihood and therefore do not have a need to be better employed. Table 3 further shows that the level of benefits was low for 51.7% of the respondents which shows that the respondents are yet to explore all the available

benefits in their ICTs utilization. However, the results further testify that female respondents (M=13.06±3.90) benefited more from the use of ICTs than males (M=12.73±3.97). The result of this study was in line with the assertion of TrumphIAS, (2021) but in contrast to the research finding of Adeniyi, (2020) in which the respondents had a high level of benefit from the use of ICTs.

Table 3: Benefits accrued from the use of ICTs

Benefits	**WMS (n=240)**
Network facilitation	0.87
Time-saving	0.77
Improved awareness of goods and services	0.68
Income	0.67
Reduction in transaction costs	0.63
Greater efficiency	0.52
Improved patronage	0.46
Improved risk management	0.45
Improved access to financial services	0.31
Employment	0.14
Level of ICT use	**%**
Low	51.7
High	48.3
Index of benefits	**Mean**
Male	12.73±3.97
Female	13.06±3.90

Constraints to ICT utilization

The result in Table 4 reveals the most constraint of the respondents to the use of ICTs was insufficient funds (WMS=0.60), while inadequate skill (WMS=0.54) and gender restriction (WMS=0.53) were the second and the least constraints encountered. The result suggests that the respondents do not have enough funds to maintain their ICTs which might hinder their use. In the same vein, the respondents' poor skill in ICT use might limit their ability to navigate while utilizing their ICTs; which may be a hindrance to the expected benefits embedded in ICT use. However, the least constraint of gender restriction affirms that ICTs are gender friendly as asserted by Aminuddin et al.,2022. The insufficient funds and gender restrictions aligned with the assertion of the International Telecommunication Union (ITU), 2020, especially for women with higher constraints than males. Table 4 further shows that most of the respondents (55%) confirmed a high level of constraints to the use of ICTs which might be responsible for the low benefits (Table 2) derived by the respondents. However, the study showed that females (M=9.46±3.90) were more constrained than males (M=8.27±4.05) in the use of ICTs which might be due to so many factors including their homecare activities (TriumphIAS, 2021; Geist & Myers, 2020; Umukoro et al*,* 2022). This suggests that the high constraints faced by the respondents were strong enough to translate to low benefits derived by the respondents as established in Table 3 above.

Table 4: Constraints to ICT access and utilisation

Constraint	WMS (n=240)
Inadequate funds	0.60
Lack of skill	0.54
Complexity of technology	0.53
Low literacy level	0.51
Remoteness of location	0.43
Poor employment status	0.39
Lack of relevance	0.27
Lack of interest	0.24
Gender restrictions	0.08
Level of Constraint to ICT use	**%**
Low	45.0
High	55.0
Index of constraints	**Mean**
Male	8.27±4.05
Female	9.46±3.90

Perception of respondents to the use of ICTs

The results in Table 5 reveal respondents' agreement that men and women have equal access to ICTs (64.6%), while 71.3% agreed that women's low level of education should not be a hindrance to ICT access. The opinion that both genders do access the ICTs equally confirms the fact that ICTs are not gender biased and that it has always been used for information transactions by both genders (Aminuddin et al*,* 2022). In the same vein, the unhindered use of ICTs irrespective of the level of education affirms the assertion of Umukoro et al, (2021) that ICTs have been user-friendly though the level of education has been a determinant of the format of ICT-based information use (Adeniyi, 2020). Furthermore, the statement that the most preferred ICTs by women are phones due to their ease of use was affirmed by 92.9% of the respondents, which is in line with the findings of Adeniyi & Yekinni (2023). Table 5 further shows that 69.6% of the respondents agreed that men are more likely to dominate the use of the TV in households, which typifies the inability of rural women to control the use of such ICTs among in their households. The result of this study corroborates the low decision ability of women in a rural household due to low women empowerment (International Telecommunication Union (ITU), 2020 & Adeniyi and Yekinni, 2020).

Table 5 further shows that the perception index of males ($\bar{x}$=85.75±10.80) and females ($\bar{x}$=85.69±10.05) to ICT use were quite close. This affirms that opinions expressed in the responses would not differ along gender lines and that more men utilise ICTs than female. However, the study reveals that more (54.6%) of the respondents were favourably disposed to the use of ICTs. The result shows that both genders had favourable perception of the use of ICTs; and that ICTs are not gender biased, which is in line with the results of Aminuddin *et al* (2022) in which the respondents had a positive perspective of ICT use in a gender study. This implies that most respondents view the use of ICTs as capable of yielding benefits that can improve their welfare (Meyenn & Lawson, 2018).

Table 5: Perception of respondents to the use of ICTs

Statements	Agreement	
Men and women have equal access to ICTs	64.6	
Women's low level of education should not be a hindrance to ICT access	71.3	
ICTs are only really relevant to men	92.1	
Both men and women are aware of the potentials of ICT in boosting income.	95.8	
ICTs are only readily available to men.	8.8	
Women are not too busy to use ICTs.	74.2	
Most men prefer phones with advanced functionality among other complex ICTs.	52.9	
Despite low income of women, they still make effort to access ICTs.	91.7	
More men than women can afford mobile phones.	74.6	
Women are less inclined to ICT use generally.	33.3	
Low literacy levels hamper the use of ICTs for both men and women.	92.1	
Women's low educational level makes them less likely than men to possess the necessary e-skills to use different technologies.	49.6	
Women's domestic responsibilities do not preclude them from effectively utilizing ICTs.	68.4	
There is usually no competition between men and women for radio use in households.	58.4	
The most preferred ICTs by women are phones because they are easy to use.	92.9	
Women always have the freedom to select the radio programmes to listen to.	48.8	
There is a greater awareness of the internet among men than women.	59.2	
The use of ICTs in enterprises increases production costs that may not be affordable by most women.	69.6	
Most women have a phobia for complex ICTs.	63.8	
Men and women benefit equally from ICTs and their applications.	76.2	
Developing women's skills in use of ICTs can help to enhance the benefits accruing from them.	83.8	
Men are better able to operate complex ICTs.	50	
Most women lack interest in ICTs.	37.5	
Most women can use ICTs.	70.9	
Men are more likely to dominate the use of the TV in households.	69.6	
Perception Category	**Frequency**	**Percentage**
Unfavourable	109	45.4
Favourable	131	54.6
Perception index	**Mean**	
Male	85.75±10.80	
Female	85.69±10.05	

Conclusion and Recommendations

The study concludes that both males and females were favourably disposed to ICT use despite the high constraint, low level of use, and low level of benefit derived from ICT usage. The challenges to ICT use were inversely proportional to the use and benefits derived from ICT use. The motives and perception of ICT usage are gender-responsive

as more male uses ICT and were found more favourably disposed to its usage than females. However, females derived more benefits from ICT usage than males, despite the male high index level of ICT usage; though the challenges to ICT use were more severe in females than males. However, the use of ICT is influenced by marital status, years of formal education, primary occupation, and other education obtained irrespective of gender. The study recommends that males and females should endeavour to form cooperative groups where financial resources could be pooled for financial stability and empowerment of their livelihood. This will give way to easy acquisition of skills, funds, and better use of ICTs for optimum benefit that ICTs offer to its users. Female groups should be encouraged by Women developmental agents, agricultural extension, and women leaders by organising workshops and seminars for more ICTs skill acquisition among females.

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