

Assessment of Information and Communication Technologies Usage by Maize Farmers in Afijio Local Government Area of Oyo State, Nigeria

Oke O.O., Adeoye A.S*, Jatto K.A., Adelusi, F.T. and Ojo-Fakuade F.F.

Department of Agricultural Extension and Management
Federal College of Forestry, Ibadan, P.M.B 5087, Jericho Hill, Ibadan, Nigeria
*Corresponding email: saadeoye06@gmail.com;

Abstract

The study was carried out to assess the information and communication technology usage by maize farmers in Afijio Local Government Area of Oyo State. The study was necessitated by persistent poor communication of new technologies from research institutes which has hampered the productivity and livelihood of farmers. The parameters assessed include socio-economic characteristics of the respondents, ICT devices used, extent of radio usage, extent of mobile phone usage, effect of radio on maize farming, effect of mobile phone on maize farming, and constraints to effective use of ICT among respondents, respectively. A multistage sampling procedure was used for sample selection with 30% random selection of 10 wards which were Aawe, Imini, and Ilora with 8 villages selected randomly, and from each of these 8 selected villages, 10 respondents were selected systematically to give rise to a total of 80 respondents as sample size. A well-structured questionnaire was used for data collection while frequencies, percentages, chi-square and Pearson product moment correlation were used for data analysis. The results showed that 60.0% of the respondents were male while 40.0% were female. The findings revealed that the use of radio, television and mobile phone has increased the income and livelihood of the maize farmers due to new methods learnt from agricultural programmes, also maize farmers have been exposed to latest technology on maize production through watching of documentaries and communicating with other maize farmers and customers. The study also showed the problems faced by the respondents were irregular power supply, high cost of ICT devices, and inadequate knowledge on technical know-how. It was therefore recommended that Maize farmers should be encouraged to access and utilize ICTs by supporting them financially and materially by the governments and private sectors/donor agencies. Government should improve on electricity supply to the rural areas which will enable the farmers to utilize the ICT devices.

Keywords: Information Communication Technologies, Usage, Maize farmers

Introduction

Information and Communication Technologies play important roles in every aspect of human activities today, including agriculture. The key player in agriculture are the farmers and their ability to use the technologies defines the role of ICT in agricultural generally (Nwagwu & Opeyemi,

2015). In increasing access and exchanging of information, ICT offer the potential to increase efficiency productivity, competitiveness and growth in various aspects of agricultural sectors. Farmers that engage in commercial agriculture in large scale might be expected to be using cameras, computing devices, digital imaging, the

internet and Wide Area Networking(WAN), Wi-Fi, SMS services, Wireless Access Protocol(WAP) based internet access. Those that engage in Agriculture in small scale utilize various other forms of Information and Communication Technology such as mobile phones, computer and the internet. Of all technologies, the mobile phone is certainly an instrument of choice for many farmers, both large and small scale (FAO, 2013). Mobile phones are cheap, easy to manage, power efficient and encourages personalised interactions. Mobile phones enable farmers to compare prices more efficiently and to link up with others buyers who were not previously easily accessible. Mobile phones help to improve the link between farmers and traders, creating opportunities for small scale producers in the area. ICT use in Agriculture moves in regular procession just like in many developing areas (FAO 2010). The major problems in adoption of ICT in rural setting are ICT illiteracy, availability of relevant and localised contents in own languages, easy and affordable accessibility and awareness and willingness to adopt new technologies. The potential benefits of ICT to farmers and farm processes call for need to understand factors that might influence

the use of the technologies by farmers (Davis & Addom, 2010). Over 80 percent of the farming population in Nigeria are small holders residing mostly in rural areas (Anamam, 2013). Small farms are mainly responsible for self sufficiency of food in Africa and cultivation of export crops. They are also very significant in world development with 50% of world's population depending on them. The usage of Information and Communication Technology maize farmers improve their knowledge of production and also enable the maize farmers to know and get aware of new innovation and also to know different varieties of maize. Maize is one of the commonly cultivated food crop in Nigeria, as it is eaten in various dishes and forms the basis for most of the meals prepared by the average Nigeria e.g (pap). Corn is a crop, cheaper than rice and wheat which is the most consumed cereals, and its affordability make maize hugely important food (Olaniyi & Ismail, 2016). In the study of Temu and Msya (2014), the capacities of ICT on food security are related to improving communication between research system, farmers and extension, improving accessibility to information regarding inputs, introducing technologies, providing more

rapid accessibility to high quality information, ensuring information about the appropriate time and places for optimised sales of Agricultural products decreasing Agricultural product losses.

Over the years, rural farmers depend on indigenous or local knowledge for improved farming system. Such knowledge refers to skill and experience gain through oral tradition and practice over many generations (Muriithi & Ogaleh, 2009). Acquisition of such primitive skill by rural farmers has not helped to improve Agricultural yield. All that is witnessed in rural agricultural system range from poor farm yield, emergence of new crop and animal diseases resistant, weed and pests that attack farm crops, implement poor quality fertilizer. In Sub-Sahara Africa, the predominant carriers of information have traditionally been radio, television and newspapers. Recently, mobile phone technology have diffused very rapidly in the region, providing faster and multi-directional communication and information exchange opportunities for rural dwellers, farmers, extension workers and agricultural firms. Some of the key factors affecting the use of ICT in agriculture are inappropriate ICT policies especially those addressing

agriculture, and the fact that not all the farmers have low-end ICT such as radio and television. Irregular power supply in Nigeria is a common feature that can act as a major barrier to the use of ICT (Olatokun, 2009). Also, some farmers who might be aware of the communication technologies may not use them to obtain information due to some barriers such as their level of education, level of their income, old age, all these may impede the farmers from using the information communication technologies. Some constraints in the use of ICT may includes; unavailability of the communication gadgets, unaffordability of the communication technologies (Gilwald, 2010.)

Methodology

This study was carried out in Afijio Local Government Area of Oyo State. A multi-stage sampling procedure was used to select respondents for the study. The first stage involved purposive selection of Afijio local Government Area for this study due to the availability of maize farmers in the Area. The 2nd stage involved 30% random selection of 10 wards in Afijio Local Government Area, namely; Aawe, Imini and Ilora 1. The 3rd stage was simple random selection of 8 villages from the selected

wards which are Aba Igara, Aba Pana, Aba Idi Eemi, Aba Ayetoro, Aba Pastor, Aba Onifa, Ilu Aje and Onikoko respectively while the 4th stage was systematic random sampling of 10 respondents from each village selected. In all 80 respondents were selected for the study. Data was collected from the respondents with a well-structured questionnaire. The data were analyzed with descriptive statistics such as frequency distribution, percentages while inferential statistics were chi-square and pearson product moment correlation to test the hypothesis of the study.

Results and Discussion

Socio-economic characteristics of the respondents

The results shows that 60.0% of the respondents were male while 40.0% were female .This indicated that both genders are involved in maize farming, but males are more involved than females. The results buttress the work of Temu (2010), that more men are engaged in maize farming than women. Also respondents above 50years has the highest percentage of 33.8%, followed by 27.5% with the age less than 30years while 31-40years has the lowest percentage of 13.5% of the total population. This shows

that the respondents in their middle age engaged more in maize farming than the younger farmers. The result of the marital status of the respondents shows that 62.5% of the respondents were married, 20% were single and 17.5% were widowed. This shows that most of the respondents are married, which implies that they are matured and responsible, this was in line with the findings of Akinbile (2007) who stated that marriage confers responsibility. According to the table, 31.3% do not have education at all, 17.5% have primary education, 12.6% have secondary education, 30.0% have OND/NCE and 8.8% have HND/BSC. This implies that most of the respondents were illiterates and very few have secondary education. This means there is problem of availability of relevant and localised contents in own languages and not able to adopt new technologies (Davis and Adom 2010).The result also shows that 26.2% practise Islamic religion while 68.8% are Christian and only 5.0% practise traditional religion. This means that whether you are Muslim or Christian does not affect your being involve in maize farming. The result further shows the secondary occupation of the respondents aside from maize farming, 43.8% are into trading, 15.0% are artisan,

and 18.7% are civil servants while 22.5% do not have any secondary occupation they are fully into maize farming. This indicates that majority of the respondents are engaged in trading as their secondary occupation in the study area. The result revealed that the level of employment of the respondents 60.0% are full time maize farmers and 40.0% are part

time farmers which implies that a higher percentage of the farmers population are into maize farming.

Table 1: Socio-economic characteristics of the respondents (n = 80)

Variable	Frequency	Percentage
Sex		
Male	48	60.0
Female	32	40.0
Total	80	
Age		
Less than 30years	22	27.5
31-40years	11	13.5
41-50years	20	25.0
Total	80	100.0
Marital status		
Single	16	20.0
Married	50	62.5
Widowed	14	17.5
Total	80	100.0
Educational level		
No formal education	25	31.1
Primary education	14	17.5
Secondary education	10	12.6
OND/NCE	24	30.0

HND/BSC	7	8.8
Total	80	100.0
Religion		
Islam	21	26.2
Christianity	55	68.8
Traditional	4	5.0
Total	80.0	100.0
Secondary occupation		
Trading	35	43.8
Artisan	12	15.0
Civil servant	15	18.7
None	18	22.5
Total	80	100.0
Level of employment		
Full time	48	60.0
Part time	32	40.0
Total	80	100.0

The results in table 2 reveals that 96.3% of the respondents used radio as their ICT device, followed by mobile phone 86.3%, television (65.0%), internet (35.0%), and computer (22.5). This result is in agreement with the findings of Arokoyo (2003) that radio, mobile phone and television remained

the major ICTs used for extension service delivery especially in the rural areas. Similarly, Adejo and Haruna (2009) stated that these classes of ICT devices (radio ,television and mobile phone) are ideal for rural areas, cheap to set up, easy to use and meeting the important needs of the farmers.

Table 2: ICT Devices and facilities used by maize farmers (n = 80)

Devices	Yes	No
Radio	77(96.3)	3(3.8)
Television	52(65.0)	28(35.0)
Computer	18(22.5)	62(77.5)

Internet	28(35.0)	52(65.0)
Mobile phone	69(86.3)	11(13.8)

Percentage in parentheses

Table 3 shows that 46.3% of the respondents occasionally used radio to listen to agricultural programme, while 37.5% always used radio to listen to agric programme, followed by 15.0% of respondents who rarely used radio and lastly 1.3% never listened to agriculture programme on radio. This implies that majority of the respondents occasionally

used radio to listen to agricultural programmes. The result also shows that 26.3% of the respondents occasionally used radio as medium of advert while 33.8% never used radio as medium of advert. This implies that a higher number of maize farmers in the study area never used radio frequently.

Table 3: Extent of Usage of Radio by maize farmers (n = 80)

Radio	Always	Occasionally	Rarely	Never
I use radio to listen to agric programmes	30(37.5)	37(46.3)	12(15.0)	1(1.3)
I use radio as medium of advert	16(20.0)	21(26.3)	16(20.0)	27(33.8)

Percentage in parentheses

The results in table 4 shows that 62.5% of the respondents used mobile phone to source for information from extension agents, followed by 27.5% who occasionally used mobile phone and only 7.5% never used mobile. This indicates that majority of the maize farmers in the study area used mobile phone because it is easy to handle, fast, less expensive and easy to operate compared to other modern ICT facilities such as internet,

social media etc. Arokoyo (2005) reported that mobile phone is one of the commonest classes of ICT facilities used for extension delivery services especially in the rural areas. The table further shows that 65.0% of the respondents always used mobile phone to transact business with the customers. This implies that with the use of mobile phone, maize farmers in the study area were transacting business with their customers on

regular basis. Also 51.3% which is the average percentage of the respondents use mobile phone to source for agro-inputs such as chemicals, fertilizers and seeds. Also 53.8% of the respondents use mobile phone to source for information on credit facilities

while only 5.0% seldom use mobile phone to source for information on credit facilities. This indicates that a higher number of respondents use mobile phone for business transaction on regular basis.

Table 4: Extent of usage of Mobile phone by maize farmers (n = 80)

Mobile phone	Always	Occasionally	Rarely	Never
I use mobile phone to get information from extension agents	50(62.5)	22(27.5)	2(2.5)	6(7.5)
I use mobile phone to transact business with customers	52(65.0)	11(13.8)	9(11.3)	8(10.0)
I use mobile phone to source for agro-inputs such as chemicals	41(51.3)	19(23.8)	7(8.8)	13(16.3)
I use mobile phone to source for information on credit facilities	43(53.8)	23(28.8)	4(5.0)	10(12.5)

Percentage in parentheses

The result in table 5 shows that 93.8% of the respondents were of the opinion that their income has increased due to new method learnt from agricultural programmes on radio broadcast. Also 90.0% of the respondents have been enlightened on the various agronomic maize practices through agricultural programmes on radio.71.3% of the maize farmers in the study areas reported

that their customers have increased as a result of advertising their farm on radio. This implies that through agricultural programmes on radio, the maize farmers in the study area have experienced improvement on their production capacity. Majority (97.5%) of the respondents profit has increased due to increase in their income.

Table 5: Effects of Radio on maize farming (n = 80)

Radio	Yes	No
My income has increased due to new methods learnt from agric programme	75(93.8)	5(6.3)
Through agric programmes, I have been enlightened on various agronomy maize practise	72(90.0)	8(10.0)
My customers has increased as a result of advertising my farm on radio	57(71.3)	23(28.8)
My profit has increased due to increase in my income	78(97.5)	2(2.5)

Percentage in parentheses

The result in table 6 shows that 88.8% of the respondents have received information from extension agents through the use of mobile phone which serves as a means of better communication. About 90.0% of the respondents in the study area reported that the use of mobile phone has greatly improved their ways of communicating with

other maize farmers. Furthermore, 82.5% of the maize farmers found it easier to source for agro-inputs with the use of mobile phone while 86.3% of the respondents in the study area got information on agencies involved in agricultural credit facilities through the use of mobile phone.

Table 6: Effects of mobile phone on maize farming (n = 80)

Mobile phone	Yes	No
Acquiring information from extension agents is now easier due to better means of communication	71(88.8)	9(11.3)
Communication with other maize farmers and customers has improved greatly	72(90.0)	8(10.0)
Sourcing for agro-inputs is now easier and better done	66(82.5)	14(17.5)
Information on agencies involved in agric facilities is easier to get through the use of mobile phone	69(86.3)	11(13.8)

Percentage in parentheses

The result in table 7 reveals that insufficient financial resources (63.8%), high cost of ICT devices (50.0%), inadequate knowledge on technical know-how (46.3%) and irregular power supply (41.3%) were the major constraints, while cost of maintenance (45.0%) and high cost of ICT devices (40.0%) were the minor constraints experienced by the farmers. ITU (2010) stated that rural people mostly live sparsely and this would make provision of infrastructure and public utilities such as

electric power, water, health facilities and some devices of modern ICTs very difficult to deploy in rural areas. Private companies invest their resources in areas where they would get good returns .In addition, provision of ICT services would require electricity and technical know-how which are limited in most places of rural areas. Income of the rural people tends to be low as compared to urban areas and many rural households simply cannot afford modern ICTs such as computer and internet.

Table 7: Constraints to effective use of ICT (n = 80)

Constraints	Major constraints	Minor constraints	Not-a constraints
Irregular power supply	33(41.3)	23(28.8)	24(30.0)
High cost of ICT devices	40(50.0)	32(40.0)	8(10.0)
Poor network connection	19(23.8)	9(11.3)	52(65.0)
Poor knowledge on technical know-how	37(46.3)	23(28.8)	20(25.0)

Percentage in parentheses

Table 8 shows that there is significant relationship ($P < 0.01$) between age, marital status, educational level, secondary occupation, level of employment and utilization of ICT in the study area. This implies that age, marital status, educational level, secondary occupation and level of employment of the respondents had

influence on the utilization of ICT in the study area. Nevertheless, the result also shows that there is no significant relationship ($p > 0.05$) between gender and utilization of ICT. This implies that whether you are male or female maize farmer, you can use ICT devices to get information needed on the production of maize.

Table 8: Chi-square analysis on socio-economic characteristics of respondents

Variable	X ² -value	p-value	Decision
Gender	3.260	0.196	Not significant
Age	34.239	0.000	Significant
Marital status	25.767	0.000	Significant
Educational level	56.892	0.000	Significant
Secondary occupation	20.306	0.002	Significant
Level of employment	7.228	0.027	Significant

Correlation coefficient, r significant @ $p < 0.01$

The table above shows that there is significant relationship between the extent of utilization of ICT by maize farmers and the effects of utilization of ICT devices ($r=0.817$, $p<0.05$). This implies that

the more the maize farmers make use of ICT devices, the more the effects of utilization of ICT devices will have on the level of their production.

Table 9: Pearson product moment correlation (PPMC)

Variables	r-value	p-value	Decision
Extent of utilization of ICT by maize Farmers and the effects of utilization of ICT devices	0.817	0.000	Significant

Correlation coefficient, r significant, p @ 5% level of significance

The table above shows that there is no significant relationship between the constraints of ICT usage and the utilization

of ICT devices ($r=0.075$, $p>0.05$). This implies that challenges do not influence utilization of ICTs

Table 10: Pearson product moment correlation (PPMC)

Variables	r-value	p-value	Decision
The constraints of ICT usage and Utilization of ICT devices	-0.075	0.509	Not significant

Correlation coefficient, r not significant, p @ 5% level of significance

Conclusion

The study accessed the usage of ICT by maize farmers in Afijio Local Government Area of Oyo State. The socio-economic characteristics of the respondents reveals that male gender were more involved in maize farming with majority of the farmers having one acre which implied limited agricultural practices. The results further showed that radio and mobile phones were the most widely used ICT devices. Majority of the respondents used mobile phones to source for information relevant to their agricultural production. The farmers also received enlightenment programmes on agronomic practices in maize production. Findings therefore showed that mobile phones, radio, television were predominantly used among the respondents in the study area which have given them access to information on innovation and improvements in their production activities.

However, the major constraints encountered by maize farmers in ICT usage were irregular power supply, high cost of ICT devices, and poor technical know-how of ICT devices.

Recommendation

Maize farmers should be encouraged to access and utilize ICTs by supporting them financially and materially by the governments and private sectors/donor agencies. More awareness and training of both farmers and extension agents on the effective and efficient use of ICT facilities should be intensified by the governments through extension agency. As a developing country, ICT should be integrated to agriculture in order to provide accurate, timely, relevant information and services to maize farmers thereby facilitating good environment for increased agricultural production. Furthermore, the research organisations should ensure that farmers

submit their detailed profile data and phone numbers to receive adequate information on latest agricultural discoveries, expos, and advertisements. Ministry of Agriculture should sign a memorandum of understanding with electricity Distribution Company for constant supply of power to rural areas to ensure their access to information. Extension agents should also encourage farmers to acquire transistor radio with battery cells to enjoy frequent access to information. Government should improve on electricity supply to the rural areas which will enable the farmers to utilize the ICT devices. Finally, the ministry of Agriculture and most research institutes should synergize with social media and telecommunication service providers outfits on latest innovation; and make it available to farmers through the most widely used ICT devices among the farmers generally.

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About the authors

Oke Olalekan Oluwole, the lead author, is an Agricultural Extension expert per excellence. He bagged his first degree in Agricultural Extension and Rural Development in 1998 from the Federal University of Agriculture, Abeokuta, Nigeria. Since graduation he has worked with a private organisation till 2011 before joining the Federal College of Forestry, Ibadan, Nigeria in 2011 till date as a lecturer/Researcher. He bagged his M.Sc. in Agricultural Extension and Rural Development in 2017, and PhD in view from the Federal University of Agriculture, Abeokuta, Nigeria. email: woleok@yahoo.com; phone: 08034019783.

Adeoye, Adebayo Samson, is the corresponding author of the article. He is a motivated field extension researcher, an

agricultural extensionist per excellence. He bagged his first degree in Agricultural Economics and Extension in 2005 from the Federal University of Agriculture, Makurdi, Benue State, Nigeria. Since graduation he has worked as sales representative with a telecommunication outfit, teacher in secondary school, and as an agricultural superintendent in government service of Ekiti state before joining the services of the Federal College of Forestry, Ibadan, Nigeria in 2011. He has worked as a lecturer and researcher in the department of Agricultural Extension and Management since 2011 till date. He is Master of Science holder in Agricultural Extension and Rural Development (2014) from the prestigious University of Ibadan, Nigeria. PhD in view in Social Forestry/ Extension and Environmental Development from the University of Ibadan, Nigeria. email: saadeoye06@gmail.com; phone: 08037657876, 07036335225.

Jatto, Kabir Adedayo. He is an Agricultural Economist. He bagged his first degree in Agricultural Economics and Extension in 2007 from the University of Maiduguri, Maiduguri, Nigeria. Since graduation he has worked with a private organisation till 2011 before joining the Federal College of Forestry, Ibadan, Nigeria till date as a lecturer/ Researcher. He is currently undergoing his M.Sc. in Agricultural Economics, in view from the University of Ilorin, Ilorin, Nigeria. email: Jattodayo@yahoo.com; phone: 07034598245

Adelusi, Felicia Temitope, one of the authors is a master degree holder in Animal

science from Federal University of Agriculture, Abeokuta in 2017. I work as a lecturer/researcher in the Department of Agricultural extension and management of federal college of forestry, ibadan, Oyo state, Nigeria since 2011 till date. email:temmytdoks@gmail.com; phone:+2347038153579

Ojo-fakuade, Folashade Foluso, one of the authors is an excellent teacher of Agricultural Economics. She bagged her first degree in Economics from the Lead City University, Ibadan in 2008. She joined the Federal College of Forestry, Ibadan, Nigeria in March 2012 and till date she has been prolific in the discharge of her duties as a Lecturer / Researcher. She is a Master of Science holder in Agricultural Economics which she obtained from the prestigious University of Ibadan in 2015. email: oluwasegunfakuade@yahoo.com; phone: 08035296741.