

ANALYSIS OF THE EXTENT OF INFORMATION AND COMMUNICATION TECHNOLOGIES UTILIZATION FOR ENHANCED COCOA TECHNOLOGIES ADOPTION AMONG COCOA FARMERS IN IKOM AGRICULTURAL ZONE OF CROSS RIVER STATE.

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ABSTRACT

This study was conducted in Ikom Agricultural Zone of Cross River State, Nigeria to analyse the extent of information and communication technologies utilization for enhanced cocoa technologies adoption among farmers in the study area. The study sought to identify the cocoa farming technologies adopted by cocoa farmers and the extent of adoption of the technologies using different ICT facilities. A multistage sampling technique was used in the study to select 190 respondents. The data generated with the use of a structured questionnaire was analyzed using descriptive statistics such as percentages, means, and frequency. The results showed that the available cocoa farming technologies were adopted as follows; cocoa beans drying technology (100%), fermentation technology (100%), fertilizers and manures application (84.7%), pruning (100%), control of black pods (100%), control of capsids (100%). The result further reveals that the extent of adoption of these technology was very high using the radio, followed by video show, the television came third and mobile phones came fourth. The study showed a very low extent of the use of modern ict facilities as a source of information for cocoa technologies and recommends that cocoa farmers associations in the study area should sensitize the farmers on the use of modern Ict's. Extension agents should be trained on the use of modern Ict facilities so that they can inturn train the farmers.

Key words: Information, communication, technology, utilization, adoption, farmers

INTRODUCTION

Information and communication technologies (ICT) is defined by the world bank (2011) "as any device, tool or application that permits the exchange or collection of data through interaction or transmission", it includes anything ranging from radio to satellite imagery to mobile phones or electronic money transfer." According to the food and agricultural organization of the united Nation FAO (2017), "world Population is expected to surpass the 9 billion mark by 2050, and agricultural production will need to increase by 60 percent from its 2005/2007 levels to meet this additional food demand. ICT applications can make a significant contribution to meet this future global food needs. Information and communication technology can achieve this goal by collecting and sharing timely and accurate

information on inputs, weather, prices, technologies as well as feeding the information into research and development initiatives; by disseminating knowledge to farmers; connecting producers and consumers and through many other avenues".

Cocoa production in West Africa is grown mainly by small holders who depend majorly on their indigenous knowledge thus the need for adequate information regarding useful cocoa technologies that have the potential to increase output. This can be made possible through the use of ICTs.

Fadare, Akerele and Toritseju (2015) notes that in Nigeria, cocoa production is characterized by low output and the growth rate has been low, one reason for this misfortune is the low adoption of cocoa technologies by cocoa farmers. Similarly, Anchirinah, Owusu-Ansa, Asamoah and Aneanl (2014) supported this assertion that the adoption of cocoa technologies by farmers has been low leading to a decrease in the yields of the crop. To reverse this phenomenon, Anchirinah et al., (2014) have identified the use of information and communication technologies as an effective means of providing vital information to farmers concerning cocoa technologies and their subsequent adoption.

Aneani et al (2014) defines cocoa technologies as a set of knowledge and ideas including traditional skills that are being put in place and used for the production, processing, storage and marketing of the cocoa beans. The adoption of these technologies have been proven as a key factor for the increased yield of cocoa crops all over the world (Baffoe-Asare, Danquash and Annor-Frempong (2013), Adebisi and Okunlola (2013). Oluyole et al (2011) opines that a variety of cocoa technologies exist such as the use resistant varieties, use of insecticides and pesticide for cocoa production, application of fertilizers and manures, adoption of improve space, treatment of seeds before planting, use of improved storage facilities etc.

Adoption of these technologies according to Waisu and Adebayo (2015) refers to the decision to try the technologies and then continue with its full use. Evenson and Gallins (2013) notes that despite the contribution of agriculture to economic growth, yields of crops have continued to decline especially in developing countries over so many years and this is partly attributed to the low level of adoption of technologies.

Aneani et al (2012) observed that the adoption of cocoa farming technologies recommended to cocoa farmers by the cocoa research institute of Ghana has been low resulting to low yields of cocoa. They added that cocoa technologies such as the control of capsids, control of black pod disease, weeds control, planting of improved disease resistant and early yielding varieties etc have not adequately been adopted by farmers, due to reasons like gender, age of cocoa farmers, number of cocoa farms owned by farmers, lack of credits etc. contrary to their view, findings of a study carried out by Oluyole, Egbetokun and Aigbekaen (2011) in Ogun State, Nigeria reveals that cocoa farmers adopted technologies such as the use of improved seedlings and a lot of other technologies. Similar findings by Matanmi, Oladipo, Adefalu, Olabanjo, Yusuf and Abdulkareem (2015) in Oyo State revealed that cocoa farmers adopted cocoa technologies such as the use of agro chemicals, application of fertilizers, use of insecticides and herbicides, etc. considering the importance of cocoa to the Nigeria economy, this study is designed to answer the following research questions;

1. What are the cocoa farming technologies adopted by cocoa farmers in Ikom Agricultural Zone?
2. What is the external of adoption of the cocoa technologies as a result of the use of different information and communication technologies?

METHODOLOGY

STUDY AREA

This study was carried out in Ikom Agricultural Zone of Cross River State, Nigeria. The area is located in the central geopolitical zone of the state which comprise of six local government areas namely Yakurr, Abi Obubra, Ikom Etung and Boki respectively. It shares an international boundary with the republic of Cameroon to the East, Obudu and Obanliku to the North, Ebonyi State to the West and Biase Local Government Area to the south. The area covers a land mass of approximately 16,280.02km² and has a population density of about 500 people per square kilometer with an estimated number of 942,416 people (CRSGA, 2010). It lies between, longitude 8.00¹E and latitude 520¹N and 6⁰²¹N (Abang, Solomon and Oko 1994). The area is approximately 25m above sea level with an annual temperature range

of 27⁰c-33⁰c, where rainfall varies between 1500mm-2000mm per annum.

Ikom Agricultural zone has two seasons, the rainy and dry season (CRSGA, 2010). The dominant vegetation of the area is primary and secondary forest; with some areas cleared for farms or timber extraction. The other agro-ecological zone is the derived savannah.

Farming system survey shows that farms in the zone are long distant farms ranging from 4.5 to 10 hectares in size with crops such as cocoa, oil palm, rubber, coffee, bush mango, cassava, rice, plantain, maize, banana, etc. while major livestock include poultry, pigs, goat, sheep, rabbit, cattle etc.

This study adopted a multistage sampling procedure to select respondents. Stage 1 involved a purposive selection of three extension blocks out of the six blocks that make up the Ikom agricultural zone to include Etung, Ikom and Boki because cocoa is produced in commercial quantity in the selected blocks. Stage 2 involved a simple random selection of three cells each from the three blocks giving a total of nine cells which include; Bendeghe Eklem, Nsofang and Abia from Etung, Akparabong, Okuni and rode from Ikom and Nsadop, Abo and Bateriko from Boki respectively.

Finally, a sample frame of registered cocoa farmers in each cell was obtained from the Cross River Agricultural Development Project (CRADP) from where simple random sampling technique was used to select seventy six (70) respondents from Etung, sixty (60) from Ikom and sixty (60) respondents from Boki from a total of three hundred and eighty (380) registered cocoa farmers in the study area representing 50% of the registered farmers.

The data for the study was obtained using a well-structured questionnaire and the data was analyzed using descriptive statistics such as percentages, means and frequency.

The extent of adoption of cocoa technologies as a result of ICT usage was categorized as; very high extent, 75% and above, high extent, 50%-74%, moderate extent, 25%-49% and low extent 0%-25%.

RESULTS AND DISCUSSION

Types of cocoa farming technologies available to farmers. The types of cocoa farming technologies available to farmers are presented in Table 1.

Table 1: Distribution of respondents based on the types of cocoa farming technologies available to farmers

Cocoa farming technologies	Available (Technologies)	
	Available	Not available
Cocoa beans drying technology	190(100)	
Fermentation	190(100)	
Weeds control manually or use of herbicides	190(100)	
Fertilizer application and manure	161(84.7)	29(15.3)
Pruning	190(100)	
Control of black pods using fungicides	190(100)	
Control of capsids using insecticides	190(100)	
Watering of young seedlings	184(96.8)	6(3.2)
Shade management using banana steams	187(98.4)	3(1.6)
Use of improved variety	185(97.4)	5(2.6)
Destroying of old stems	183(96.3)	7(3.7)
Storage of beans in bags	190(100)	

Values in bracket are the percentages

Source: field survey (2021)

The respondents revealed that the available cocoa farming technologies adopted include; cocoa beans drying technology (100%), fermentation technology (100%), fertilizers and manures application (84.7%), pruning of excess branches (100%), control of black pods using fungicides and other chemical (100%), control of capsids using insecticides (100%), and others. The results showed that cocoa farmers in Ikom agricultural zone are quiet aware of a wide range of cocoa production technologies. The adoption of cocoa technologies in the study area is very high; this can be attributed to the benefit they derive from cocoa as a major income generating crop in the study area. This result is consistent with that of Omoare et al (2016) who recorded a high level of cocoa technologies adoption by farmers. In Ogun and Ondo State.

The result is also consistent with those of Oluyole et al (2011) and Matanmi et al (2015) who recorded high adoption of cocoa farming technologies by cocoa farmers in their different study areas.

On a contrary view, the result disagrees with that of Aneani et al (2012) who reported that the adoption of technologies recommended to cocoa farmers in Ghana was very low. Similarly, this result disagrees with that of Waisu and Adebayo (2015) who reported that the yield of cocoa is experiencing a decline in developing countries and the problem is

partly attributed to the low level of adoption of cocoa technologies by farmers.

Extent of adoption of cocoa farming technologies as a result of ICT utilization

The result showing the extent of adoption of cocoa farming technologies as a result of Icts utilization is presented in table 2. The result revealed that majority of the respondents indicated a high extent of adoption of some technologies through the use of the radio specifically, the technologies include; the cocoa drying technology (67.4%), fermentation (64.2%), weeds control manually or use of herbicides (64.7%), fertilizer and manure application (55.8%), watering of young seedlings (50.0%) and shade management (51.1%). Some farmers indicated a moderate extent of the sue of radio for the adoption of technologies which include; pruning (42.1%), control of black pods disease (46.3%), control of capsids (47.9%), use of improved varieties (45.3%), destroying of old cocoa stems (45.8%) and storage of beans in bags (37.4%). This result indicates that the radio as a form of Ict, is widely used by farmers as a means of getting information on cocoa farming technologies. This result is in consonance with that of Aphumu and Atoma (2011) who stated that 95% of fish farmers in Isoko agricultural zone of Delta State utilized mostly the radio as a form of ICT.

Table 2: Distribution of respondents by extent of adoption of cocoa farming technologies as a result of the use of ICTs

S/N	Cocoa farming technologies	Icts Facilities													
		Radio	Mobile phone	Tv	Print media	Computer	Video	SMS	Social media	CD-ROM	DVD	e-mal	Telecentres	VideoConference	
1	Cocoa beans drying technology	128(67.4)	7(3.7)	7(3.7)	1(0.5)	2(1.1)	18(9.5)	-	-	3(1.6)	2(1.1)	1(0.5)	-	1(0.5)	
2	Fermentation	122(64.2)	8(4.2)	13(6.8)	1(0.5)	2(1.1)	17(8.9)	-	-	3(1.6)	2(1.1)	1(0.5)	1(0.5)	1(0.5)	
3	Weeds control manually or use of herbicides	123(64.7)	8(4.2)	11(5.8)	3(1.6)	2(1.1)	13(6.08)	-	-	2(1.1)	2(1.1)	2(1.1)	1(0.5)	3(1.6)	
4	Fertilizer application and manure	106(55.8)	12(6.3)	17(8.9)	2(1.1)	3(1.6)	18(9.05)	1(0.5)	-	2(1.1)	-	4(2.1)	2(1.1)	2(1.1)	
5	Pruning	80(42.1)	13(6.8)	34(17.9)	5(2.6)	2(1.1)	28(14.7)	1(0.5)	1(0.5)	2(1.1)	1(0.5)	4(2.1)	2(1.1)	2(1.1)	
6	Control of black pods using fungicides	88(46.3)	10(5.3)	29(15.3)	5(2.6)	1(0.5)	30(15.8)	-	-	-	2(1.1)	1(0.5)	-	2(1.1)	
7	Control of capsids using insecticides	91(47.9)	11(5.8)	21(11.1)	7(3.7)	2(1.1)	30(15.8)	2(1.1)	-	3(1.6)	1(0.5)	-	-	2(1.1)	
8	Watering of young seedlings	95(50.0)	14(7.4)	26(13.7)	3(1.6)	-	25(13.2)	-	-	3(1.6)	3(1.6)	-	-	-	
9	Shade management using banana stems	97(51.1)	13(6.8)	13(6.8)	5(2.6)	3(1.6)	28(14.7)	4(2.1)	2(1.1)	2(1.1)	-	-	1(0.5)	2(1.1)	
10	Use of improved variety	86(45.3)	20(10.5)	17(8.9)	6(3.2)	4(2.1)	21(11.1)	1(0.5)	4(2.1)	3(1.6)	-	2(1.1)	3(1.6)	3(1.6)	
11	Destroying of old stems	87(45.8)	10(5.3)	20(10.5)	10(5.3)	3(1.6)	24(12.6)	4(2.1)	1(0.5)	7(3.7)	-	2(1.1)	2(1.1)	-	
12	Storage of beans in bags	71(37.4)	20(10.5)	24(12.6)	6(3.2)	1(0.5)	36(18.9)	1(0.5)	4(2.1)	3(1.6)	2(1.1)	1(0.5)	1(0.5)	-	
	Total	618.0	76.8	122.1	29.5	13.4	151.5	7.3	6.3	17.7	8.1	7.9	8.0	9.7	

Source: Field survey (2021), values in parenthesis represent Percentages

The use of video show came second after the radio, the television came third, and then the use of mobile phones which came fourth among other Ict facilities. The result conforms to the findings of Ogbonna and Agwu (2013) who observed that farmers in Enugu State utilized Ict facilities such as radio, video show, television and mobile phone to get agricultural information.

The use of some modern Ict facilities such as email, telecentres, video conferencing, computers as well as the print media recorded very low utilization by farmers.

The farmers low utilization of most Ict facilities such as computer, social media, email, video conference, telecentres, CD-Rom DVD and print media could probably be as a result of their non-availability and high level of technical operational requirements.

CONCLUSION

The study reveals that cocoa farmers in Ikom Agricultural zone adopted a wide range of cocoa technologies and used some Ict facilities such as radio, video show, television and mobile phones mostly to access their information. The study observed that there was a very low extent of the utilization of modern ICT facilities to get information on cocoa technology. Based on the findings of this study the following recommendations are made.

RECOMMENDATIONS

1. Cocoa farmers' associations in the study area should sensitize the farmers on the use of modern ICT facilities.
2. Government, non-governmental organizations and farmers themselves should provide training opportunities on the use of Ict facilities in the study area.
3. Extension agents should be trained on the use of modern ICT facilities so that they will also train the farmers.
4. Efforts should be made by all stakeholders to educate farmers in the study area, computers and other ICT facilities should be used in adult education programmes.

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