INFORMATION NEEDED WHILE USING ICTS AMONG MAIZE FARMERS IN DANGBO AND ADJOHOUN FARMERS IN SOUTHERN BENIN REPUBLIC

[1]Kpavode, A. Y. G., [2]Akinbile, L. A. and [3]Vissoh. P. V.
Department of Agricultural Extension and Rural Development, University of Ibadan, Nigeria
School of Economics, Socio-anthropology and Communication for Rural Development, University of Abomey Calavi, Benin Republic
Correspondence contact details: yvengerald@gmail.com

ABSTRACT
This study assessed Information needed while using ICTs among maize farmers in Dangbo and Adjohoun in southern Benin Republic. Data were collected from a random sample of 150 maize farmers. The data collected were analysed using descriptive statistics and inferential statistics used were Chi-square, Pearson's Product Moment Correlation and t-test at p=0.05. The results showed that farmers' mean age was 43±1 years and were mostly male (88.0 %), married (88.0 %), Christians (67.3%) and 48.7% had no formal education. Prominent constraints to ICTs use were power supply ($\overline{X}$ =1.80) and high cost of maintenance of ICTs gadget ($\overline{X}$ =1.58). The most needed information by farmers using ICTs was on availability and cost of fertilisers insecticides and herbicides ($\overline{X}$ =1.20) and availability and cost of labour ($\overline{X}$ =1.16). Farmers' constraints (t=2.832; p=0.005) significantly differed between Dangbo and Adjohoun communes. The information need of farmers in Dangbo and Adjohoun communes (t=0.753; p=0.453) do not significantly differ. The study concluded that the major barriers facing ICTs usage were power supply and high cost of maintenance of ICTs gadget; and there is the need for information on agricultural inputs. The study therefore recommended that government agencies in charge of power supply should make effort to ensure steady power supply.
Keywords: ICTs, Information need, Constraint, Maize production, Farmers

INTRODUCTION

Cereal production provides the bulk of the staple diet for the world population. In Benin republic, the achievement of food security and the fight against poverty are partly based on the intensification of cereal production. This production is characterised by low productivity and annual fluctuations in the production of food crops. Among these cereals is maize (*Zea mays L.*), which plays an important role for both food security and the national economy. Azontonde, Igué, and Dagbenonbakin, (2010) found that maize yield is far lower than the potential achievable yields (between 3 and 5 ton/hectare).

In Benin, maize is the most widely cultivated food crop (Abadassi, 2013). Aly, Salami, Yallou, Adjadohoun and Baba-Moussa (2016) also found that maize is the first cereal grown in Benin

Maize production faces many challenges that extension structures together with research centres are trying to find solutions. In the study area (Adjohoun and Dangbo), where maize production has been declining in recent years, as shown in the general report volume 1 on the 2015 assessment of food production and the food outlook for 2016 in Benin (ONASA, 2016). Maize farmers thus need information to optimize production. Due to all these problems, agricultural agents need to use adequate information tools to inform farmers on time. The use of ICT can progressively reduce the costs of managing information, enabling individuals and organisations to undertake information-related tasks much more efficiently, and to introduce innovations in products, processes and organisational structures in agriculture sector in Benin. (Adégbidi, Mensah,Vidogbenan and Agossou, 2012).

The improvement of maize production can be brought about by enhancing capacity for improving access to information through ICTs gadgets. However, constraints such as power supply, problem of connectivity, complexity of modern ICTs, low literacy level, low local content, and high cost of ICTs gadgets must be considered.

Therefore, this study investigated the Information need on improving maize production among Dangbo and Adjohoun farmers in. southern Benin Republic

The specific objectives are to;

1. identify personal and enterprise characteristics of maize farmers ,
2. determine information needed by farmers while using ICTs in the study area ,
3. ascertain the constraint to respondents' utilisation of ICTs for improved maize production ,

The hypotheses of the study are;

$H_0$1: There is no significant difference in the constraint faced by maize farmers while using ICTs among maize farmers in Dangbo and Adjohoun.

$H_0$2: There is no significant difference in the information needed while using ICTs among maize farmers in Dangbo and Adjohoun.

METHODOLOGY

This study was carried out in southwestern Benin Republic which comprises two communes which are Adjohoun and Dangbo. The study area is culturally homogenous and populated mainly by

the Goun and Wémin ethnic group and is hence unified by two general languages, Goun and Wemin. It is located in the department of Ouémé between 6° 36 'and 6° 43' of north latitude and between 2° 21 'and 2° 35' of east longitude, the communes of Dangbo and Adjohoun are bounded in the north by the commune of Bonou, in the south by the commune of Aguégués, in the east by the commune of Sakété and in the west by the Commune of Zè. It covers an area of 457 km² (INSAE, as cited in Abou,Yabi,Yolou, and Ogouwale 2018).

The study population consisted of all maize farmers in the double Dangbo-Adjohoun communes, Benin Republic. Multi-stage sampling procedure was used to select the respondents for this study. **First stage**: Adjohoun commune comprises 8 districts, while Dangbo commune comprises 7 districts. Forty percent (40**%**) of the district was randomly selected in Adjohoun (3) and Dangbo (3) to give a total number of 6 districts: Awonou; Gangban and Azowlisse districts in Adjohoun commune, while Dangbo, Houètin-Houédomey and Zounguè were selected in Dangbo. **Second stage**: In this stage, from each 6 selected districts, each village was randomly selected. **Third stage:** 15% of maize farmers was proportionally selected in each village to yield a total number of 1010 maize farmers. Data were analysed using descriptive statistics such as frequency counts, percentages while inferential statistics (t- test) were used to analyse study hypotheses. Data were collected from respondents using structured questionnaire and analysed using descriptive statistics, PPMC and t-test at α 0.05. Constraints while using ICTs among maize farmers were obtained by presenting farmers with a list of 10 items on constraints using a 3 point scale of serious constraint, mild constraint and not a constraint with scores of 2, 1 and 0 assigned respectively. The maximum score obtained was 20 for maize farmers, and the minimum was 3.Weighted mean scores were generated and were used to rank constraint items in order of severity. Information needed while using ICTs among farmers were obtained by presenting a list of 17 items on information needed. This was measured using a 3-point scale of, to a greater extent (2), to a lesser extent (1), not a need (0). The maximum obtained score was 27 and the minimum score was 0. Respondents' scores on information need was summed, while the mean score was computed. Weighted mean scores were generated and were used to rank the level of information needed while using ICTs.

RESULTS AND DISCUSSION

Personal and enterprise characteristics information in Table 1 shows that 33.3% of the respondents were old, 45.3 % were adult and others were young with the mean age of 43.73±1.05 years. Older farmers were assumed to have gained knowledge and experience over time and are better able to evaluate technology than young farmes.88.0 % of the respondents were male, and 67.3% of the respondents were Christians. This shows than more male were involved in farming than female. The male dominance might be due to the culture of the area which does not allows women to have more land. 88.0 % of maize farmers were married, 48.7 % had no formal education. This finding is similar to that of Olaniyi and Ismaila (2016) who reported that majority (84.0 %) of the sampled maize farmers in Ondo State were male and married. Also 39.3% were between the farming experiences of 16-27 year of farming experience with mean age of 23.75±0.99. This implies that majority of respondents had been into maize production for a long time.Also 55.3 % had between 3 and 5 ha of farm size and 38.7 % get maize seeds from more than one place.

Constraint faced by farmers while using ICTs

Table 2 shows result on the types of constraint that the farmers faced. Most serious constraint is power supply ($\overline{X}$ =1.8) followed by High cost of maintenance of ICT gadget ($\overline{X}$ =1.8), high Complexity of modern ICTs ($\overline{X}$ =1.8) Constraints that were considered as not been serious include low local content (29.6%), lack of time out of busy schedule (30.9%).Thus, the technical nature of some ICTs and infrastructure required were the most serious constraints. The result of this study agreed with of Olaniyi (2013) who found that poor power supply and inadequate access to ICTs are among the major constraints associated with the use of ICTs.

Table 1: Farmers' personal and enterprise characteristics (n=150)

Characteristics	Category	Frequency	Percentage	Mean±SD
Sex	Male	132	88.0	
	Female	18	12.0	
Age	Young (<35years)	32	21.3	
	Adult (35-50years)	68	45.3	
	Old (≥50years)	50	33.3	
	Mean±SD			43.73±1.05
Marital status	Single	13	8.7	
	Divorced	1	0.7	
	Widowed	3	2.0	
	Married	132	88.0	
	Separated	1	0.7	
Religion	Christianity	101	67.3	
	Islam	13	8.7	
	Traditional	36	24.0	
Education	No education	73	48.7	
	Primary	46	30.7	
	Secondary	22	14.7	
	Tertiary	9	6.0	
Farming experience	4-15	43	28.7	
	16-27	59	39.3	
	28-39	25	17.3	
	40-51	20	13.3	
	≥52	2	1.3	
	Mean±SD			23.75±0.99
Farm size	Small (< 2 ha)	40	26.7	
	Medium (3-5 ha)	83	55.3	
	Large(>5ha)	27	18.0	
Source of seed	Own production	44	29.3	
	Market	24	16.0	
	Territorial Agencies for Agricultural Development	24	16.0	
	More than one place	58	38.7	

Source: Field survey (2019)

Table 2: Constraints to use of ICTs by maize farmers (n=150)

NO	Constraints	Not constraint	Mild constraint	Serious constraint	Mean		Rank
1	High cost of ICTs gadgets	13.3	34.5	52.1	1.39		5th
2	Low local content	33.1	37.2	29.6		0.97	10th
3	Low literacy level	16.3	36.1	47.5	1.31		8th
4	Difficulty in retrieval of information	14.7	36.4	49.0	1.34		6th
5	Loss of signal form source	9.9	47.7	42.4	1.33		7th
6	High cost of maintenance of ICT gadget	9.3	23.7	66.9	1.58		2nd
7	Lack of time out of busy schedule	17.9	51.2	30.9	1.13		9th
8	Complexity of modern ICTs	14.0	16.2	69.8	1.56		3rd
9	Problem of connectivity	11.3	30.1	58.6	1.47		4th
10	Power supply	6.7	13.4	79.9	1.8		1st

Source: Field survey (2019)

Information needed by farmers while using ICTs

Table 3 shows the weighted mean score of the respondents based on their information need on maize production activities using ICTs. The information most needed using ICTs as indicated by the respondents include acquisition of agricultural inputs market information, availability and cost of labour ($\overline{X}$=1.20) and availability and cost of fertilisers, insecticides and herbicides ($\overline{X}$=1.16). Maize farmers have more interest using ICTs to know either maize inputs production are available in the market or not. Then, market information as to know market price in the market ($\overline{X}$=1.16). The result of this study shows the relevance of marketing of maize to farmers and according to Usman, Oluyole and Ajijola, (2012), that marketing information is one of the most relevant ICT services, which could be offered to farmers in developing countries.

Table 3: Information needed by maize farmers (n=150)

Types of information need		Greater extent	Lesser extent	Not a need	Mean	Rank
Installation of the culture	Choice of the plot	4.7	10.7	84.7	0.20	12th
	Choice of variety of maize	6.0	24.7	69.3	0.37	10th
	Choice of seeds	6.7	27.1	66.2	0.41	9th
	Weather (Weather Information)	0.7	14.7	84.7	0.16	13th
Technical itineraries	Crop protection	6.0	37.0	58.0	0.49	7th
	Best Cultural Practices (From sowing to harvest)	9.5	29.3	61.2	0.48	8th
	Storage of products (which products and packaging to use, when to store / destock ... among others)	2.7	21.2	76.0	0.27	11th
	Product prices in the markets	32.0	51.7	16.3	1.16	2nd
	Market demand	20.3	56.7	23.0	0.97	4th
Market Information	Availability and cost of means of transport	27.0	35.9	37.2	0.90	5th
Acquisition of agricultural inputs	Availability and cost of labor	41.4	33.1	25.5	1.16	2nd
	Availability and cost of fertilisers, insecticides and herbicides.	32.8	54.1	13.0	1.20	1st
Others	Periods of execution of operations	2.1	11.9	86.0	0.63	6th
	Planting date	1.4	5.0	93.6	0.08	16th
	Date of Fertilisation	2.1	10.0	88.0	0.14	14th
	Date of interview	0.0	12.0	88.0	0.12	15th
	Harvest date	0.0	5.0	95.1	0.05	17th

Source: Field survey (2019)

Independent sample t-test on the constraints faced by maize farmers between Adjohoun and Dangbo

As shown in Table 4 there was significant difference in the constraints faced between Adjohoun and Dangbo maize farmers (t=2.832; p=0.005). Constraints faced by farmers in Adjohoun was higher relative to Dangbo. The differences in the level of constraints observed between the two locations might be attributed to the severity of inadequate power supply in Adjohoun but solar panels were used by Dangbo farmers to address electricity problems. Though, this does not connotes complete absence of power challenges in Dangbo.

Table 4: Independent sample t-test on the constraints faced by maize farmers while using ICTs between Adjohoun and Dangbo

Commune	N	Mean	Standard Deviation	Mean difference	t-value	p- value	Decision
Adjohoun	74	13.97	3.989	1.903	2.832	0.005	Significant
Dangbo	76	12.07	4.103				

Level of Significant = 0.05
Source: Field survey (2019)

Independent sample t-test on the information needed by maize farmers while using ICTs between Adjohoun and Dangbo

Table 5 shows that the information by maize farmers needed while using ICTs in Adjohoun and Dangbo was not significant. It reveals that there is not significant difference in the constraint of the ICTs use between Adjohoun and Dangbo maize farmers (t=0.753; p=0.453).This shows that the level of information in the two communes are relatively similar.

Table 5 : Independent sample t-test on the information needed while using ICT by maize farmers between Adjohoun and Dangbo

Commune	N	Mean	Standard Deviation	Mean difference	t-value	p- value	Decision
Adjohoun	74	8.39	4.742	0.549	0.753	0.453	Not Significant
Dangbo	76	7.84	4.189				

CONCLUSION

The study concluded that maize farmers while using ICTs among maize farmers in Dangbo and Adjohoun needed various kind of information. The information most needed while using ICTs gadgets are availability and cost of fertilisers, insecticides and herbicides, product prices in the markets, availability and cost of labor…while the major constraints faced are power supply, high cost of maintenance of ICT gadget, complexity of modern ICTs. It is noticed that the level of information needed while using ICTs in Dangbo and Adjohoun are relatively similar.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations were given;

1- Government agencies in charge of power supply should make effort at ensuring that there is steady power supply or make solar panels available and accessible for farmers in order to encourage the use of ICT channels.
2- Since the information most needed while using ICTs gadgets are availability and cost of fertilisers, insecticides and herbicides, government and NGOs should make agricultural inputs available to farmers at subsidised rate.
3- Make radio broadcasts to inform daily,the price of raw mterials and the price of agricultural products on the market.
4- Since most of the farmers had no formal education, workshops and short courses can be organised by policy makers to educate them on ICTs to enable them to acquire agricultural information that can develop skills to improve their production.

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